



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 2 of 2

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

Report Date: 2 May 16  
 Lab Number: 16-W648  
 Work Order #: 82-0831  
 Account #: 002800  
 Date Sampled: 6 Apr 16  
 Date Received: 7 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: Dup 1  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.001 ^ mg/l	0.0005	6020	9 Apr 16 13:00	KMD
Chromium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	10 Apr 16 1:00	CC
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Apr 16 13:00	KMD
Molybdenum - Dissolved	< 0.005 ^ mg/l	0.0020	6020	10 Apr 16 1:00	CC
Selenium - Dissolved	0.0864 mg/l	0.0020	6020	9 Apr 16 21:00	CC
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Apr 16 13:00	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll* *CC* *2 May 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:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 2 of 2

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

Report Date: 2 May 16  
 Lab Number: 16-W649  
 Work Order #: 82-0831  
 Account #: 002800  
 Date Sampled: 6 Apr 16  
 Date Received: 7 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: Field Blank (FB)  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.001 mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Chromium - Dissolved	< 0.005 ^ mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Molybdenum - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Selenium - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 21:00	CC
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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@ = Due to sample matrix # = Due to concentration of other analytes  
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CERTIFICATION: ND # ND-00016





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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W650  
Work Order #: 82-0831  
Account #: 002800  
Date Sampled: 6 Apr 16 10:18  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW13  
Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.005 ^ mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Barium - Dissolved	0.0069 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Beryllium - Dissolved	< 0.001 ^ mg/l		0.0005	6020	10 Apr 16 10:22	CC
Cadmium - Dissolved	< 0.001 ^ mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Chromium - Dissolved	< 0.005 ^ mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Molybdenum - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Selenium - Dissolved	0.0570 mg/l		0.0020	6020	9 Apr 16 21:00	CC
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD

\* Holding time exceeded

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

Approved by:

*CC*  
*Claudette K. Carroll* *2 May 16*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

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Page: 1 of 2

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

Report Date: 2 May 16  
 Lab Number: 16-W651  
 Work Order #:82-0831  
 Account #: 002800  
 Date Sampled: 6 Apr 16 12:30  
 Date Received: 7 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW103  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion						
pH	* 6.5	units	N/A	EPA 200.2	7 Apr 16	KMD
Total Suspended Solids	10	mg/l	1	SM4500 H+ B	7 Apr 16 17:00	CC
pH - Field	6.62	units	NA	I3765-85	7 Apr 16 15:24	MF
Temperature - Field	7.32	Degrees C	NA	SM 4500 H+ B	6 Apr 16 12:30	DJN
Total Alkalinity	397	mg/l CaCO3	20	SM 2550B	6 Apr 16 12:30	DJN
Conductivity - Field	4953	umhos/cm	1	SM2320-B	7 Apr 16 17:00	CC
Fluoride	0.24	mg/l	0.10	EPA 120.1	6 Apr 16 12:30	DJN
Sulfate	2880	mg/l	5.00	SM4500-F-C	10 Apr 16 9:30	CC
Chloride	100	mg/l	1.0	ASTM D516-07	14 Apr 16 9:51	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	SM4500-Cl-E	7 Apr 16 11:08	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Total Dissolved Solids	4500	mg/l	5	EPA 245.1	12 Apr 16 13:10	EV
Calcium - Total	482	mg/l	1.0	I1750-85	12 Apr 16 11:10	ML
Magnesium - Total	438	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Sodium - Total	232	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Potassium - Total	18.4	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Lithium - Total	0.63	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.14	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	479	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	435	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	258	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	18.8	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.64	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.12	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Barium - Total	0.0092	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Selenium - Total	0.1316	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Apr 16 13:00	KMD

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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W651  
Work Order #: 82-0831  
Account #: 002800  
Date Sampled: 6 Apr 16 12:30  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW103  
Sample Site: MDU Heskett

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Barium - Dissolved	0.0090	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 10:22	CC
Cadmium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	9 Apr 16 13:00	KMD
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Apr 16 13:00	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Selenium - Dissolved	0.1490	mg/l	0.0020	6020	28 Apr 16 11:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Apr 16 13:00	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll*

*CC*  
*2 May 16*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W652  
Work Order #: 82-0831  
Account #: 002800  
Date Sampled: 6 Apr 16 14:50  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW44R  
Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.005 ^ mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Barium - Dissolved	0.0068 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Beryllium - Dissolved	< 0.001 ^ mg/l		0.0005	6020	10 Apr 16 10:22	CC
Cadmium - Dissolved	< 0.001 ^ mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Chromium - Dissolved	< 0.005 ^ mg/l		0.0020	6020	10 Apr 16 1:00	CC
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020	9 Apr 16 13:00	KMD
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD
Molybdenum - Dissolved	< 0.005 ^ mg/l		0.0020	6020	10 Apr 16 1:00	CC
Selenium - Dissolved	0.0822 mg/l		0.0020	6020	9 Apr 16 21:00	CC
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Apr 16 13:00	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll*

*CC*  
*2 May 16*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

CERTIFICATION: ND # ND-00016



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: nw 13  
 Sampling Personal: Darren Nieswaag

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1003	6.78	10381	6.91	2.75	126.8	1.93	31.30	500	clear
12	1008	6.49	10377	6.91	2.76	118.2	1.68	31.30	500	clear
13	1013	6.39	10363	6.91	2.85	111.9	1.78	31.30	500	clear
14	1018	6.54	10379	6.91	2.76	109.6	1.76	31.30	500	clear
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Stabilized: Yes No

Total Volume Removed: 7000 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW13  
 Sampling Personal: Darren Newsome

Weather Conditions: Temp: 35 °F Wind: NW 17 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	30.55	ft
Total Well Depth:	41.90	ft
Well Volume:	7.0	liters
Depth to Top of Pump:	35.23	ft
Water Level After Sample:	31.39	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	5 sec.
Dedicated Equip?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI:	20
Duplicate Sample ID:	Pumping Rate: 100 mL/min		
Purge Date:	6 Apr 16	Time Purging Began:	0908 am/pm
Well Purged Dry?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	6 Apr 16	Time of Sampling:	1018 am/pm
Bottle List:	500 mL Nitric	1 Liter Raw	
	500 mL Nitric (filtered)	4 - 1 Liter Nitric	

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft)	mL Removed	Description: Clarity, Color, Odor, Ect.
SEQ #	Time						0.25 ft		
1	0913	5.78	10382	6.89	2.94	174.9	30.98	500	clear
2	0918	6.67	10405	6.90	3.12	167.2	31.08	500	clear
3	0923	6.59	10404	6.92	3.38	163.1	31.16	500	clear
4	0928	6.63	10433	6.92	3.32	163.6	31.25	500	clear
5	0933	6.73	10394	6.92	3.11	163.6	31.25	500	clear
6	0938	6.47	10381	6.91	3.01	162.4	31.25	500	clear
7	0943	6.55	10380	6.91	2.79	160.9	31.30	500	clear
8	0948	6.62	10357	6.91	2.78	156.9	31.30	500	clear
9	0953	6.63	10351	6.91	2.74	148.5	31.30	500	clear
10	0958	6.79	10340	6.91	2.75	137.4	31.30	500	clear

Stabilized: Yes ~~No~~

Total Volume Removed: — mL

Comments:

*Continued on next page*



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW103  
 Sampling Personal: Darren Nieswangs

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1215	7.08	4958	6.65	3.63	139.7	0.80	36.76	500	clear
12	1220	7.31	4945	6.63	3.76	138.3	0.76	37.09	500	clear
13	1225	7.32	4945	6.62	3.78	138.7	0.73	37.12	500	clear
14	1230	7.32	4953	6.62	3.76	139.6	0.70	37.18	500	clear
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Stabilized: Yes No

Total Volume Removed: 7000 mL

Comments:





2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW44R  
 Sampling Personal: Darren Nieswaag

### Field Measurements

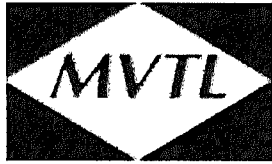
Stabilization (3 consecutive)		Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time									
11	1430	7.95	9241	6.56	0.51	153.9	6.21	29.13	500	clear
12	1435	7.86	9244	6.56	0.50	155.3	5.25	29.13	500	clear
13	1440	7.81	9252	6.56	0.45	156.2	4.26	29.13	500	clear
14	1445	7.84	9252	6.56	0.42	157.0	4.33	29.13	500	clear
15	1450	7.93	9259	6.56	0.41	158.3	4.42	29.13	500	clear
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Stabilized: Yes No

Total Volume Removed: 7500 mL

Comments:





**Laboratories, Inc.**

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

# Chain of Custody Record

<b>Project Name:</b> MDU                      Heskett                      CCR Groundwater                      2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Darren Nieswang</i>			
<b>Report To:</b> MDU <b>Attn:</b> Samantha Marshall <b>Address:</b> 400 N. 4th St Bismarck, ND 58501 <b>Phone:</b> 701-222-7829				<b>Carbon Copy:</b> <b>Attn:</b> <b>Address:</b>			
				<b>Work Order Number:</b> 82-0831			

Sample Information					Bottle Type				Field Parameters			Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO <sub>3</sub>	1 liter	500 ml HNO <sub>3</sub> (filtered)			Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W648	Dup 1	6Apr16	NA	W	Up	X	X	X			NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W649	Field Blank (FB)	6Apr16	NA	W	Up	X	X	X			NA	NA	NA	
W650	mw13	6Apr16	1018	GW		X	X	X			6.54	10379	6.91	
W651	mw103	6Apr16	1230	GW		X	X	X			7.32	4953	6.62	
W652	mw 44R	6Apr16	1450	GW		X	X	X			7.93	9259	6.56	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Don Walker</i>	Walker 2	6Apr16 1736	C. Jackson		7Apr16 0800	ROI 6.72 TM 588
2							
3							

*Apr 16  
DN*





CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-0832
IML Lab Reference No/SDG: S1604161
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR 2nd Quarter 2016
MVTL Laboratory Identifications: 16-W653 through 16-W657
IML Laboratory Identifications: S1604161-001 through S1604161-005
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Dup1, Field Blank (FB), MW13, MW103, MW44R.

I. RECEIPT

- All samples were received at the laboratory on 7 April 2016 at 0800.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 6.4°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 12 April 2016.
All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-0832
IML Lab Reference No/SDG: S1604161
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR 2nd Quarter 2016
MVTL Laboratory Identifications: 16-W653 through 16-W657
IML Laboratory Identifications: S1604161-001 through S1604161-005
Page 2 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Dup1, Field Blank (FB), MW13, MW103, MW44R.

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 DATE: 2 May 16
Claudette Carroll - MVTL Bismarck Laboratory Manager



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W653  
Work Order #: 82-0832  
Account #: 002800  
Date Sampled: 6 Apr 16  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: Dup 1  
Sample Site: MDU Heskett

Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> 2M2416

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W654  
Work Order #: 82-0832  
Account #: 002800  
Date Sampled: 6 Apr 16  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: Field Blank (FB)  
Sample Site: MDU Heskett

Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 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:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W655  
Work Order #: 82-0832  
Account #: 002800  
Date Sampled: 6 Apr 16 10:18  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: MW13  
Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.91 units	NA	SM 4500 H+ B	6 Apr 16 10:18	DJN
Temperature - Field	6.54 Degrees C	NA	SM 2550B	6 Apr 16 10:18	DJN
Conductivity - Field	10379 umhos/cm	1	EPA 120.1	6 Apr 16 10:18	DJN
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W656  
Work Order #: 82-0832  
Account #: 002800  
Date Sampled: 6 Apr 16 12:30  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW103  
Sample Site: MDU Heskett

Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.62 units	NA	SM 4500 H+ B	6 Apr 16 12:30	DJN
Temperature - Field	7.32 Degrees C	NA	SM 2550B	6 Apr 16 12:30	DJN
Conductivity - Field	4953 umhos/cm	1	EPA 120.1	6 Apr 16 12:30	DJN
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>cc</sup> 2 May 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:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W657  
Work Order #: 82-0832  
Account #: 002800  
Date Sampled: 6 Apr 16 14:50  
Date Received: 7 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW44R  
Sample Site: MDU Heskett

Temp at Receipt: 6.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.56	units	NA	SM 4500 H+ B	6 Apr 16 14:50	DJN
Temperature - Field	7.93	Degrees C	NA	SM 2550B	6 Apr 16 14:50	DJN
Conductivity - Field	9259	umhos/cm	1	EPA 120.1	6 Apr 16 14:50	DJN
Radium 226	See Attached Report				19 Apr 16	OL
Radium 228	See Attached Report				22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>cc</sup> 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



Date: 4/29/2016

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-0832  
**Lab Order:** S1604161


**CASE NARRATIVE**  
Report ID: S1604161001

Samples 16-W653 Dup 1, 16-W654 Field Blank, 16-W655 MW13, 16-W656 MW103, and 16-W657 MW44R were received on April 12, 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:   
Wade Nieuwsma, Assistant Laboratory Manager





### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604161001

**ProjectName:** 201682-0832  
**Lab ID:** S1604161-001  
**ClientSample ID:** 16-W653 Dup 1  
**COC:** 201682-0832

**WorkOrder:** S1604161  
**CollectionDate:** 4/6/2016  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

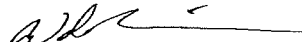
#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	04/22/2016 722	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/22/2016 722	MB

These results apply only to the samples tested.

RL - Reporting Limit

- |                    |   |  |    |  |
|--------------------|---|--|----|--|
| <b>Qualifiers:</b> | B | Analyte detected in the associated Method Blank      | C  | Calculated Value                                   |
|                    | E | Value above quantitation range                       | H  | Holding times for preparation or analysis exceeded |
|                    | J | Analyte detected below quantitation limits           | L  | Analyzed by another laboratory                     |
|                    | M | Value exceeds Monthly Ave or MCL or is less than LCL | ND | Not Detected at the Reporting Limit                |
|                    | O | Outside the Range of Dilutions                       | S  | Spike Recovery outside accepted recovery limits    |
|                    | X | Matrix Effect  |    |  |

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604161001

**ProjectName:** 201682-0832  
**Lab ID:** S1604161-002  
**ClientSample ID:** 16-W654 Field Blank  
**COC:** 201682-0832

**WorkOrder:** S1604161  
**CollectionDate:** 4/6/2016  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

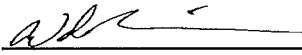
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.0	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.03	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	04/22/2016 1023	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/22/2016 1023	MB

These results apply only to the samples tested.

**RL - Reporting Limit**

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

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

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604161001

**ProjectName:** 201682-0832  
**Lab ID:** S1604161-003  
**ClientSample ID:** 16-W655 MW13  
**COC:** 201682-0832

**WorkOrder:** S1604161  
**CollectionDate:** 4/6/2016 10:18:00 AM  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
----------	--------	-------	------	----	--------	--------------------

#### Radionuclides - Total

Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504 MB
Radium 228	0.0	pCi/L		1	Ga-Tech	04/22/2016 1324 MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/22/2016 1324 MB

These results apply only to the samples tested.

RL - Reporting Limit

<b>Qualifiers:</b>	B	Analyte detected in the associated Method Blank	C	Calculated Value
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	M	Value exceeds Monthly Ave or MCL or is less than LCL	ND	Not Detected at the Reporting Limit
	O	Outside the Range of Dilutions	S	Spike Recovery outside accepted recovery limits
	X	Matrix Effect		

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604161001

**ProjectName:** 201682-0832  
**Lab ID:** S1604161-004  
**ClientSample ID:** 16-W656 MW103  
**COC:** 201682-0832

**WorkOrder:** S1604161  
**CollectionDate:** 4/6/2016 12:30:00 PM  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.5	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-1.0	pCi/L		1	Ga-Tech	04/22/2016 1624	MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/22/2016 1624	MB

These results apply only to the samples tested.

#### RL - Reporting Limit

- |                    |  |  |
|--------------------|--|--|
| <b>Qualifiers:</b> | B Analyte detected in the associated Method Blank      | C Calculated Value                                   |
|                    | E Value above quantitation range                       | H Holding times for preparation or analysis exceeded |
|                    | J Analyte detected below quantitation limits           | L Analyzed by another laboratory                     |
|                    | M Value exceeds Monthly Ave or MCL or is less than LCL | ND Not Detected at the Reporting Limit               |
|                    | O Outside the Range of Dilutions                       | S Spike Recovery outside accepted recovery limits    |
|                    | X Matrix Effect  |  |

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604161001

**ProjectName:** 201682-0832  
**Lab ID:** S1604161-005  
**ClientSample ID:** 16-W657 MW44R  
**COC:** 201682-0832

**WorkOrder:** S1604161  
**CollectionDate:** 4/6/2016 2:50:00 PM  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

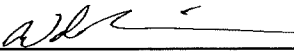
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-2.3	pCi/L		1	Ga-Tech	04/22/2016 1925	MB
Radium 228 Precision (±)	1.2	pCi/L			Ga-Tech	04/22/2016 1925	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



### ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.

Date: 4/29/2016

Work Order: S1604161

Report ID: S1604161001

Project: 201682-0832

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-336 (04/21/16 10:15)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-336 (04/21/16 13:16)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		34	1	39.5		86.0	61.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-336 (04/21/16 19:18)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		29	1	39.5	ND	73.9	64.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-336 (04/21/16 22:19)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		32	1	29	10.1	81.7	20		

Radium 226 in Water - Total		Sample Type	MBLK		Units: pCi/L				
MB-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.2						

Radium 226 in Water - Total		Sample Type	LCS		Units: pCi/L				
LCS-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		4.9	0.2	5.54		88.3	67.1 - 122		

Radium 226 in Water - Total		Sample Type	LCSD		Units: pCi/L				
LCSD-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		5.7	0.2	4.9	15.9	104	20		

Radium 226 in Water - Total		Sample Type	MS		Units: pCi/L				
S1604125-002B MS (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.3	0.2	5.54	ND	95.4	65 - 131		

- Qualifiers:**
- B 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

Phone: (701) 258-9720  
 Toll Free: (800) 279-6885 Fax: (701) 258-9724

**201682-0832**

<b>Company Name and Address:</b>  <p style="text-align: center;"><b>MVTL</b>          2616 E Broadway          Bismarck, ND 58501</p>	<b>Account #:</b>  <b>Contact:</b> <p style="text-align: center;">Claudette</p>	<b>Phone #:</b> <p style="text-align: center;">701-258-9720</p>
<b>Billing Address (indicate if different from above):</b>  <p style="text-align: center;">PO Box 249          New Ulm, MN 56073</p>	<b>Name of Sampler:</b>  <b>Quote Number</b>  <b>Project Name/Number:</b>	<b>Fax #:</b> For faxed report check box <input type="checkbox"/>  <b>E-mail:</b> <p style="text-align: center;">ccarroll@mvtl.com</p> For e-mail report check box <input type="checkbox"/>  <b>Date Submitted:</b> <p style="text-align: center;">4/7/2016</p>
		<b>Purchase Order #:</b> <p style="text-align: center;">BL5549</p>

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
51604161 -001	16-W653	Dup 1		4/6/2016								Radium226 & Radium228 on all
002	16-W654	Field Blank		4/6/2016								
003	16-W655	MW13		4/6/2016	1018							
004	16-W656	MW103		4/6/2016	1230							
005	16-W657	MW44R		4/6/2016	1450							

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
C. Jackson	4/7/2016	1700		Kristy Boyd ML	4/12/16	11AM 13.6 °C
2.						



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU Heskett CCR Radiochem 2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Darren Nieswaag</i>				
<b>Report To:</b> MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			<b>Carbon Copy:</b> Attn: Address:			<b>Work Order Number:</b> <i>82-0832</i>		

Sample Information						Bottle Type				Field Parameters			Analysis	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO <sub>3</sub>					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
<i>W653</i>	Dup 1	<i>6Apr16</i>	NA	W		4					NA	NA	NA	MDU CCR combined RadChem
<i>W654</i>	Field Blank (FB)	<i>6Apr16</i>	NA	W		4					NA	NA	NA	
<i>W655</i>	<i>MW13</i>	<i>6Apr16</i>	<i>1018</i>	<i>GW</i>		4					<i>6.54</i>	<i>10379</i>	<i>6.91</i>	
<i>W656</i>	<i>MW103</i>	<i>6Apr16</i>	<i>1230</i>	<i>GW</i>		4					<i>7.32</i>	<i>4953</i>	<i>6.62</i>	
<i>W657</i>	<i>MW44R</i>	<i>6Apr16</i>	<i>1450</i>	<i>GW</i>		4					<i>7.93</i>	<i>9259</i>	<i>6.56</i>	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Dawn May</i>	<i>walkin 2</i>	<i>6Apr16</i> <i>1736</i>	<i>C. Jackson</i>		<i>7Apr16</i> <i>0800</i>	<i>ROJ 7.2</i> <i>6.4 on</i>
2							<i>Tm 588</i>
3							





**CASE NARRATIVE – AMENDED 26 MAY 2016**

**MVTL Lab Reference No/SDG: 201682-0855**

**Client: Montana Dakota Utilities**  
**Location: MDU Heskett Ash Site**  
**Project Identification: CCR 2<sup>nd</sup> Quarter 2016 Groundwater**

**MVTL Laboratory Identifications: 16-W680 through 16-W684**

**Page 1 of 2**

<b>MDU Sample Identification</b>	<b>MVTL Laboratory #</b>
MW105	16-W680
MW80R	16-W681
MW102	16-W682
MW70	16-W683
MW101	16-W684

**I. RECEIPT**

- All samples were received at the laboratory on 8 April 2016 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 2.5°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

**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.



**CASE NARRATIVE – AMENDED 26 MAY 2016**

**MVTL Lab Reference No/SDG: 201682-0855**

**Client: Montana Dakota Utilities**  
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**Project Identification: CCR 2<sup>nd</sup> Quarter 2016 Groundwater**

**MVTL Laboratory Identifications: 16-W680 through 16-W684**

**Page 2 of 2**

- For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
- For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
- One dissolved selenium matrix spike duplicate recovery within the batch was outside of the acceptable limits. Matrix spike recovery was within range and % RPD between matrix spike recovery and matrix spike duplicate recovery was within acceptable limits. High spike recovery was determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.
- Recoveries for one dissolved selenium matrix spike/matrix spike duplicate within the batch were outside of the acceptable limits. High spike recoveries were determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.

• **REPORTING**

- Report for 16-W681 was amended on 25 May 2016 to add a qualifier on the total chromium result.

All laboratory data has been approved by MVTL Laboratories.

**SIGNED:** Claudette Carroll **DATE:** 26 May 16  
Claudette Carroll - MVTL Bismarck Laboratory Manager



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 5

## Quality Control Report

Lab IDs: 16-W680 to 16-W684

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0855

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank		
Antimony - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	< 0.001	0.1107	111	75-125	0.1107	0.1124	112	1.5	20	-	-	< 0.001		
				0.100	16-W695QC	< 0.001	0.1092	109	75-125	0.1092	0.1080	108	1.1	20	-	-	-	-	
Antimony - Total mg/l	0.1000	106	80-120	0.400	16-W680QC	< 0.001	0.4036	101	75-125	0.4036	0.4256	106	5.3	20	-	-	< 0.001		
				0.400	16-W692QC	< 0.001	0.4444	111	75-125	0.4444	0.4300	108	3.3	20	-	-	-	-	
				0.100	16-W704QC	< 0.001	0.1066	107	75-125	0.1066	0.1077	108	1.0	20	-	-	-	-	
Arsenic - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	0.0030	0.1124	109	75-125	0.1124	0.1164	113	3.5	20	-	-	< 0.002		
				0.100	16-W695QC	0.0025	0.1148	112	75-125	0.1148	0.1120	110	2.5	20	-	-	-	-	
Arsenic - Total mg/l	0.1000	106	80-120	0.400	16-W680QC	0.0050	0.4274	106	75-125	0.4274	0.4300	106	0.6	20	-	-	< 0.002		
				0.400	16-W692QC	0.0021	0.4266	106	75-125	0.4266	0.4150	103	2.8	20	-	-	-	-	
				0.100	16-W704QC	< 0.002	0.1126	113	75-125	0.1126	0.1084	108	3.8	20	-	-	-	-	
Barium - Dissolved mg/l	0.1000	103	80-120	0.100	16-W694QC	0.0070	0.1062	99	75-125	0.1062	0.1078	101	1.5	20	-	-	< 0.002		
				0.100	16-W695QC	0.0103	0.1120	102	75-125	0.1120	0.1152	105	2.8	20	-	-	-	-	
Barium - Total mg/l	0.1000	102	80-120	0.400	16-W680QC	0.0737	0.5010	107	75-125	0.5010	0.4866	103	2.9	20	-	-	< 0.002		
				0.400	16-W692QC	0.0119	0.4274	104	75-125	0.4274	0.4092	99	4.4	20	-	-	-	-	
				0.100	16-W704QC	0.0312	0.1278	97	75-125	0.1278	0.1342	103	4.9	20	-	-	-	-	
Beryllium - Dissolved mg/l	0.1000	111	80-120	0.100	16-W694QC	< 0.0005	0.1080	108	75-125	0.1080	0.1115	112	3.2	20	-	-	< 0.0005		
				0.100	16-W695QC	< 0.0005	0.1060	106	75-125	0.1060	0.1052	105	0.8	20	-	-	-	-	
Beryllium - Total mg/l	0.1000	103	80-120	0.400	16-W680QC	< 0.0005	0.4272	107	75-125	0.4272	0.4292	107	0.5	20	-	-	< 0.0005		
				0.400	16-W692QC	< 0.0005	0.4442	111	75-125	0.4442	0.4302	108	3.2	20	-	-	-	-	
				0.100	16-W704QC	< 0.0005	0.1105	110	75-125	0.1105	0.1066	107	3.6	20	-	-	-	-	
Boron - Dissolved mg/l	0.40	100	85-115	0.300	16-W639	1.76	1.99	77	75-125	1.99	2.00	80	0.5	20	-	-	< 0.1		
	0.40	100	85-115	0.300	16-W684	1.03	1.28	83	75-125	1.28	1.31	93	2.3	20	-	-	< 0.1		
Boron - Total mg/l	0.40	100	80-120	0.600	16-W680	0.39	0.96	95	75-125	0.96	0.97	97	1.0	20	-	-	< 0.1		
																			< 0.1
Cadmium - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	< 0.0005	0.1028	103	75-125	0.1028	0.1046	105	1.7	20	-	-	< 0.0005		
				0.100	16-W695QC	< 0.0005	0.1045	104	75-125	0.1045	0.1014	101	3.0	20	-	-	-	-	



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**Quality Control Report**

Lab IDs: 16-W680 to 16-W684

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0855

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	102	80-120	0.400	16-W680QC	< 0.0005	0.3976	99	75-125	0.3976	0.4128	103	3.8	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.4316	108	75-125	0.4316	0.4228	106	2.1	20	-	-	
				0.100	16-W704QC	< 0.0005	0.1041	104	75-125	0.1041	0.1042	104	0.1	20	-	-	
Calcium - Dissolved mg/l	20.0	93	85-115	500	16-W651	479	895	83	75-125	895	900	84	0.6	20	-	-	< 1 < 1
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	2000	16-M895	2640	4420	89	75-125	910	965	106	5.9	20	-	-	< 1
				500	16-W683	434	910	95	75-125	995	995	96	0.0	20	-	-	< 1
				500	16-W692	515	995	96	75-125	152	154	96	1.3	20	-	-	< 1
				100	16-W707	58.1	152	94	75-125	-	-	-	-	-	-	-	< 1
Chloride mg/l	30.0	99	80-120	30.0	16-D1417	23.6	52.7	97	80-120	52.7	51.3	92	2.7	20	-	-	< 1 < 1
Chromium - Dissolved mg/l	0.1000	102	80-120	0.100	16-W694QC	0.0025	0.1072	105	75-125	0.1072	0.1098	107	2.4	20	-	-	< 0.002
				0.100	16-W695QC	0.0053	0.1080	103	75-125	0.1080	0.1095	104	1.4	20	-	-	
Chromium - Total mg/l	0.1000	100	80-120	0.400	16-W680QC	0.0087	0.3984	97	75-125	0.3984	0.4090	100	2.6	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.3980	100	75-125	0.3980	0.3882	97	2.5	20	-	-	
				0.100	16-W704QC	0.0024	0.1042	102	75-125	0.1042	0.1030	101	1.2	20	-	-	
Cobalt - Dissolved mg/l	0.1000	99	80-120	0.100	16-W694QC	0.0025	0.1024	100	75-125	0.1024	0.1073	105	4.7	20	-	-	< 0.002
				0.100	16-W695QC	< 0.002	0.0987	99	75-125	0.0987	0.0980	98	0.7	20	-	-	
Cobalt - Total mg/l	0.1000	99	80-120	0.400	16-W680QC	0.0045	0.3924	97	75-125	0.3924	0.3966	98	1.1	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.4068	102	75-125	0.4068	0.3950	99	2.9	20	-	-	
				0.100	16-W704QC	< 0.002	0.1021	102	75-125	0.1021	0.0983	98	3.8	20	-	-	
Fluoride mg/l	0.50 0.50	104 104	90-110	0.500	16-W681	0.30	0.77	94	80-120	0.77	0.79	98	2.6	20	-	-	< 0.1
			90-110	0.500	16-W692	0.12	0.62	100	80-120	0.62	0.62	100	0.0	20	-	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	100	80-120	0.100	16-W694QC	< 0.0005	0.1015	102	75-125	0.1015	0.1042	104	2.6	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1042	104	75-125	0.1042	0.1070	107	2.7	20	-	-	



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**Quality Control Report**

Lab IDs: 16-W680 to 16-W684

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0855

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	104	80-120	0.400	16-W680QC	0.0019	0.4072	101	75-125	0.4072	0.4008	100	1.6	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.4032	101	75-125	0.4032	0.3936	98	2.4	20	-	-	< 0.0005
				0.100	16-W704QC	< 0.0005	0.0960	96	75-125	0.0960	0.0988	99	2.9	20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.40 0.40	110 108	85-115 85-115	0.400	16-W683	0.33	0.77	110	75-125	0.77	0.77	110	0.0	20	-	-	< 0.1
				2.00	16-W695	1.10	3.36	113	75-125	3.36	3.28	109	2.4	20	-	-	< 0.1
																	-
Lithium - Total mg/l	0.40 0.40	115 110	85-115 85-115	0.400	16-W639	0.10	0.56	115	75-125	0.56	0.54	110	3.6	20	-	-	< 0.1
				2.00	16-W648	1.44	3.58	107	75-125	3.58	3.56	106	0.6	20	-	-	< 0.1
				2.00	16-W680	1.02	3.34	116	75-125	3.34	3.25	112	2.7	20	-	-	< 0.1
				0.400	16-W692	0.22	0.65	108	75-125	0.65	0.64	105	1.6	20	-	-	< 0.1
Magnesium - Dissolved mg/l	20.0	102	80-120	500	16-W651	435	880	89	75-125	880	885	90	0.6	20	-	-	< 1
Magnesium - Total mg/l	20.0 20.0	112 112	80-120 80-120	2000	16-M895	< 20	1970	98	75-125	655	690	105	5.2	20	-	-	< 1
				500	16-W683	164	655	98	75-125	725	725	99	0.0	20	-	-	< 1
				500	16-W692	230	725	99	75-125	174	176	95	1.1	20	-	-	< 1
				100	16-W707	80.8	174	93	75-125						-	-	< 1
Mercury - Dissolved mg/l	0.0020 0.0020	90 105	85-115 85-115	0.002	16-W683	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002
				0.002	16-W702	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	95	85-115	0.002	16-W690	< 0.0002	0.0018	90	70-130	0.0018	0.0017	85	5.7	20	-	-	< 0.0002
Molybdenum - Dissolved mg/l	0.1000	89	80-120	0.100	16-W694QC	< 0.002	0.0948	95	75-125	0.0948	0.1016	102	6.9	20	-	-	< 0.002
				0.100	16-W695QC	< 0.002	0.0942	94	75-125	0.0942	0.0996	100	5.6	20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	89	80-120	0.400	16-W680QC	0.0067	0.3236	79	75-125	0.3236	0.3486	85	7.4	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.3480	87	75-125	0.3480	0.3454	86	0.7	20	-	-	< 0.002
				0.100	16-W704QC	0.0037	0.1004	97	75-125	0.1004	0.1060	102	5.4	20	-	-	< 0.002
pH units	-	-	-	-	-	-	-	-	-	6.8	6.9	-	1.5	20	-	-	-
Potassium - Dissolved mg/l	10.0	89	85-115	100	16-W651	18.8	113	94	75-125	113	114	95	0.9	20	-	-	< 1
															-	-	< 1



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**Quality Control Report**

Lab IDs: 16-W680 to 16-W684

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0855

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0	105	80-120	400	16-M895	736	1140	101	75-125	110	116	104	5.3	20	-	-	< 1
	10.0	105	80-120	100	16-W683	11.8	110	98	75-125	112	113	101	0.9	20	-	-	< 1
				100	16-W692	12.0	112	100	75-125	39.6	40.1		1.3	20	-	-	< 1
															-	-	< 1
Selenium - Dissolved mg/l	0.1000	114	80-120	0.100	16-W694	0.1584	0.2800	122	75-125	0.2800	0.2861	128	2.2	20	-	-	< 0.002
				0.100	16-W695	0.1737	0.3032	130	75-125	0.3032	0.3022	128	0.3	20	-	-	< 0.002
Selenium - Total mg/l	0.1000	119	80-120	0.400	16-W680	0.0066	0.4782	118	75-125	0.4782	0.4790	118	0.2	20	-	-	< 0.002
				0.400	16-W692	0.1326	0.6122	120	75-125	0.6122	0.6064	118	1.0	20	-	-	< 0.002
				0.100	16-W704	< 0.002	0.1198	120	75-125	0.1198	0.1186	119	1.0	20	-	-	< 0.002
Sodium - Dissolved mg/l	20.0	106	85-115	500	16-W651	258	705	89	75-125	705	705	89	0.0	20	-	-	< 1
															-	-	< 1
Sodium - Total mg/l	20.0	110	80-120	2000	16-M895	4560	6360	90	75-125	1030	1060	101	2.9	20	-	-	< 1
	20.0	109	80-120	500	16-W683	555	1030	95	75-125	1040	1020	94	1.9	20	-	-	< 1
				500	16-W692	550	1040	98	75-125	1110	1140	89	2.7	20	-	-	< 1
				500	16-W707	695	1110	83	75-125						-	-	< 1
Sulfate mg/l	100	103	90-110	100	16-W649	< 5	100	100	80-120	100	99.9	100	0.1	20	-	-	< 5
Thallium - Dissolved mg/l	0.1000	97	80-120	0.100	16-W694QC	< 0.0005	0.1048	105	75-125	0.1048	0.1073	107	2.4	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1056	106	75-125	0.1056	0.1067	107	1.0	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	101	80-120	0.400	16-W680QC	< 0.0005	0.3724	93	75-125	0.3724	0.3758	94	0.9	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.3782	95	75-125	0.3782	0.3814	95	0.8	20	-	-	< 0.0005
				0.100	16-W704QC	< 0.0005	0.0968	97	75-125	0.0968	0.0980	98	1.2	20	-	-	< 0.0005
Total Alkalinity mg/l CaCO3	410	100	90-110	410	16-W690	< 20	396	97	80-120	396	393	96	0.8	20	97	80-120	< 20
	410	97	90-110	410	16-W682	529	918	95	80-120	918	912	93	0.7	20	102	80-120	< 20
	410	91	90-110														< 20
	410	97	90-110														< 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	7750	7640	-	1.4	20	-	-	< 5



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MEMBER  
ACIL

## Quality Control Report

Lab IDs: 16-W680 to 16-W684

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0855

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	351	349	-	0.6	20	-	-	< 1
	-	-	-	-	-	-	-	-	-	19	19	-	0.0	20	-	-	

Approved by: C. Cantel  
2 May 16



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Page: 1 of 2

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

Report Date: 2 May 16  
 Lab Number: 16-W680  
 Work Order #:82-0855  
 Account #: 002800  
 Date Sampled: 7 Apr 16 11:30  
 Date Received: 8 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW105  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 6.8	units	N/A	SM4500 H+ B	11 Apr 16 17:00	ML
Total Suspended Solids	108	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.83	units	NA	SM 4500 H+ B	7 Apr 16 11:30	JSM
Temperature - Field	6.98	Degrees C	NA	SM 2550B	7 Apr 16 11:30	JSM
Total Alkalinity	437	mg/l CaCO3	20	SM2320-B	11 Apr 16 17:00	ML
Conductivity - Field	6972	umhos/cm	1	EPA 120.1	7 Apr 16 11:30	JSM
Fluoride	0.26	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	4450	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	348	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	6680	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	364	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	675	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	710	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	18.2	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	1.02	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.39	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	347	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	710	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	705	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	18.4	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	1.06	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.36	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0737	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	0.0087	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	0.0045	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	0.0019	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	0.0067	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.0066	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to concentration of other analytes  
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CERTIFICATION: ND # ND-00016





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

Report Date: 2 May 16  
 Lab Number: 16-W680  
 Work Order #: 82-0855  
 Account #: 002800  
 Date Sampled: 7 Apr 16 11:30  
 Date Received: 8 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW105  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0221	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	0.0029	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	0.0067	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>IC</sup> 2 May 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:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Amended 25May16 (Flag total Cr)

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

Report Date: 2 May 16  
 Lab Number: 16-W681  
 Work Order #:82-0855  
 Account #: 002800  
 Date Sampled: 7 Apr 16 14:55  
 Date Received: 8 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW80R  
 Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 7.4	units	N/A	SM4500 H+ B	11 Apr 16 17:00	ML
Total Suspended Solids	18	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	7.18	units	NA	SM 4500 H+ B	7 Apr 16 14:55	JSM
Temperature - Field	8.10	Degrees C	NA	SM 2550B	7 Apr 16 14:55	JSM
Total Alkalinity	522	mg/l CaCO3	20	SM2320-B	11 Apr 16 17:00	ML
Conductivity - Field	5732	umhos/cm	1	EPA 120.1	7 Apr 16 14:55	JSM
Fluoride	0.30	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	3070	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	161	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	5360	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	291	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	545	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	590	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.76	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.32	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	254	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	498	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	548	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	4.2	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.74	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.35	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0143	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.0570	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	0.0008	mg/l	0.0005	6020	10 Apr 16 19:45	CC

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Amended 25May16 (Flag total Cr)

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

Report Date: 2 May 16  
Lab Number: 16-W681  
Work Order #: 82-0855  
Account #: 002800  
Date Sampled: 7 Apr 16 14:55  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW80R  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Barium - Dissolved	0.0101	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Selenium - Dissolved	0.0584	mg/l	0.0020	6020	10 Apr 16 17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>CC</sup> *26 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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

Report Date: 2 May 16  
Lab Number: 16-W682  
Work Order #: 82-0855  
Account #: 002800  
Date Sampled: 7 Apr 16 9:15  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW102  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0265	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	0.0042	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by:

*Cc*  
Claudette K. Carroll 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 2 of 2

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

Report Date: 2 May 16  
 Lab Number: 16-W683  
 Work Order #: 82-0855  
 Account #: 002800  
 Date Sampled: 7 Apr 16 12:44  
 Date Received: 8 Apr 16 8:00  
 Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW70  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0095	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	0.0582	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by:

*cc*  
*Claudette K. Carroll* *2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016







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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W684  
Work Order #: 82-0855  
Account #: 002800  
Date Sampled: 7 Apr 16 15:19  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW101  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0224	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	0.0021	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

# MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darren Nieswaag

Instrument  
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

**Pre Site Calibration**

Date: 6 Apr 16 Time: 0748

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH Buffer 7	21.61	7.04	7.00	6.95-7.05	-22.3	0 +/- 50
Buffer 10	20.87	10.00	10.00	9.95-10.05	-200.4	-180 +/- 50
<b>Conductivity</b> 12890 Buffer 10000	21.32	12934	12906	±10%	ICCA 1413 Buffer 5000	Check 1414
<b>ORP</b> 231 mV @ 25C	7.52	256.4	257.0	±10 mV		
<b>DO</b>	8.41	8.88	9.27			
				Barometric Pressure (mm Hg)		
				mg/L	715.4	

**Post Site Check**

Time: 1730

	Temp °C	Reading
pH Buffer 7	19.94	6.99
<b>Conductivity</b> ICCA 1413 Buffer 5000	20.30	1402

**Pre Site Calibration**

Date: 7 Apr 16 Time: 0725

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH Buffer 7	20.34	7.00	7.00	6.95-7.05	-22.0	0 +/- 50
Buffer 10	20.30	<del>10.00</del> 10.02	10.00	9.95-10.05	-200.7	-180 +/- 50
<b>Conductivity</b> 12890 Buffer 10000	19.94	12940	12893	±10%	ICCA 1413 Buffer 5000	Check <del>280</del> 1404 7 APR 16 DN
<b>ORP</b> 231 mV @ 25C	5.91	257.4	257.1	±10 mV		
<b>DO</b>	15.85	10.04	9.33			
				Barometric Pressure (mm Hg)		
				mg/L	715.7	

**Post Site Check**

Time: 1638

	Temp °C	Reading
pH Buffer 7	18.36	6.99
<b>Conductivity</b> Buffer 5000 ICCA 1413	19.33	1399





2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW105  
 Sampling Personal: Jenny Pfluger  
7 Apr 16

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1120	6.85	6918	6.83	4.86	140.2	52.3	13.59	500.0	Slightly Turbid
12	1125	6.96	6956	6.83	4.83	139.5	56.2	13.60	500.0	Slightly Turbid
13	1130	6.98	6972	6.83	4.80	138.8	56.8	13.60	500.0	Slightly Turbid
14										
15										
16										
17										
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30										

Stabilized: Yes No

Total Volume Removed: 10,000 mL

Comments:



# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2nd Qtr 2016  
Sample ID: MW105  
Sampling Personal: Jeremy Pley

Weather Conditions: Temp: 45 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / ~~Cloudy~~

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Casing Straight?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Grout Seal Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	13.37	ft
Total Well Depth:	32.39	ft
Well Volume:	11.7	liters
Depth to Top of Pump:	29.50	ft
Water Level After Sample:	13.53	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	4 sec.
Dedicated Equip?:	Yes	No <input checked="" type="checkbox"/>	Recover:	56 sec.
Duplicate Sample?:	Yes	No <input checked="" type="checkbox"/>	PSI:	20
Duplicate Sample ID:			Pumping Rate:	100 mL/min
Purge Date:	7 Apr 16	Time Purging Began:	0950	am/pm
Well Purged Dry?	Yes	No <input checked="" type="checkbox"/>	Time Purged Dry:	
Sample Date:	7 Apr 16	Time of Sampling:	1130	am/pm
Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)	4 - 1 Liter Nitric		

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
1	1000	6.93	5050	6.93	4.73	184.7	82.9	13.52	1000.0	Slightly Turbid
2	1010	7.10	5444	6.90	4.89	182.4	72.8	13.57	1000.0	Slightly Turbid
3	1020	7.17	5689	6.89	5.00	165.5	63.8	13.52	1000.0	Slightly Turbid
4	1030	7.19	6056	6.87	5.08	155.8	63.6	13.57	1000.0	Slightly Turbid
5	1040	7.09	6305	6.89	4.83	144.4	57.7	13.57	1000.0	Slightly Turbid
6	1050	6.97	6538	6.84	4.94	143.2	60.4	13.57	1000.0	Slightly Turbid
7	1100	6.84	6697	6.83	4.91	142.3	63.0	13.58	1000.0	Slightly Turbid
8	1105	6.88	6791	6.84	4.90	142.0	48.6	13.58	500.0	Slightly Turbid
9	1110	6.75	6821	6.84	4.87	141.8	56.5	13.58	500.0	Slightly Turbid
10	1115	6.76	6885	6.83	4.89	140.9	58.8	13.59	500.0	Slightly Turbid

Stabilized: Yes ~~No~~

Comments:

Total Volume Removed: 8500.0 mL

Continued on next page



2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MWBOR  
 Sampling Personal: Jeremy Geyer  
7 April

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1430	8.01	5744	7.19	4.40	89.7	6.37	14.87	500.0	Clear
12	1435	8.00	5742	7.19	4.39	89.0	5.40	14.87	500.0	Clear
13	1440	7.95	5738	7.19	4.35	88.3	4.94	14.88	500.0	Clear
14	1445	8.07	5740	7.18	4.45	88.6	3.44	14.88	500.0	Clear
15	1450	8.22	5738	7.19	4.37	88.4	3.60	14.88	500.0	Clear
16	1455	8.10	5732	7.18	4.34	87.8	3.33	14.88	500.0	Clear
17										
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28										
29										
30										

Stabilized: Yes No

Total Volume Removed: 13,000.0 mL

Comments:



# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2nd Qtr 2016  
Sample ID: MW80R  
Sampling Personal: Jeremy Hagan

Weather Conditions: Temp: 45 °F Wind: N @ 10-15 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	No	
Casing Straight?	<input checked="" type="radio"/> Yes	No	
Grout Seal Intact?	<input checked="" type="radio"/> Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	<u>14.69</u>		ft
Total Well Depth:	<u>30.10</u>		ft
Well Volume:	<u>9.5</u>		liters
Depth to Top of Pump:	<u>27.05</u>		ft
Water Level After Sample:	<u>14.87</u>		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	<u>4</u> sec.
Dedicated Equip?:	Yes	<input checked="" type="radio"/> No	Recover:	<u>56</u> sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	<u>20</u>
Duplicate Sample ID:	<u>                    </u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>7 Apr 16</u>	Time Purging Began:	<u>1245</u>	<u>am/pm</u>
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	<u>                    </u> am/pm
Sample Date:	<u>7 Apr 16</u>	Time of Sampling:	<u>1455</u>	<u>am/pm</u>
Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)	4 - 1 Liter Nitric		

### Field Measurements

SEQ #	Stabilization (3 consecutive)		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.
	Time										
1	<u>1255</u>		<u>7.65</u>	<u>5737</u>	<u>7.20</u>	<u>6.48</u>	<u>144.4</u>	<u>80.3</u>	<u>14.73</u>	<u>1000.0</u>	<u>Slightly Turbid (ST)</u>
2	<u>1305</u>		<u>7.67</u>	<u>5723</u>	<u>7.20</u>	<u>5.65</u>	<u>134.8</u>	<u>59.5</u>	<u>14.80</u>	<u>1000.0</u>	<u>ST</u>
3	<u>1315</u>		<u>7.68</u>	<u>5721</u>	<u>7.19</u>	<u>5.25</u>	<u>130.3</u>	<u>112.0</u>	<u>14.85</u>	<u>1000.0</u>	<u>ST</u>
4	<u>1325</u>		<u>7.65</u>	<u>5720</u>	<u>7.19</u>	<u>4.98</u>	<u>127.7</u>	<u>68.5</u>	<u>14.86</u>	<u>1000.0</u>	<u>ST</u>
5	<u>1335</u>		<u>7.68</u>	<u>5717</u>	<u>7.19</u>	<u>4.85</u>	<u>125.1</u>	<u>74.3</u>	<u>14.86</u>	<u>1000.0</u>	<u>ST</u>
6	<u>1345</u>		<u>7.64</u>	<u>5711</u>	<u>7.19</u>	<u>4.70</u>	<u>114.4</u>	<u>43.3</u>	<u>14.86</u>	<u>1000.0</u>	<u>ST</u>
7	<u>1355</u>		<u>7.77</u>	<u>5745</u>	<u>7.19</u>	<u>4.62</u>	<u>101.6</u>	<u>25.5</u>	<u>14.87</u>	<u>1000.0</u>	<u>ST</u>
8	<u>1405</u>		<u>7.75</u>	<u>5749</u>	<u>7.19</u>	<u>4.52</u>	<u>97.0</u>	<u>16.6</u>	<u>14.86</u>	<u>1000.0</u>	<u>ST</u>
9	<u>1415</u>		<u>7.78</u>	<u>5744</u>	<u>7.19</u>	<u>4.47</u>	<u>94.3</u>	<u>12.9</u>	<u>14.87</u>	<u>1000.0</u>	<u>ST</u>
10	<u>1425</u>		<u>7.97</u>	<u>5750</u>	<u>7.19</u>	<u>4.43</u>	<u>90.1</u>	<u>9.74</u>	<u>14.87</u>	<u>1000.0</u>	<u>Clear</u>

Stabilized: Yes ~~No~~ 7 Apr 16

Total Volume Removed: 10,000.0 mL

Comments:

Continued on next sheet



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW102  
 Sampling Personal: Darren Nieswag

Weather Conditions: Temp: 36 °F Wind: NW 24 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	17.64 ft		
Total Well Depth:	33.20 ft		
Well Volume:	9.6 liters		
Depth to Top of Pump:	28.64 ft		
Water Level After Sample:	20.54 ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Recover:	55 sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	15-20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	7 Apr 16	Time Purging Began:	0820	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	7 Apr 16	Time of Sampling:	0915	am/pm
Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)	4 - 1 Liter Nitric		

### Field Measurements

SEQ #	Stabilization (3 consecutive) 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.
2	0835	7.34	9994	6.85	0.56	-46.3	1.93	18.58	500	clear
3	0840	7.35	9924	6.84	0.55	-54.9	1.31	18.75	500	clear
4	0845	7.32	9839	6.83	0.87	-55.3	2.05	18.84	500	clear
5	0850	7.17	9602	6.82	0.80	-57.9	1.65	19.03	500	clear
6	0855	7.20	9417	6.81	0.50	-56.3	1.63	19.17	500	clear
7	080900	7.22	9314	6.81	0.48	-50.0	1.70	19.26	500	clear
8	0905	7.37	9046	6.80	0.61	-48.0	2.20	19.31	500	clear
9	0910	7.40	8949	6.81	0.63	-47.7	2.01	19.48	500	clear
10	0915	7.41	8739	6.81	0.63	-47.1	2.17	19.51	500	clear

Stabilized: Yes No

Total Volume Removed: 5500 mL

Comments:





2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: mw 20  
 Sampling Personal: Jarren Nieswaag

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1209	7.76	4320	7.06	4.23	125.6	50.8	23.57	1000	clear
12	1219	7.80	4349	7.06	4.21	123.3	49.7	23.92	1000	clear
13	1229	7.74	4365	7.06	4.22	120.7	52.6	24.11	1000	clear
14	1239	7.72	4373	7.06	4.19	119.3	54.8	24.19	500	clear
15	1239	7.69	4369	7.06	4.24	118.8	57.3	24.29	500	clear
16	1244	7.74	4370	7.06	4.22	118.9	57.0	24.41	500	clear
17										
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30										

Stabilized: Yes No

Comments: 9

Total Volume Removed: 14,500 mL





2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2nd Qtr 2016  
 Sample ID: MW101  
 Sampling Personal: Darren Nieswaeg

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
11	1519	8.88	489.5	6.74	1.07	41.6	4.19	40.88	500	clear
12										
13										
14										
15										
16										
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Stabilized: Yes No  
 Comments:

Total Volume Removed: 9000 mL





**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU                      Heskett                      CCR Groundwater                      2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Jeremy Meyer / Darren Metzger</i>	
<b>Report To:</b> MDU <b>Attn:</b> Samantha Marshall <b>Address:</b> 400 N. 4th St Bismarck, ND 58501 <b>Phone:</b> 701-222-7829		<b>Carbon Copy:</b> <b>Attn:</b> <b>Address:</b>		<b>Work Order Number:</b> 82-0855	

Sample Information					Bottle Type			Field Parameters			Analysis	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO <sub>3</sub>	1 liter	500 ml HNO <sub>3</sub> (filtered)	Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W680	MW105	7Apr16	1130	GW		X	X	X	6.98	6972	6.83	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W681	MW80R	7Apr16	1455	GW		X	X	X	8.10	5732	7.18	
W682	MW102	7Apr16	0915	GW		X	X	X	7.41	8739	6.81	
W683	MW70	7Apr16	1244	GW		X	X	X	7.74	4370	7.06	
W684	MW101	7Apr16	1519	GW		X	X	X	8.88	4895	6.74	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Jeremy Meyer</i>	Walkin#2	<del>7Apr16</del> 7Apr16 1700	<i>C. Jackson</i>		8Apr16 0800	41.588 R01 2.5
2							
3							

\* du 7Apr16



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-0856
IML Lab Reference No/SDG: S1604163
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR 2nd Quarter 2016
MVTL Laboratory Identifications: 16-W685 through 16-W689
IML Laboratory Identifications: S1604163-001 through S1604163-005
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include MW105, MW80R, MW102, MW70, MW101.

I. RECEIPT

- All samples were received at the laboratory on 8 April 2016 at 0800.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 2.5°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.
All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-0856  
IML Lab Reference No/SDG: S1604163  
  
Client: Montana Dakota Utilities  
Location: MDU Heskett Ash Site  
  
Project Identification: CCR 2<sup>nd</sup> Quarter 2016  
  
MVTL Laboratory Identifications: 16-W685 through 16-W689  
IML Laboratory Identifications: S1604163-001 through S1604163-005  
Page 2 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
MW105	16-W685	S1604163-001
MW80R	16-W686	S1604163-002
MW102	16-W687	S1604163-003
MW70	16-W688	S1604163-004
MW101	16-W689	S1604163-005

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 DATE: 2 May 16  
Claudette Carroll - MVTL Bismarck Laboratory Manager



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W685  
Work Order #: 82-0856  
Account #: 002800  
Date Sampled: 7 Apr 16 11:30  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW105  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.83	units	NA	SM 4500 H+ B	7 Apr 16 11:30	JSM
Temperature - Field	6.98	Degrees C	NA	SM 2550B	7 Apr 16 11:30	JSM
Conductivity - Field	6972	umhos/cm	1	EPA 120.1	7 Apr 16 11:30	JSM
Radium 226	See Attached Report				20 Apr 16	OL
Radium 228	See Attached Report				23 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>cc</sup> 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W686  
Work Order #: 82-0856  
Account #: 002800  
Date Sampled: 7 Apr 16 14:55  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW80R  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.18 units	NA	SM 4500 H+ B	7 Apr 16 14:55	JSM
Temperature - Field	8.10 Degrees C	NA	SM 2550B	7 Apr 16 14:55	JSM
Conductivity - Field	5732 umhos/cm	1	EPA 120.1	7 Apr 16 14:55	JSM
Radium 226	See Attached Report			20 Apr 16	OL
Radium 228	See Attached Report			23 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*CC*  
Claudette K. Carroll 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W687  
Work Order #: 82-0856  
Account #: 002800  
Date Sampled: 7 Apr 16 9:15  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW102  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.81	units	NA	SM 4500 H+ B	7 Apr 16	9:15	JSM
Temperature - Field	7.41	Degrees C	NA	SM 2550B	7 Apr 16	9:15	JSM
Conductivity - Field	8739	umhos/cm	1	EPA 120.1	7 Apr 16	9:15	JSM
Radium 226	See Attached Report				20 Apr 16		OL
Radium 228	See Attached Report				23 Apr 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>cc</sup> 2 May 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W688  
Work Order #: 82-0856  
Account #: 002800  
Date Sampled: 7 Apr 16 12:44  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW70  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.06 units	NA	SM 4500 H+ B	7 Apr 16 12:44	JSM
Temperature - Field	7.74 Degrees C	NA	SM 2550B	7 Apr 16 12:44	JSM
Conductivity - Field	4370 umhos/cm	1	EPA 120.1	7 Apr 16 12:44	JSM
Radium 226	See Attached Report			20 Apr 16	OL
Radium 228	See Attached Report			24 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*CC*  
*2 May 16*  
Claudette K. Carroll

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W689  
Work Order #: 82-0856  
Account #: 002800  
Date Sampled: 7 Apr 16 15:19  
Date Received: 8 Apr 16 8:00  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW101  
Sample Site: MDU Heskett

Temp at Receipt: 2.5C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.74	units	NA	SM 4500 H+ B	7 Apr 16 15:19	JSM
Temperature - Field	8.88	Degrees C	NA	SM 2550B	7 Apr 16 15:19	JSM
Conductivity - Field	4895	umhos/cm	1	EPA 120.1	7 Apr 16 15:19	JSM
Radium 226	See Attached Report				20 Apr 16	OL
Radium 228	See Attached Report				24 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll*

*2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



Date: 4/29/2016

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-0856  
**Lab Order:** S1604163

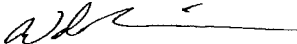
**CASE NARRATIVE**  
**Report ID:** S1604163001

Samples 16-W685 MW105, 16-W686 MW80R, 16-W687 MW102, 16-W688 MW70, and 16-W689 MW101 were received on April 12, 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:   
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604163001

ProjectName: 201682-0856
Lab ID: S1604163-001
ClientSample ID: 16-W685 MW105
COC: 201682-0856

WorkOrder: S1604163
CollectionDate: 4/7/2016 11:30:00 AM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604163001

**ProjectName:** 201682-0856  
**Lab ID:** S1604163-002  
**ClientSample ID:** 16-W686 MW80R  
**COC:** 201682-0856

**WorkOrder:** S1604163  
**CollectionDate:** 4/7/2016 2:55:00 PM  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

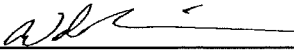
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	04/23/2016 1933	MB
Radium 228 Precision (±)	1.2	pCi/L			Ga-Tech	04/23/2016 1933	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604163001

ProjectName: 201682-0856
Lab ID: S1604163-003
ClientSample ID: 16-W687 MW102
COC: 201682-0856

WorkOrder: S1604163
CollectionDate: 4/7/2016 9:15:00 AM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager





Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604163001

ProjectName: 201682-0856
Lab ID: S1604163-004
ClientSample ID: 16-W688 MW70
COC: 201682-0856

WorkOrder: S1604163
CollectionDate: 4/7/2016 12:44:00 PM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604163001

ProjectName: 201682-0856
Lab ID: S1604163-005
ClientSample ID: 16-W689 MW101
COC: 201682-0856

WorkOrder: S1604163
CollectionDate: 4/7/2016 3:19:00 PM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank, E Value above quantitation range, J Analyte detected below quantitation limits, M Value exceeds Monthly Ave or MCL or is less than LCL, O Outside the Range of Dilutions, X Matrix Effect, C Calculated Value, H Holding times for preparation or analysis exceeded, L Analyzed by another laboratory, ND Not Detected at the Reporting Limit, S Spike Recovery outside accepted recovery limits

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### ANALYTICAL QC SUMMARY REPORT

**CLIENT:** MVTL Laboratories, Inc.  
**Work Order:** S1604163  
**Project:** 201682-0856

**Date:** 4/29/2016  
**Report ID:** S1604163001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-336 (04/21/16 10:15)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-336 (04/21/16 13:16)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		34	1	39.5		86.0	61.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-336 (04/21/16 19:18)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		29	1	39.5	ND	73.9	64.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-336 (04/21/16 22:19)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		32	1	29	10.1	81.7	20		

Radium 226 in Water - Total		Sample Type	MBLK		Units: pCi/L				
MB-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.2						

Radium 226 in Water - Total		Sample Type	LCS		Units: pCi/L				
LCS-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		4.9	0.2	5.54		88.3	67.1 - 122		

Radium 226 in Water - Total		Sample Type	LCSD		Units: pCi/L				
LCSD-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		5.7	0.2	4.9	15.9	104	20		

Radium 226 in Water - Total		Sample Type	MS		Units: pCi/L				
S1604125-002B MS (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.3	0.2	5.54	ND	95.4	65 - 131		

- Qualifiers:**
- B 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

Phone: (701) 258-9720  
 Toll Free: (800) 279-6885 Fax: (701) 258-9724

201682-0856

Company Name and Address:  <b>MVTL</b> 2616 E Broadway Bismarck, ND 58501	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above):  PO Box 249 New Ulm, MN 56073	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 4/8/2016
	Project Name/Number:	Purchase Order #: BL5551

Sample Information						Bottle Type					Analysis	
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
51604163 001	16-W685	MW105		4/7/2016	1130							Radium226 & Radium228 on all
002	16-W686	MW80R		4/7/2016	1455							
003	16-W687	MW102		4/7/2016	915							
004	16-W688	MW70		4/7/2016	1244							
005	16-W689	MW101		4/7/2016	1519							

Comments: All results must be reported as a numerical value

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
C. Jackson	4/8/2016	1700		Kathy Boyd IML	4.12.16	11 AM 11.4 °C
2.						



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU Heskett CCR Radiochem 2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Jeremy Meyer / Darren Newsom</i>				
<b>Report To:</b> MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			<b>Carbon Copy:</b> Attn: Address:			<b>Work Order Number:</b> 82-0856		

Sample Information				Bottle Type				Field Parameters			Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO <sub>3</sub>				Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W685	Mw105	7 Apr 16	1130	GW		4				6.98	6972	6.83	MDU CCR combined RadChem
W686	Mw10R	7 Apr 16	1455	GW		4				8.10	5732	7.18	
W687	Mw102	7 Apr 16	0915	GW		4				7.41	8739	6.81	
W688	Mw70	7 Apr 16	1244	GW		4				7.74	4370	7.06	
W689	Mw101	7 Apr 16	1519	GW		4				8.88	4895	6.74	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>[Signature]</i>	Log in/walkin #2	7 Apr 16 1700-1500 - 7 Apr 16	C. Jackson		8 Apr 16 0500	Pool <sup>TH 500</sup> 2.5
2							
3							



CASE NARRATIVE

MVTl Lab Reference No/SDG: 201682-0862
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR 2nd Quarter 2016 Groundwater

MVTl Laboratory Identifications: 16-W690 through 16-W695
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Equip Blank Pump 1, Equip Blank Pump 2, MW3-90, MW33, MW104, MW2-90.

I. RECEIPT

- All samples were received at the laboratory on 8 April 2016 at 1247.
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 4.7°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

- Approved methodology was followed for all sample analyses.
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



CASE NARRATIVE

MVTL Lab Reference No/SDG:

201682-0862

Client:

Montana Dakota Utilities

Location:

MDU Heskett Ash Site

Project Identification:

CCR 2<sup>nd</sup> Quarter 2016 Groundwater

MVTL Laboratory Identifications:

16-W690 through 16-W695

Page 2 of 2

MDU Sample Identification	MVTL Laboratory #
Equip Blank Pump 1	16-W690
Equip Blank Pump 2	16-W691
MW3-90	16-W692
MW33	16-W693
MW104	16-W694
MW2-90	16-W695

laboratory report.

- o For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
- o One dissolved selenium matrix spike duplicate recovery was outside of the acceptable limits. Matrix spike recovery was within range and % RPD between matrix spike recovery and matrix spike duplicate recovery was within acceptable limits. High spike recovery was determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.
- o Recoveries for one dissolved selenium matrix spike/matrix spike duplicate were outside of the acceptable limits. High spike recoveries were determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.
- o Equip Blank Pump 2 had small hits on Calcium dissolved, Magnesium dissolved and Sodium dissolved. Hits were not present on the total concentrations for these metals.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll

DATE: 2 May 16

Claudette Carroll - MVTL Bismarck Laboratory Manager







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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W690  
Work Order #: 82-0862  
Account #: 002800  
Date Sampled: 8 Apr 16  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTl Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: Equip Blank Pump 1  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll* <sup>CC</sup>  
2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016









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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W692  
Work Order #: 82-0862  
Account #: 002800  
Date Sampled: 8 Apr 16 10:31  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW3-90  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0116	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	0.1328	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 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:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W693  
Work Order #: 82-0862  
Account #: 002800  
Date Sampled: 8 Apr 16 8:47  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW33  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Barium - Dissolved	0.0103	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16	1:00	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16	1:00	CC

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll* <sup>cc</sup> *2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016











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Page: 2 of 2

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

Report Date: 2 May 16  
Lab Number: 16-W695  
Work Order #: 82-0862  
Account #: 002800  
Date Sampled: 8 Apr 16 10:58  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Groundwater/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW2-90  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Barium - Dissolved	0.0103	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	28 Apr 16 16:00	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Selenium - Dissolved	0.1534	mg/l	0.0020	6020	28 Apr 16 11:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>CC</sup> 2 May 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:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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## Quality Control Report

Lab IDs: 16-W690 to 16-W695

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0862

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<=)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	< 0.001	0.1107	111	75-125	0.1107	0.1124	112	1.5	20	-	-	< 0.001
				0.100	16-W695QC	< 0.001	0.1092	109	75-125	0.1092	0.1080	108	1.1	20	-	-	-
Antimony - Total mg/l	0.1000	106	80-120	0.400	16-W680QC	< 0.001	0.4036	101	75-125	0.4036	0.4256	106	5.3	20	-	-	< 0.001
				0.400	16-W692QC	< 0.001	0.4444	111	75-125	0.4444	0.4300	108	3.3	20	-	-	-
				0.100	16-W704QC	< 0.001	0.1066	107	75-125	0.1066	0.1077	108	1.0	20	-	-	-
Arsenic - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	0.0030	0.1124	109	75-125	0.1124	0.1164	113	3.5	20	-	-	< 0.002
				0.100	16-W695QC	0.0025	0.1148	112	75-125	0.1148	0.1120	110	2.5	20	-	-	-
Arsenic - Total mg/l	0.1000	106	80-120	0.400	16-W680QC	0.0050	0.4274	106	75-125	0.4274	0.4300	106	0.6	20	-	-	< 0.002
				0.400	16-W692QC	0.0021	0.4266	106	75-125	0.4266	0.4150	103	2.8	20	-	-	-
				0.100	16-W704QC	< 0.002	0.1126	113	75-125	0.1126	0.1084	108	3.8	20	-	-	-
Barium - Dissolved mg/l	0.1000	103	80-120	0.100	16-W694QC	0.0070	0.1062	99	75-125	0.1062	0.1078	101	1.5	20	-	-	< 0.002
				0.100	16-W695QC	0.0103	0.1120	102	75-125	0.1120	0.1152	105	2.8	20	-	-	-
Barium - Total mg/l	0.1000	102	80-120	0.400	16-W680QC	0.0737	0.5010	107	75-125	0.5010	0.4866	103	2.9	20	-	-	< 0.002
				0.400	16-W692QC	0.0119	0.4274	104	75-125	0.4274	0.4092	99	4.4	20	-	-	-
				0.100	16-W704QC	0.0312	0.1278	97	75-125	0.1278	0.1342	103	4.9	20	-	-	-
Beryllium - Dissolved mg/l	0.1000	111	80-120	0.100	16-W694QC	< 0.0005	0.1080	108	75-125	0.1080	0.1115	112	3.2	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1060	106	75-125	0.1060	0.1052	105	0.8	20	-	-	-
Beryllium - Total mg/l	0.1000	103	80-120	0.400	16-W680QC	< 0.0005	0.4272	107	75-125	0.4272	0.4292	107	0.5	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.4442	111	75-125	0.4442	0.4302	108	3.2	20	-	-	-
				0.100	16-W704QC	< 0.0005	0.1105	110	75-125	0.1105	0.1066	107	3.6	20	-	-	-
Boron - Dissolved mg/l	0.40	100	85-115	0.300	16-W684	1.03	1.28	83	75-125	1.28	1.31	93	2.3	20	-	-	< 0.1 < 0.1
Boron - Total mg/l	0.40	100	80-120	0.600	16-W680	0.39	0.96	95	75-125	0.96	0.97	97	1.0	20	-	-	< 0.1
	0.40	100	80-120	0.400	16-W692	0.12	0.48	90	75-125	0.48	0.48	90	0.0	20	-	-	< 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	104	80-120	0.100	16-W694QC	< 0.0005	0.1028	103	75-125	0.1028	0.1046	105	1.7	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1045	104	75-125	0.1045	0.1014	101	3.0	20	-	-	-



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## Quality Control Report

Lab IDs: 16-W690 to 16-W695

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0862

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	102	80-120	0.400	16-W680QC	< 0.0005	0.3976	99	75-125	0.3976	0.4128	103	3.8	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.4316	108	75-125	0.4316	0.4228	106	2.1	20	-	-	
				0.100	16-W704QC	< 0.0005	0.1041	104	75-125	0.1041	0.1042	104	0.1	20	-	-	
Calcium - Dissolved mg/l	20.0	114	85-115	500	16-W693	494	960	93	75-125	960	975	96	1.6	20	-	-	< 1 < 1
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	2000	16-M895	2640	4420	89	75-125	910	965	106	5.9	20	-	-	< 1
				500	16-W683	434	910	95	75-125	995	995	96	0.0	20	-	-	< 1
				500	16-W692	515	995	96	75-125	152	154	96	1.3	20	-	-	< 1
				100	16-W707	58.1	152	94	75-125						-	-	< 1
Chloride mg/l	30.0	99	80-120	30.0	16-D1417	23.6	52.7	97	80-120	52.7	51.3	92	2.7	20	-	-	< 1 < 1
Chromium - Dissolved mg/l	0.1000 0.1000	102 98	80-120 80-120	0.100	16-W694QC	0.0025	0.1072	105	75-125	0.1072	0.1098	107	2.4	20	-	-	< 0.002
				0.100	16-W695QC	0.0053	0.1080	103	75-125	0.1080	0.1095	104	1.4	20	-	-	< 0.002
				0.400	16-W799QC	< 0.002	0.3986	100	75-125	0.3986	0.3744	94	6.3	20	-	-	
Chromium - Total mg/l	0.1000	100	80-120	0.400	16-W680QC	0.0087	0.3984	97	75-125	0.3984	0.4090	100	2.6	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.3980	100	75-125	0.3980	0.3882	97	2.5	20	-	-	< 0.002
				0.100	16-W704QC	0.0024	0.1042	102	75-125	0.1042	0.1030	101	1.2	20	-	-	
Cobalt - Dissolved mg/l	0.1000	99	80-120	0.100	16-W694QC	0.0025	0.1024	100	75-125	0.1024	0.1073	105	4.7	20	-	-	< 0.002
				0.100	16-W695QC	< 0.002	0.0987	99	75-125	0.0987	0.0980	98	0.7	20	-	-	
Cobalt - Total mg/l	0.1000	99	80-120	0.400	16-W680QC	0.0045	0.3924	97	75-125	0.3924	0.3966	98	1.1	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.4068	102	75-125	0.4068	0.3950	99	2.9	20	-	-	< 0.002
				0.100	16-W704QC	< 0.002	0.1021	102	75-125	0.1021	0.0983	98	3.8	20	-	-	
Fluoride mg/l	0.50 0.50	104 104	90-110 90-110	0.500	16-W681	0.30	0.77	94	80-120	0.77	0.79	98	2.6	20	-	-	< 0.1
				0.500	16-W692	0.12	0.62	100	80-120	0.62	0.62	100	0.0	20	-	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	100	80-120	0.100	16-W694QC	< 0.0005	0.1015	102	75-125	0.1015	0.1042	104	2.6	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1042	104	75-125	0.1042	0.1070	107	2.7	20	-	-	



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**Quality Control Report**

Lab IDs: 16-W690 to 16-W695

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0862

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	104	80-120	0.400	16-W680QC	0.0019	0.4072	101	75-125	0.4072	0.4008	100	1.6	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.4032	101	75-125	0.4032	0.3936	98	2.4	20	-	-	
				0.100	16-W704QC	< 0.0005	0.0960	96	75-125	0.0960	0.0988	99	2.9	20	-	-	
Lithium - Dissolved mg/l	0.40	108	85-115	2.00	16-W695	1.10	3.36	113	75-125	3.36	3.28	109	2.4	20	-	-	< 0.1 < 0.1
Lithium - Total mg/l	0.40	110	85-115	0.400	16-W692	0.22	0.65	108	75-125	0.65	0.64	105	1.6	20	-	-	< 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	114	80-120	500	16-W693	433	900	93	75-125	900	915	96	1.7	20	-	-	< 1 < 1
Magnesium - Total mg/l	20.0 20.0	112 112	80-120 80-120	2000	16-M895	< 20	1970	98	75-125	655	690	105	5.2	20	-	-	< 1
				500	16-W683	164	655	98	75-125	725	725	99	0.0	20	-	-	< 1
				500	16-W692	230	725	99	75-125	174	176	95	1.1	20	-	-	< 1
				100	16-W707	80.8	174	93	75-125						-	-	< 1
Mercury - Dissolved mg/l	0.0020	105	85-115	0.002	16-W702	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020 0.0020	95 100	85-115 85-115	0.002	16-W690	< 0.0002	0.0018	90	70-130	0.0018	0.0017	85	5.7	20	-	-	< 0.0002
				0.002	16-W715	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	< 0.0002
				0.002	16-W722	< 0.0002	0.0015	75	70-130	0.0015	0.0014	70	6.9	20	-	-	
				0.002	16-W723	< 0.0002	0.0017	85	70-130	0.0017	0.0020	100	16.2	20	-	-	
Molybdenum - Dissolved mg/l	0.1000	89	80-120	0.100	16-W694QC	< 0.002	0.0948	95	75-125	0.0948	0.1016	102	6.9	20	-	-	< 0.002
				0.100	16-W695QC	< 0.002	0.0942	94	75-125	0.0942	0.0996	100	5.6	20	-	-	
Molybdenum - Total mg/l	0.1000	89	80-120	0.400	16-W680QC	0.0067	0.3236	79	75-125	0.3236	0.3486	85	7.4	20	-	-	< 0.002
				0.400	16-W692QC	< 0.002	0.3480	87	75-125	0.3480	0.3454	86	0.7	20	-	-	
				0.100	16-W704QC	0.0037	0.1004	97	75-125	0.1004	0.1060	102	5.4	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	6.8	6.9	-	1.5	20	-	-	-
Potassium - Dissolved mg/l	10.0	106	85-115	100	16-W693	21.0	118	97	75-125	118	121	100	2.5	20	-	-	< 1 < 1



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 www.mvtl.com

MEMBER  
 ACIL

**Quality Control Report**

Lab IDs: 16-W690 to 16-W695

Project: CCR Groundwater/2nd Qtr 2016

Work Order: 201682-0862

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0	105	80-120	400	16-M895	736	1140	101	75-125	110	116	104	5.3	20	-	-	< 1
	10.0	105	80-120	100	16-W683	11.8	110	98	75-125	112	113	101	0.9	20	-	-	< 1
				100	16-W692	12.0	112	100	75-125	39.6	40.1		1.3	20	-	-	< 1
Selenium - Dissolved mg/l	0.1000	114	80-120	0.100	16-W694	0.1584	0.2800	122	75-125	0.2800	0.2861	128	2.2	20	-	-	< 0.002
	0.1000	106	80-120	0.100	16-W695	0.1737	0.3032	130	75-125	0.3032	0.3022	128	0.3	20	-	-	< 0.002
				0.400	16-W799QC	< 0.002	0.4370	109	75-125	0.4370	0.4094	102	6.5	20	-	-	< 0.002
Selenium - Total mg/l	0.1000	119	80-120	0.400	16-W680	0.0066	0.4782	118	75-125	0.4782	0.4790	118	0.2	20	-	-	< 0.002
				0.400	16-W692	0.1326	0.6122	120	75-125	0.6122	0.6064	118	1.0	20	-	-	
				0.100	16-W704	< 0.002	0.1198	120	75-125	0.1198	0.1186	119	1.0	20	-	-	
Sodium - Dissolved mg/l	20.0	112	85-115	500	16-W693	440	895	91	75-125	895	895	91	0.0	20	-	-	< 1
Sodium - Total mg/l	20.0	110	80-120	2000	16-M895	4560	6360	90	75-125	1030	1060	101	2.9	20	-	-	< 1
				500	16-W683	555	1030	95	75-125	1040	1020	94	1.9	20	-	-	< 1
				500	16-W692	550	1040	98	75-125	1110	1140	89	2.7	20	-	-	< 1
				500	16-W707	695	1110	83	75-125						-	-	< 1
Sulfate mg/l	100	101	90-110	100	16-W690	< 5	105	105	80-120	105	105	105	0.0	20	-	-	< 5
Thallium - Dissolved mg/l	0.1000	97	80-120	0.100	16-W694QC	< 0.0005	0.1048	105	75-125	0.1048	0.1073	107	2.4	20	-	-	< 0.0005
				0.100	16-W695QC	< 0.0005	0.1056	106	75-125	0.1056	0.1067	107	1.0	20	-	-	
Thallium - Total mg/l	0.1000	101	80-120	0.400	16-W680QC	< 0.0005	0.3724	93	75-125	0.3724	0.3758	94	0.9	20	-	-	< 0.0005
				0.400	16-W692QC	< 0.0005	0.3782	95	75-125	0.3782	0.3814	95	0.8	20	-	-	
				0.100	16-W704QC	< 0.0005	0.0968	97	75-125	0.0968	0.0980	98	1.2	20	-	-	
Total Alkalinity mg/l CaCO3	410	91	90-110	410	16-W690	< 20	396	97	80-120	396	393	96	0.8	20	97	80-120	< 20
	410	97	90-110														< 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	4850	4820	-	0.6	20	-	-	< 5
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	351	349	-	0.6	20	-	-	< 1
	-	-	-	-	-	-	-	-	-	19	19	-	0.0	20	-	-	

pg 5 of 5

Approved by: C. Causey  
2 May 16



# MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Jeremy Phyllis

Instrument  
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration						
Date:	7 Apr 16		Time:	0840		
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	20.12	7.04	7.00	6.95-7.05	-7.2	0 +/- 50
Buffer 10	19.83	10.10	10.00	9.95-10.05	-184.5	-180 +/- 50
Conductivity	12890		10000		Check	
Buffer 10000	20.04	12852	12891	±10%	100A 1413 Buffer 5000	1417
ORP	231 mV @ 25C		7.70	258.6	257.0	±10 mV
DO	Time 1005 1009		15.80 8.79	15.77 9.98	10.30 10.95	Barometric Pressure (mm Hg) mg/L
			1-7416	1-7417	1-7417	759.4 717.3 2-7416

Post Site Check		
Time:	1615	
pH	Temp °C	Reading
Buffer 7	19.33	7.01
Conductivity	100A 1413	
Buffer 5000	19.74	1418

Pre Site Calibration						
Date:	8 Apr 16		Time:	0700		
pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	18.96	7.03	7.00	6.95-7.05	-8.4	0 +/- 50
Buffer 10	18.98	10.00	10.00	9.95-10.05	-185.4	-180 +/- 50
Conductivity	12890		10000		Check	
Buffer 10000	18.82	12903	12889	±10%	100A 1413 Buffer 5000	1427
ORP	231 mV @ 25C		8.10	258.1	257.0	±10 mV
DO	Time 0750		4.51	12.75	12.26	Barometric Pressure (mm Hg) mg/L
			changed DO membrane			720.0

Post Site Check		
Time:	1240	
pH	Temp °C	Reading
Buffer 7	19.08	6.98
Conductivity	100A 1413	
Buffer 5000	18.81	1428

# MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darren Nieswag

Instrument  
(Circle One):

#1 650 MDS 08F100203

#2 650 MDS 04H14736

#3 556 MPS 12E102056

Pre Site Calibration						
Date:	<u>8 Apr 16</u>		Time: <u>0720</u>			
<b>pH</b>	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	<u>19.24</u>	<u>7.01</u>	<u>7.00</u>	6.95-7.05	<u>-22.6</u>	0 +/- 50
Buffer 10	<u>19.35</u>	<u>9.98</u>	<u>10.00</u>	9.95-10.05	<u>-199.4</u>	-180 +/- 50
<b>Conductivity</b>						Check
Buffer 10000 <i>12890</i>	<u>18.87</u>	<u>12970</u>	<u>12883</u>	±10%	<sup>1413</sup> Buffer 5000 <i>ICCA</i>	<u>1416</u>
<b>ORP</b>						
231 mV @ 25C	<u>5.02</u>	<u>255.4</u>	<u>257.7</u>	±10 mV		
<b>DO</b>						
	<u>13.71</u>	<del>10.18</del> <i>8 Apr 16</i>	<u>9.85</u>	Barometric Pressure (mm Hg)		
				mg/L	<u>721.9</u>	

Post Site Check		
Time:	<u>1131</u>	
<b>pH</b>	Temp °C	Reading
Buffer 7	<u>6.90</u>	<u>7.01</u>
<b>Conductivity</b>		
Buffer 5000 <i>1413</i> <i>ICCA</i>	<u>9.72</u>	<u>1408</u>

<del>Pre Site Calibration</del>						
Date:			Time:			
<b>pH</b>	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7				6.95-7.05		0 +/- 50
Buffer 10				9.95-10.05		-180 +/- 50
<b>Conductivity</b>						Check
Buffer 10000				±10%	Buffer 5000	
<b>ORP</b>						
231 mV @ 25C				±10 mV		
<b>DO</b>						
				Barometric Pressure (mm Hg)		
				mg/L		

<del>Post Site Check</del>		
Time:		
<b>pH</b>	Temp °C	Reading
Buffer 7		
<b>Conductivity</b>		
Buffer 5000		







# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2nd Qtr 2016  
Sample ID: MW104  
Sampling Personal: Jeremy King

Weather Conditions: Temp: 30 °F Wind: N@S-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Casing Straight?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Grout Seal Intact?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Not Visible
Repairs Necessary:		
Casing Diameter:	2"	
Water Level Before Purge:	14.28	ft
Total Well Depth:	32.85	ft
Well Volume:	114	liters
Depth to Top of Pump:	29.10	ft
Water Level After Sample:	14.48	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Recover:	55 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		PSI:	20
Duplicate Sample ID:			Pumping Rate:	100 mL/min
Purge Date:	8 Apr 16	Time Purging Began:	0755	am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:		am/pm
Sample Date:	8 Apr 16	Time of Sampling:	0910	am/pm
Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)	4 - 1 Liter Nitric		

### Field Measurements

Stabilization (3 consecutive)		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.
SEQ #	Time									
1	0805	5.56	14089	6.97	6.12	252.8	25.1	14.39	1000.0	clear
2	0815	5.49	14013	6.96	6.02	251.6	18.0	14.43	1000.0	clear
3	0825	5.61	13999	6.98	5.33	246.7	13.2	14.52	1000.0	clear
4	0835	5.05	13984	6.98	0.76	244.5	10.4	14.59	1000.0	clear
5	0845	5.24	14006	6.98	0.76	237.4	8.51	14.61	1000.0	clear
6	0850	5.06	13917	6.98	0.75	235.7	8.30	14.58	500.0	clear
7	0855	5.56	13954	6.98	0.80	233.7	8.59	14.58	500.0	clear
8	0900	5.43	13967	6.98	0.82	232.9	7.14	14.57	500.0	clear
9	0905	5.08	13984	6.98	0.88	231.6	6.95	14.52	500.0	clear
10	0910	5.23	13993	6.98	0.92	230.7	7.63	14.55	500.0	clear

Stabilized:  Yes  No

Total Volume Removed: 7500.0 mL

Comments:



# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2nd Qtr 2016  
Sample ID: MW2-90 MW3-90  
Sampling Personal: Jerry Hyslop

Weather Conditions: Temp: 40 °F Wind: NWS-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<u>No</u>	
Well Labeled?	<u>Yes</u>	No	
Casing Straight?	<u>Yes</u>	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>21.06</u>		ft
Total Well Depth:	<u>24.80</u>		ft
Well Volume:	<u>2.3</u>		liters
Depth to Top of Pump:	<u>22.60</u>		ft
Water Level After Sample:	<u>21.42</u>		ft
Measurement Method:	<u>Electric Water Level Indicator</u>		

### Sampling Information

Purging Method:	<u>Bladder</u>	Control Settings	
Sampling Method:	<u>Bladder</u>	Purge:	<u>4</u> sec.
Dedicated Equip?:	Yes <u>No</u>	Recover:	<u>56</u> sec.
Duplicate Sample?:	Yes <u>No</u>	PSI:	<u>18</u>
Duplicate Sample ID:	<u>                    </u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>8 Apr 16</u>	Time Purging Began:	<u>1028</u> am/pm
Well Purged Dry?	Yes <u>No</u>	Time Purged Dry:	<u>                    </u> am/pm
Sample Date:	<u>8 Apr 16</u>	Time of Sampling:	<u>1058</u> am/pm
Bottle List:	500 mL Nitric	1 Liter Raw	
	500 mL Nitric (filtered)	4 - 1 Liter Nitric	

### Field Measurements

SEQ #	Stabilization (3 consecutive) 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.
2	<u>*1046 1038</u>	<u>7.04</u>	<u>7972</u>	<u>6.99</u>	<u>3.37</u>	<u>242.1</u>	<u>1.36</u>	<u>21.33</u>	<u>*7000.0300.0</u>	<u>Clear</u>
3	<u>1043</u>	<u>6.88</u>	<u>7945</u>	<u>6.99</u>	<u>3.38</u>	<u>237.0</u>	<u>0.72</u>	<u>21.33</u>	<u>500.0</u>	<u>Clear ORP 237.0</u>
4	<u>1048</u>	<u>6.99</u>	<u>7935</u>	<u>6.98</u>	<u>3.40</u>	<u>231.4</u>	<u>0.48</u>	<u>21.33</u>	<u>500.0</u>	<u>Clear</u>
5	<u>1053</u>	<u>6.99</u>	<u>7923</u>	<u>6.98</u>	<u>3.44</u>	<u>227.4</u>	<u>0.43</u>	<u>21.33</u>	<u>500.0</u>	<u>Clear</u>
6	<u>1058</u>	<u>6.99</u>	<u>7916</u>	<u>6.99</u>	<u>3.45</u>	<u>225.8</u>	<u>0.42</u>	<u>21.33</u>	<u>500.0</u>	<u>Clear</u>
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 3,000.0 mL

Comments:

\*1038 8 Apr 16



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU Heskett CCR Groundwater 2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Darren Nieswaag / Jeremy Meyer</i>				
<b>Report To:</b> MDU Attn: Samantha Marshall Address: 400 N. 4th St Bismarck, ND 58501 Phone: 701-222-7829			<b>Carbon Copy:</b> Attn: Address:			<b>Work Order Number:</b> <i>82-0862</i>		

Sample Information						Bottle Type			Field Parameters			Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO <sub>3</sub>	1 liter	500 ml HNO <sub>3</sub> (filtered)			Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
<i>W690</i>	<i>Equip. Blank Pump 1</i>	<i>8 Apr 16</i>	<i>—</i>	<i>—</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>—</i>	<i>—</i>	<i>—</i>	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
<i>W691</i>	<i>Equip. Blank Pump 2</i>	<i>8 Apr 16</i>	<i>—</i>	<i>—</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>—</i>	<i>—</i>	<i>—</i>	
<i>W692</i>	<i>MW 3-90</i>	<i>8 Apr 16</i>	<i>1031</i>	<i>GW</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>7.10</i>	<i>4795</i>	<i>6.88</i>	
<i>W693</i>	<i>MW 33</i>	<i>8 Apr 16</i>	<i>0847</i>	<i>GW</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>8.09</i>	<i>5038</i>	<i>6.53</i>	
<i>W694</i>	<i>MW 104</i>	<i>8 Apr 16</i>	<i>0910</i>	<i>GW</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>5.23</i>	<i>13993</i>	<i>6.98</i>	
<i>W695</i>	<i>MW 2-90</i>	<i>8 Apr 16</i>	<i>1058</i>	<i>GW</i>		<i>X</i>	<i>X</i>	<i>X</i>			<i>6.99</i>	<i>7916</i>	<i>6.99</i>	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>[Signature]</i>	<i>Log in</i>	<i>8 Apr 16 1247</i>	<i>C. Jackson</i>		<i>8 Apr 16 1247</i>	<i>4.7°C</i>
2							<i>TM588 ROI</i>
3							



**CASE NARRATIVE**

**MVTL Lab Reference No/SDG:** 201682-0863  
**IML Lab Reference No/SDG:** S1604162

**Client:** Montana Dakota Utilities  
**Location:** MDU Heskett Ash Site

**Project Identification:** CCR 2<sup>nd</sup> Quarter 2016

**MVTL Laboratory Identifications:** 16-W696 through 16-W701  
**IML Laboratory Identifications:** S1604162-001 through S1604162-006

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Equip Blank 1	16-W696	S1604162-001
Equip Blank 2	16-W697	S1604162-002
MW3-90	16-W698	S1604162-003
MW33	16-W699	S1604162-004
MW104	16-W700	S1604162-005
MW2-90	16-W701	S1604162-006

**I. RECEIPT**

- All samples were received at the laboratory on 8 April 2016 at 1247.
- 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 4.7°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 12 April 2016.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

**II. HOLDING TIMES**

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

**III. METHODS**

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





CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-0863
IML Lab Reference No/SDG: S1604162
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR 2nd Quarter 2016
MVTL Laboratory Identifications: 16-W696 through 16-W701
IML Laboratory Identifications: S1604162-001 through S1604162-006
Page 2 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Equip Blank 1, Equip Blank 2, MW3-90, MW33, MW104, MW2-90.

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 DATE: 2 May 16
Claudette Carroll - MVTL Bismarck Laboratory Manager



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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www.mvttl.com



Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W696  
Work Order #: 82-0863  
Account #: 002800  
Date Sampled: 8 Apr 16  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: Equip Blank Pump 1  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			22 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*CC*  
Claudette K. Carroll 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W697  
Work Order #: 82-0863  
Account #: 002800  
Date Sampled: 8 Apr 16  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: Equip Blank Pump 2  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			23 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll <sup>CC</sup> 2 May 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:  
@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W698  
Work Order #: 82-0863  
Account #: 002800  
Date Sampled: 8 Apr 16 10:31  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW3-90  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.88 units	NA	SM 4500 H+ B	8 Apr 16 10:31	DJN
Temperature - Field	7.10 Degrees C	NA	SM 2550B	8 Apr 16 10:31	DJN
Conductivity - Field	4795 umhos/cm	1	EPA 120.1	8 Apr 16 10:31	DJN
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			23 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*C*  
Claudette K. Carroll 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W699  
Work Order #: 82-0863  
Account #: 002800  
Date Sampled: 8 Apr 16 8:47  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW33  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.53	units	NA	SM 4500 H+ B	8 Apr 16	8:47	DJN
Temperature - Field	8.09	Degrees C	NA	SM 2550B	8 Apr 16	8:47	DJN
Conductivity - Field	5038	umhos/cm	1	EPA 120.1	8 Apr 16	8:47	DJN
Radium 226	See Attached Report				19 Apr 16		OL
Radium 228	See Attached Report				23 Apr 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>CC</sup> *2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

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

Report Date: 2 May 16  
Lab Number: 16-W700  
Work Order #: 82-0863  
Account #: 002800  
Date Sampled: 8 Apr 16 9:10  
Date Received: 8 Apr 16 12:47  
Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

PO #: 160249 OP

Sample Description: MW104  
Sample Site: MDU Heskett

Temp at Receipt: 4.7C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.98	units	NA	SM 4500 H+ B	8 Apr 16	9:10	DJN
Temperature - Field	5.23	Degrees C	NA	SM 2550B	8 Apr 16	9:10	DJN
Conductivity - Field	13993	umhos/cm	1	EPA 120.1	8 Apr 16	9:10	DJN
Radium 226	See Attached Report				19 Apr 16		OL
Radium 228	See Attached Report				23 Apr 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*C*  
Claudette K. Carroll 2 May 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:

@ = Due to sample matrix # = Due to concentration of other analytes  
! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Page: 1 of 1

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

Report Date: 2 May 16  
 Lab Number: 16-W701  
 Work Order #: 82-0863  
 Account #: 002800  
 Date Sampled: 8 Apr 16 10:58  
 Date Received: 8 Apr 16 12:47  
 Sampled By: MVTL Field Services

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: MW2-90  
 Sample Site: MDU Heskett

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.99 units	NA	SM 4500 H+ B	8 Apr 16 10:58	DJN
Temperature - Field	6.99 Degrees C	NA	SM 2550B	8 Apr 16 10:58	DJN
Conductivity - Field	7916 umhos/cm	1	EPA 120.1	8 Apr 16 10:58	DJN
Radium 226	See Attached Report			19 Apr 16	OL
Radium 228	See Attached Report			23 Apr 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*CC*  
*Claudette K. Carroll 2 May 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:  
 @ = Due to sample matrix # = Due to concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



Date: 4/29/2016

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-0863  
**Lab Order:** S1604162

**CASE NARRATIVE**  
**Report ID:** S1604162001

Samples 16-W696 Equip Blank Pump 1, 16-W697 Equip Blank Pump 2, 16-W698 MW3-90, 16-W699 MW33, 16-W700 MW104, and 16-W701 MW2-90 were received on April 12, 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:

Wade Nieuwsma, Assistant Laboratory Manager





### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604162001

**ProjectName:** 201682-0863  
**Lab ID:** S1604162-001  
**ClientSample ID:** 16-W696 Equip Blank Pump 1  
**COC:** 201682-0863

**WorkOrder:** S1604162  
**CollectionDate:** 4/8/2016  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

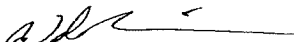
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.0	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-0.7	pCi/L		1	Ga-Tech	04/22/2016 2226	MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/22/2016 2226	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by:   
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604162001

**ProjectName:** 201682-0863  
**Lab ID:** S1604162-002  
**ClientSample ID:** 16-W697 Equip Blank Pump 2  
**COC:** 201682-0863

**WorkOrder:** S1604162  
**CollectionDate:** 4/8/2016  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.03	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	0.1	pCi/L		1	Ga-Tech	04/23/2016 127	MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/23/2016 127	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604162001

ProjectName: 201682-0863
Lab ID: S1604162-003
ClientSample ID: 16-W698 MW3-90
COC: 201682-0863

WorkOrder: S1604162
CollectionDate: 4/8/2016 10:31:00 AM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604162001

ProjectName: 201682-0863
Lab ID: S1604162-004
ClientSample ID: 16-W699 MW33
COC: 201682-0863

WorkOrder: S1604162
CollectionDate: 4/8/2016 8:47:00 AM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total, Radium 226, Radium 226 Precision (±), Radium 228, and Radium 228 Precision (±).

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank, E Value above quantitation range, J Analyte detected below quantitation limits, M Value exceeds Monthly Ave or MCL or is less than LCL, O Outside the Range of Dilutions, X Matrix Effect, C Calculated Value, H Holding times for preparation or analysis exceeded, L Analyzed by another laboratory, ND Not Detected at the Reporting Limit, S Spike Recovery outside accepted recovery limits

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company: MVTL Laboratories, Inc.
2616 E Broadway Ave.
Bismarck, ND 58501

Date Reported 4/29/2016
Report ID S1604162001

ProjectName: 201682-0863
Lab ID: S1604162-005
ClientSample ID: 16-W700 MW104
COC: 201682-0863

WorkOrder: S1604162
CollectionDate: 4/8/2016 9:10:00 AM
DateReceived: 4/12/2016 11:00:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 7 columns: Analyses, Result, Units, Qual, RL, Method, Date Analyzed/Init. Rows include Radionuclides - Total and Radium 226, 226 Precision, 228, 228 Precision.

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: [Signature]
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

**Company:** MVTL Laboratories, Inc.  
2616 E Broadway Ave.  
Bismarck, ND 58501

**Date Reported** 4/29/2016  
**Report ID** S1604162001

**ProjectName:** 201682-0863  
**Lab ID:** S1604162-006  
**ClientSample ID:** 16-W701 MW2-90  
**COC:** 201682-0863

**WorkOrder:** S1604162  
**CollectionDate:** 4/8/2016 10:58:00 AM  
**DateReceived:** 4/12/2016 11:00:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	04/23/2016 1331	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/23/2016 1331	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

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

Reviewed by: Wade Nieuwsma  
Wade Nieuwsma, Assistant Laboratory Manager



### ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.  
Work Order: S1604162  
Project: 201682-0863

Date: 4/29/2016  
Report ID: S1604162001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-336 (04/21/16 10:15)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		ND	1						

Radium 228 by Ga/Tech		Sample Type	LCS		Units: pCi/L				
LCS-336 (04/21/16 13:16)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		34	1	39.5		86.0	61.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-336 (04/21/16 19:18)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		29	1	39.5	ND	73.9	64.3 - 120		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-336 (04/21/16 22:19)	Analyte	RunNo:	133408	PrepDate:	04/14/16 14:00	BatchID:	11674		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		32	1	29	10.1	81.7	20		

Radium 226 in Water - Total		Sample Type	MBLK		Units: pCi/L				
MB-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.2						

Radium 226 in Water - Total		Sample Type	LCS		Units: pCi/L				
LCS-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		4.9	0.2	5.54		88.3	67.1 - 122		

Radium 226 in Water - Total		Sample Type	LCSD		Units: pCi/L				
LCSD-1597 (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		5.7	0.2	4.9	15.9	104	20		

Radium 226 in Water - Total		Sample Type	MS		Units: pCi/L				
S1604125-002B MS (04/19/16 15:04)	Analyte	RunNo:	133143	PrepDate:	04/14/16 0:00	BatchID:	11640		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.3	0.2	5.54	ND	95.4	65 - 131		

- Qualifiers:**
- B 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

Phone: (701) 258-9720  
 Toll Free: (800) 279-6885 Fax: (701) 258-9724

201682-0863

Company Name and Address:  <u>MVTL</u> <u>2616 E Broadway</u> <u>Bismarck, ND 58501</u>	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box <input type="checkbox"/>
Billing Address (indicate if different from above):  <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
	Quote Number	Date Submitted: 4/8/2016
	Project Name/Number:	Purchase Order #: BL5552

Sample Information						Bottle Type						Analysis
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials	Unpreserved	Glass Jar	Other	Analysis Required
S1604162												
001	16-W696	Equip Blank Pump 1		4/8/2016								Radium226 & Radium228 on all
002	16-W697	Equip Blank Pump 2		4/8/2016								
003	16-W698	MW3-90		4/8/2016	1031							
004	16-W699	MW33		4/8/2016	847							
005	16-W700	MW104		4/8/2016	910							
006	16-W701	MW2-90		4/8/2016	1058							

Comments: All results must be reported as a numerical value

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
C. Jackson	4/8/2016	1700		Ruthy Boy	4.12.16	11:00 12.0
2.						





**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU                      Heskett                      CCR Radiochem                      2nd Qtr 2016				<b>Name of Sampler(s):</b> <i>Darren Nieswong / Jeremy Meyer</i>				
<b>Report To:</b> MDU <b>Attn:</b> Samantha Marshall <b>Address:</b> 400 N. 4th St Bismarck, ND 58501 <b>Phone:</b> 701-222-7829			<b>Carbon Copy:</b> <b>Attn:</b> <b>Address:</b>			<b>Work Order Number:</b> <b>82-0863</b>		

Sample Information						Bottle Type				Field Parameters			Analysis	
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO <sub>3</sub>					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
<b>W696</b>	Equip Blank Pump 1	8 Apr 16	—	—		4					—	—	—	MDU CCR combined RadChem
<b>W697</b>	Equip Blank Pump 2	8 Apr 16	—	—		4					—	—	—	
<b>W698</b>	nw 3-90	8 Apr 16	1031	GW		4					7.10	4795	6.88	
<b>W699</b>	nw 33	8 Apr 16	0847	GW		4					8.09	5038	6.53	
<b>W700</b>	nw 104	8 Apr 16	0910	GW		4					5.23	13993	6.98	
<b>W701</b>	nw 2-90	8 Apr 16	1058	GW		4					6.99	7916	6.99	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Jeremy Meyer</i>	Log in	8 Apr 16 1247	<b>C. Jackson</b>		8 Apr 16 1247	4.7C R01 TM 588
2							
3							



CASE NARRATIVE – AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: 201782-0987
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR April 2017
MVTL Laboratory Identifications: 17-W1095 through 17-W1101
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include FB1, Dup1, 13, 101, 102, 103, 70.

I. RECEIPT

- All samples were received at the laboratory on 21 Apr17 at 900.
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 1.5°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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



CASE NARRATIVE – AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: 201782-0987  
Client: Montana Dakota Utilities  
Location: MDU Heskett  
Project Identification: CCR April 2017  
MVTL Laboratory Identifications: 17-W1095 through 17-W1101  
Page 2 of 2

- o Recoveries for two lithium matrix spike duplicates were outside of the acceptable limits. Recoveries of the matrix spikes were acceptable. RPDs for the recoveries of the matrix spikes/matrix spike duplicates were acceptable. No further action was taken.

V. REPORTING

- On 6 Jul 17, it was discovered that the template used to create the case narrative had an extra 7 in the work order (e.g. 2017782-0987). Case narrative has been corrected to reflect the correct work order.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 7 JUL 17  
Claudette Carroll - MVTL Bismarck Laboratory Manager

**Quality Control Report**

Lab IDs: 17-W1095 to 17-W1101

Project: MDU Heskett - CCR

Work Order: 201782-0987

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Total mg/l	0.1000	109	80-120	0.400 0.400	17W1096q 17W1107q	< 0.001 < 0.001	0.4490 0.4302	112 108	75-125 75-125	0.4490 0.4302	0.4302 0.4374	108 109	4.3 1.7	20 20	- -	- -	< 0.001
Arsenic - Total mg/l	0.1000	109	80-120	0.400 0.400	17W1096q 17W1107q	< 0.005 < 0.005	0.4588 0.4364	115 109	75-125 75-125	0.4588 0.4364	0.4370 0.4518	109 113	4.9 3.5	20 20	- -	- -	< 0.002
Barium - Total mg/l	0.1000	103	80-120	0.400 0.400	17W1096q 17W1107q	0.0140 0.0158	0.3866 0.4114	93 99	75-125 75-125	0.3866 0.4114	0.3974 0.4080	96 98	2.8 0.8	20 20	- -	- -	< 0.002
Beryllium - Total mg/l	0.1000	108	80-120	0.400 0.400	17W1096q 17W1107q	< 0.001 < 0.001	0.4430 0.4296	111 107	75-125 75-125	0.4430 0.4296	0.4270 0.4240	107 106	3.7 1.3	20 20	- -	- -	< 0.0005
Boron - Total mg/l	0.40 0.40	100 100	80-120 80-120	1.50 0.400 1.50	17-W1096 17-W1107 17-W1146	0.44 0.39 0.81	2.02 0.75 2.32	105 90 101	75-125 75-125 75-125	2.02 0.75 2.32	2.10 0.76 2.37	111 92 104	3.9 1.3 2.1	20 20 20	- - -	- - -	< 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Total mg/l	0.1000	111	80-120	0.400 0.400	17W1096q 17W1107q	< 0.0005 < 0.0005	0.4554 0.4368	114 109	75-125 75-125	0.4554 0.4368	0.4380 0.4370	110 109	3.9 0.0	20 20	- -	- -	< 0.0005
Calcium - Total mg/l	20.0 20.0	106 104	80-120 80-120	100 500	17W1013q 17W1101q	4.1 417	97.1 870	93 91	75-125 75-125	97.1 870	97.4 895	93 96	0.3 2.8	20 20	- - - -	- - - -	< 1 < 1 < 1 < 1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0 30.0	84 83 85 85 107 87	80-120 80-120 80-120 80-120 80-120 80-120	30.0 30.0 30.0	17-W994 17-W1098 17-W1503	7.8 19.1 51.8	36.1 50.8 77.3	94 106 85	80-120 80-120 80-120	36.1 50.8 77.3	35.6 48.3 77.0	93 97 84	1.4 5.0 0.4	20 20 20	- - - - - -	- - - - - -	< 1 < 1 < 1 < 1 < 1 < 1
Chromium - Total mg/l	0.1000	107	80-120	0.400 0.400	17W1096q 17W1107q	0.0044 < 0.002	0.4312 0.4082	107 102	75-125 75-125	0.4312 0.4082	0.4124 0.4122	102 103	4.5 1.0	20 20	- -	- -	< 0.002

**Quality Control Report**

Lab IDs: 17-W1095 to 17-W1101

Project: MDU Heskett - CCR

Work Order: 201782-0987

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
Cobalt - Total mg/l	0.1000	104	80-120	0.400	17W1096q	< 0.002	0.4134	103	75-125	0.4134	0.3992	100	3.5	20	-	-	< 0.002
				0.400	17W1107q	< 0.002	0.3972	99	75-125	0.3972	0.4022	101	1.3	20	-	-	
Fluoride mg/l	0.50	108	90-110	0.500	17-W1084	2.09	2.55	92	80-120	2.55	2.55	92	0.0	20	-	-	< 0.1
				0.500	17-W1106	0.25	0.72	94	80-120	0.72	0.72	94	0.0	20	-	-	< 0.1
Lead - Total mg/l	0.1000	105	80-120	0.400	17W1096q	< 0.001	0.4026	101	75-125	0.4026	0.3852	96	4.4	20	-	-	< 0.0005
				0.400	17W1107q	< 0.001	0.3982	100	75-125	0.3982	0.3910	98	1.8	20	-	-	
Lithium - Total mg/l	0.40 0.40	102 105	80-120 80-120	1.00	17-W1096	0.82	1.98	116	75-125	1.98	2.03	121	2.5	20	-	-	< 0.1
				0.400	17-W1107	1.55	2.03	120	75-125	2.03	2.09	135	2.9	20	-	-	< 0.1
				1.00	17-W1146	2.06	3.18	112	75-125	3.18	3.32	126	4.3	20	-	-	< 0.1
Mercury - Total mg/l	0.0020	105	85-115	0.002	17-W1102	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	< 0.0002
Molybdenum - Total mg/l	0.1000	102	80-120	0.400	17W1096q	< 0.002	0.4594	115	75-125	0.4594	0.4396	110	4.4	20	-	-	< 0.002
				0.400	17W1107q	< 0.002	0.4468	112	75-125	0.4468	0.4468	112	0.0	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	8.4	8.5	-	1.2	20	-	-	-
										7.2	7.3	-	1.4	20	-	-	-
Selenium - Total mg/l	0.1000	108	80-120	0.400	17W1096q	0.1528	0.6106	114	75-125	0.6106	0.6232	118	2.0	20	-	-	< 0.002
				0.400	17W1107q	0.1538	0.6054	113	75-125	0.6054	0.6084	114	0.5	20	-	-	
Sulfate mg/l	100 100	115 110	80-120	100	17-W1095	< 5	113	113	80-120	113	112	112	0.9	20	-	-	< 5
			80-120	100	17-W1102	< 5	111	111	80-120	111	107	107	3.7	20	-	-	< 5
Thallium - Total mg/l	0.1000	105	80-120	0.400	17W1096q	< 0.0005	0.4022	101	75-125	0.4022	0.3820	96	5.2	20	-	-	< 0.0005
				0.400	17W1107q	< 0.0005	0.3928	98	75-125	0.3928	0.3880	97	1.2	20	-	-	
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	1210	1190	-	1.7	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	3720	3730	-	0.3	20	-	-	< 10
	-	-	-	-	-	-	-	-	-	6780	6840	-	0.9	20	-	-	

Approved by: C. Cantor  
 19 May 17



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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## CERTIFICATE of ANALYSIS - CCR

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

Report Date: 18 May 17  
 Lab Number: 17-W1095  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTl Field Services

Project Name: MDU Heskett  
 Sample Description: FB1

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH	* 6.6	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	28 Apr 17 15:44	EMS
Chloride	< 1	mg/l	1.0	SM4500-CL-E	16 May 17 12:20	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	< 1	mg/l	1.0	6010	24 Apr 17 12:34	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	25 Apr 17 14:24	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	24 Apr 17 16:22	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll*

*CC  
19 May 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 concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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## CERTIFICATE of ANALYSIS - CCR

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

Report Date: 18 May 17  
 Lab Number: 17-W1096  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett  
 Sample Description: Dup 1

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH	* 7.1	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Fluoride	0.93	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	7320	mg/l	5.00	ASTM D516-07	28 Apr 17 15:44	EMS
Chloride	104	mg/l	1.0	SM4500-Cl-E	2 May 17 10:39	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	10000	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	426	mg/l	1.0	6010	24 Apr 17 12:34	SZ
Lithium - Total	0.82	mg/l	0.10	6010	25 Apr 17 14:24	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	24 Apr 17 16:22	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	0.0140	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	0.0044	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	0.1528	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll* <sup>CC</sup> *19 May 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 concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



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## CERTIFICATE of ANALYSIS - CCR

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

Report Date: 18 May 17  
 Lab Number: 17-W1097  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17 8:55  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett  
 Sample Description: 13

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH - Field	6.96	units	NA	SM 4500 H+ B	19 Apr 17 8:55	JSM
pH	* 7.2	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Temperature - Field	8.01	Degrees C	NA	SM 2550B	19 Apr 17 8:55	JSM
Conductivity - Field	10457	umhos/cm	1	EPA 120.1	19 Apr 17 8:55	JSM
Fluoride	0.92	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	6770	mg/l	5.00	ASTM D516-07	28 Apr 17 15:44	EMS
Chloride	99.4	mg/l	1.0	SM4500-Cl-E	2 May 17 11:40	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	9970	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	389	mg/l	1.0	6010	24 Apr 17 13:45	SZ
Lithium - Total	0.82	mg/l	0.10	6010	25 Apr 17 14:24	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	24 Apr 17 16:22	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	0.0147	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	0.0051	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	0.1692	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>10</sup> 19 May 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 concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





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## CERTIFICATE of ANALYSIS - CCR

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

Report Date: 18 May 17  
 Lab Number: 17-W1098  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17 15:03  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett  
 Sample Description: 101

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH - Field	6.74	units	NA	SM 4500 H+ B	19 Apr 17 15:03	JSM
pH	* 6.9	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Temperature - Field	8.97	Degrees C	NA	SM 2550B	19 Apr 17 15:03	JSM
Conductivity - Field	4733	umhos/cm	1	EPA 120.1	19 Apr 17 15:03	
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	2660	mg/l	5.00	ASTM D516-07	28 Apr 17 15:44	EMS
Chloride	19.1	mg/l	1.0	SM4500-Cl-E	2 May 17 11:40	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	4380	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	348	mg/l	1.0	6010	24 Apr 17 13:45	SZ
Lithium - Total	0.68	mg/l	0.10	6010	25 Apr 17 14:24	KMD
Boron - Total	1.14	mg/l	0.10	6010	24 Apr 17 16:22	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	0.0132	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	0.0032	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by:

*Cc*  
*Claudette K. Carroll* *19 May 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 concentration of other analytes  
 ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016





# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

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

Report Date: 18 May 17  
 Lab Number: 17-W1100  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17 16:35  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett  
 Sample Description: 103

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH - Field	6.73	units	NA	SM 4500 H+ B	19 Apr 17 16:35	JSM
pH	* 7.0	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Temperature - Field	8.46	Degrees C	NA	SM 2550B	19 Apr 17 16:35	JSM
Conductivity - Field	4993	umhos/cm	1	EPA 120.1	19 Apr 17 16:35	JSM
Fluoride	0.14	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	2850	mg/l	5.00	ASTM D516-07	28 Apr 17 16:06	EMS
Chloride	159	mg/l	1.0	SM4500-Cl-E	2 May 17 11:40	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	4620	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	550	mg/l	1.0	6010	24 Apr 17 13:45	SZ
Lithium - Total	0.71	mg/l	0.10	6010	25 Apr 17 15:24	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	24 Apr 17 16:22	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	0.0066	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	0.2948	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by: Claudette K. Carroll *CC*  
 19 May 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATION: ND # ND-00016



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## CERTIFICATE of ANALYSIS - CCR

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

Report Date: 18 May 17  
 Lab Number: 17-W1101  
 Work Order #: 82-0987  
 Account #: 002800  
 Date Sampled: 19 Apr 17 13:23  
 Date Received: 21 Apr 17 9:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett  
 Sample Description: 70

Temp at Receipt: 1.5C

Event and Year: April 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	21 Apr 17	KMD
pH - Field	7.02	units	NA	SM 4500 H+ B	19 Apr 17 13:23	JSM
pH	* 7.3	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS
Temperature - Field	8.60	Degrees C	NA	SM 2550B	19 Apr 17 13:23	JSM
Conductivity - Field	4313	umhos/cm	1	EPA 120.1	19 Apr 17 13:23	JSM
Fluoride	0.35	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS
Sulfate	2320	mg/l	5.00	ASTM D516-07	28 Apr 17 16:06	EMS
Chloride	35.8	mg/l	1.0	SM4500-Cl-E	2 May 17 11:40	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV
Total Dissolved Solids	3720	mg/l	10	I1750-85	21 Apr 17 15:35	SVS
Calcium - Total	417	mg/l	1.0	6010	24 Apr 17 13:45	SZ
Lithium - Total	0.42	mg/l	0.10	6010	25 Apr 17 15:24	KMD
Boron - Total	0.48	mg/l	0.10	6010	24 Apr 17 17:00	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD
Barium - Total	0.0098	mg/l	0.0020	6020	10 May 17 11:45	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD
Molybdenum - Total	0.0036	mg/l	0.0020	6020	10 May 17 11:45	KMD
Selenium - Total	0.0113	mg/l	0.0020	6020	10 May 17 11:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll*

*19 May 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATION: ND # ND-00016