



# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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



Page: 1 of 2

Amended 28 Feb 17 (TDS result)

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

Report Date: 12 Jan 17  
 Lab Number: 16-W6025  
 Work Order #: 82-4102  
 Account #: 002800  
 Date Sampled: 20 Dec 16  
 Date Received: 20 Dec 16 14:20  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	20 Dec 16	SVS
pH	* 5.9	units	N/A	SM4500 H+ B	20 Dec 16 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	20 Dec 16 17:49	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	20 Dec 16 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	20 Dec 16 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	5 Jan 17 14:10	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	4 Jan 17 13:47	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	< 1	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Sodium - Total	< 1	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Potassium - Total	< 1	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jan 17 12:35	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	5 Jan 17 14:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 12:20	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD

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 28 Feb 17 (TDS result)

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

Report Date: 12 Jan 17  
Lab Number: 16-W6025  
Work Order #: 82-4102  
Account #: 002800  
Date Sampled: 20 Dec 16  
Date Received: 20 Dec 16 14:20  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 12:20	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K Carroll* <sup>lc</sup> 28 Feb 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

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

Report Date: 12 Jan 17  
 Lab Number: 16-W6026  
 Work Order #: 82-4102  
 Account #: 002800  
 Date Sampled: 20 Dec 16 10:01  
 Date Received: 20 Dec 16 14:20  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: 103

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	20 Dec 16	SVS
pH	* 7.0	units	N/A	SM4500 H+ B	21 Dec 16 17:00	SVS
Total Suspended Solids	8	mg/l	2	I3765-85	20 Dec 16 17:49	SVS
pH - Field	6.79	units	NA	SM 4500 H+ B	20 Dec 16 10:01	JSM
Temperature - Field	4.20	Degrees C	NA	SM 2550B	20 Dec 16 10:01	JSM
Total Alkalinity	449	mg/l CaCO3	20	SM2320-B	21 Dec 16 17:00	SVS
Conductivity - Field	5059	umhos/cm	1	EPA 120.1	20 Dec 16 10:01	JSM
Fluoride	0.15	mg/l	0.10	SM4500-F-C	21 Dec 16 17:00	SVS
Sulfate	2380	mg/l	5.00	ASTM D516-07	5 Jan 17 14:10	EMS
Chloride	150	mg/l	1.0	SM4500-Cl-E	4 Jan 17 13:47	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	4350	mg/l	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	535	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Magnesium - Total	470	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Sodium - Total	235	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Potassium - Total	17.4	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Lithium - Total	0.62	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	5 Jan 17 12:35	KMD
Calcium - Dissolved	510	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	461	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	240	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	16.9	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.57	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Dissolved	< 0.5 @	mg/l	0.10	6010	5 Jan 17 14:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0072	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	0.0034	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.0760	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

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: 12 Jan 17
Lab Number: 16-W6026
Work Order #: 82-4102
Account #: 002800
Date Sampled: 20 Dec 16 10:01
Date Received: 20 Dec 16 14:20
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

Sample Description: 103

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

Table with 7 columns: Analyte, As Received Result, Method, Method Reference, Date Analyzed, Analyst. Rows include Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium.

\* Holding time exceeded

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

Approved by:

Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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Page: 1 of 2

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

Report Date: 12 Jan 17  
Lab Number: 16-W6027  
Work Order #: 82-4102  
Account #: 002800  
Date Sampled: 20 Dec 16 12:20  
Date Received: 20 Dec 16 14:20  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: 44R

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	20 Dec 16	SVS
pH	* 7.0	units	N/A	SM4500 H+ B	21 Dec 16 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	20 Dec 16 17:49	SVS
pH - Field	6.62	units	NA	SM 4500 H+ B	20 Dec 16 12:20	JSM
Temperature - Field	6.23	Degrees C	NA	SM 2550B	20 Dec 16 12:20	JSM
Total Alkalinity	438	mg/l CaCO3	20	SM2320-B	21 Dec 16 17:00	SVS
Conductivity - Field	9069	umhos/cm	1	EPA 120.1	20 Dec 16 12:20	JSM
Fluoride	0.67	mg/l	0.10	SM4500-F-C	21 Dec 16 17:00	SVS
Sulfate	5140	mg/l	5.00	ASTM D516-07	5 Jan 17 14:10	EMS
Chloride	241	mg/l	1.0	SM4500-CL-E	4 Jan 17 13:47	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	8830	mg/l	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	420	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Magnesium - Total	980	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Sodium - Total	995	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Potassium - Total	31.2	mg/l	1.0	6010	22 Dec 16 13:48	SZ
Lithium - Total	1.35	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	0.39	mg/l	0.10	6010	5 Jan 17 12:35	KMD
Calcium - Dissolved	431	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	1010	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	1020	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	25.7	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	1.31	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Dissolved	0.28	mg/l	0.10	6010	5 Jan 17 14:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0070	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.0778	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

Report Date: 12 Jan 17
Lab Number: 16-W6027
Work Order #: 82-4102
Account #: 002800
Date Sampled: 20 Dec 16 12:20
Date Received: 20 Dec 16 14:20
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Sample Description: 44R

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Lists various elements like Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium.

\* Holding time exceeded

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

Approved by: Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 103  
Sampling Personal: Jerry Miller

Weather Conditions: Temp: 20 °F Wind: NWS-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	No <input checked="" type="checkbox"/>	
Well Labeled?	Yes <input checked="" type="checkbox"/>	No	
Casing Straight?	Yes <input checked="" type="checkbox"/>	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	32.66		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	36.50		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	Recover:	55 sec.
Duplicate Sample?:	Yes	No <input checked="" type="checkbox"/>	PSI:	30
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	20 Dec 16	Time Purging Began:	0926	am/pm
Well Purged Dry?	Yes	No <input checked="" type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	20 Dec 16	Time of Sampling:	1001	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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. clear, slightly turbid, turbid
	4.31	5089	6.72	4.95	251.2	8.77	33.49	500	clear
	4.04	5050	6.72	5.00	251.2	8.14	33.90	500	clear
	3.81	5072	6.74	5.38	249.7	4.75	34.19	500	clear
	3.57	5079	6.78	5.42	247.2	3.13	34.33	500	clear
	3.87	5068	6.78	5.43	246.1	2.50	34.45	500	clear
	3.85	5072	6.79	5.48	245.0	2.37	34.56	500	clear
	4.20	5059	6.79	5.37	243.0	2.29	34.59	500	clear

Stabilized:  Yes  No  
Comments:

Total Volume Removed: 3500 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 44R  
Sampling Personal: Jerry King

Weather Conditions: Temp: 20 °F Wind: NOS-ID Precip: Sunny Partly Cloudy / Cloudy

Well Information	
Well Locked?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Well Labeled?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Casing Straight?	Yes <input checked="" type="radio"/> No <input type="radio"/>
Grout Seal Intact?	Yes <input type="radio"/> No <input type="radio"/> <u>Not Visible</u>
Repairs Necessary:	
Casing Diameter:	<u>2"</u>
Water Level Before Purge:	<u>28.27</u> ft
Total Well Depth:	<u>—</u> ft
Well Volume:	<u>—</u> liters
Depth to Top of Pump:	<u>—</u> ft
Water Level After Sample:	<u>28.40</u> ft
Measurement Method:	Electric Water Level Indicator

Sampling Information	
Purging Method:	Bladder
Sampling Method:	Bladder
Dedicated Equip?:	Yes <input checked="" type="radio"/> No <input type="radio"/>
Duplicate Sample?:	Yes <input type="radio"/> No <input checked="" type="radio"/>
Duplicate Sample ID:	<u>—</u>
Control Settings	
Purge:	<u>8</u> sec.
Recover:	<u>52</u> sec.
PSI:	<u>20</u>
Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>20 Dec 16</u>
Time Purging Began:	<u>1200</u> am/pm
Well Purged Dry?	Yes <input type="radio"/> No <input checked="" type="radio"/>
Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>20 Dec 16</u>
Time of Sampling:	<u>1220</u> am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric

### 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.
									clear, slightly turbid, turbid

Stabilized: Yes No

Total Volume Removed: 2000 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 2016				<b>Name of Sampler(s):</b> <i>Jerry Ph</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> <i>82-4102</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>W6025</i>	Field Blank (FB)		NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.	
<i>20 Dec 16</i>	<del>Dup</del>		NA	W		X	X	X	NA	NA	NA		
<i>W6026</i>	<i>103</i>	<i>20 Dec 16</i>	<i>1001</i>	GW		X	X	X	<i>4.20</i>	<i>5059</i>	<i>6.79</i>		
<i>W6027</i>	<i>44R</i>	<i>20 Dec 16</i>	<i>1220</i>			X	X	X	<i>6.23</i>	<i>9069</i>	<i>6.62</i>		

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Jerry Ph</i>	<i>Log in</i>	<i>20 Dec 16</i> <i>1420</i>	<i>[Signature]</i>		<i>20 Dec 2016</i> <i>1420</i>	<i>6.2°C ROT</i> <i>TMS53</i>
2							
3							



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4103
IML Lab Reference No/SDG: S1612304
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6028 through 16-W6030
IML Laboratory Identifications: S1612304-001 through S1612304-003
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Field Blank (FB) 1, 103, and 44R.

I. RECEIPT

- All samples were received at the laboratory on 20 December 2016 at 1420.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 6.2°C.
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.

IV. ANALYSIS

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4103  
IML Lab Reference No/SDG: S1612304  
Client: Montana Dakota Utilities  
Location: MDU Heskett Ash Site  
Project Identification: CCR December 2016  
MVTL Laboratory Identifications: 16-W6028 through 16-W6030  
IML Laboratory Identifications: S1612304-001 through S1612304-003  
Page 2 of 2

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: 30 Jan 17  
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: 27 Jan 17  
Lab Number: 16-W6028  
Work Order #: 82-4103  
Account #: 002800  
Date Sampled: 20 Dec 16  
Date Received: 20 Dec 16 14:20  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: Field Blank 1

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			10 Jan 17	OL
Radium 228	See Attached Report			22 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Cc*  
*Claudette K. Carroll* 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to 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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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: 27 Jan 17  
Lab Number: 16-W6029  
Work Order #: 82-4103  
Account #: 002800  
Date Sampled: 20 Dec 16 10:01  
Date Received: 20 Dec 16 14:20  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: 103

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.79	units	NA	SM 4500 H+ B	20 Dec 16 10:01	JSM
Temperature - Field	4.20	Degrees C	NA	SM 2550B	20 Dec 16 10:01	JSM
Conductivity - Field	5059	umhos/cm	1	EPA 120.1	20 Dec 16 10:01	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				22 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll*

*cc*  
*30 Jan 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix

# = Due to concentration of other analytes

! = Due to sample quantity

+ = Due to internal standard response

CERTIFICATION: ND # ND-00016



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www.mvtl.com



Page: 1 of 1

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

Report Date: 27 Jan 17  
Lab Number: 16-W6030  
Work Order #: 82-4103  
Account #: 002800  
Date Sampled: 20 Dec 16 12:20  
Date Received: 20 Dec 16 14:20  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: 44R

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.62	units	NA	SM 4500 H+ B	20 Dec 16 12:20	JSM
Temperature - Field	6.23	Degrees C	NA	SM 2550B	20 Dec 16 12:20	JSM
Conductivity - Field	10	umhos/cm	1	EPA 120.1	20 Dec 16 12:20	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				22 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll*

*CC*  
*30 Jan 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



Date: 1/27/2017

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-4103  
**Lab Order:** S1612304

**CASE NARRATIVE**  
**Report ID:** S1612304001

Samples 16-W6028 Field Blank 1, 16-W6029 103, and 16-W6030 44R were received on December 28, 2016.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612304001

**ProjectName:** 201682-4103  
**Lab ID:** S1612304-001  
**ClientSample ID:** 16-W6028 Field Blank 1  
**COC:** 201682-4103

**WorkOrder:** S1612304  
**CollectionDate:** 12/20/2016  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

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

**Radionuclides - Total**

Radium 226	0.2	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-3.1	pCi/L		1	Ga-Tech	01/22/2017 607 WN
Radium 228 Precision (±)	1.8	pCi/L			Ga-Tech	01/22/2017 607 WN

**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 1/27/2017
Report ID S1612304001

ProjectName: 201682-4103
Lab ID: S1612304-002
ClientSample ID: 16-W6029 103
COC: 201682-4103

WorkOrder: S1612304
CollectionDate: 12/20/2016 10:01:00 AM
DateReceived: 12/28/2016 11:27:00 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 1/27/2017
Report ID S1612304001

ProjectName: 201682-4103
Lab ID: S1612304-003
ClientSample ID: 16-W6030 44R
COC: 201682-4103

WorkOrder: S1612304
CollectionDate: 12/20/2016 12:20:00 PM
DateReceived: 12/28/2016 11:27:00 AM
FieldSampler:
Matrix: Water

Comments

Table with 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.

Date: 1/27/2017

Work Order: S1612304

Report ID: S1612304001

Project: 201682-4103

**Radium 228 by Ga/Tech**

Sample Type **MBLK**

Units: pCi/L

MB-412 (01/21/17 14:53)	RunNo: 142633	PrepDate: 01/03/17 0:00	BatchID 12769	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228 ND 1

**Radium 228 by Ga/Tech**

Sample Type **LCS**

Units: pCi/L

LCS-412 (01/21/17 17:54)	RunNo: 142633	PrepDate: 01/03/17 0:00	BatchID 12769	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228 38 1 40.3 93.5 64.4 - 99.5

**Radium 228 by Ga/Tech**

Sample Type **MS**

Units: pCi/L

MS-412 (01/22/17 00:01)	RunNo: 142633	PrepDate: 01/03/17 0:00	BatchID 12769	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Total Radium 228 37 1 40.3 ND 92.5 55 - 113

**Radium 228 by Ga/Tech**

Sample Type **MSD**

Units: pCi/L

MSD-412 (01/22/17 03:04)	RunNo: 142633	PrepDate: 01/03/17 0:00	BatchID 12769	
Analyte	Result	RL	Conc	%RPD %REC % RPD Limits Qual

Total Radium 228 33 1 37 11.3 82.6 30

**Radium 226 in Water -**

Sample Type **MBLK**

Units: pCi/L

MB-1707 (01/11/17 13:52)	RunNo: 142395	PrepDate: 01/03/17 0:00	BatchID 12733	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226 ND 0.3

**Radium 226 in Water -**

Sample Type **LCS**

Units: pCi/L

LCS-1707 (01/10/17 10:09)	RunNo: 142395	PrepDate: 01/03/17 0:00	BatchID 12733	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226 5.9 0.3 5.89 99.8 65 - 131

**Radium 226 in Water -**

Sample Type **LCSD**

Units: pCi/L

LCSD-1707 (01/10/17 12:11)	RunNo: 142395	PrepDate: 01/03/17 0:00	BatchID 12733	
Analyte	Result	RL	Conc	%RPD %REC % RPD Limits Qual

Radium 226 6.1 0.3 5.9 3.30 103 20

**Radium 226 in Water -**

Sample Type **MS**

Units: pCi/L

S1612304-001AMS (01/10/17 10:09)	RunNo: 142395	PrepDate: 01/03/17 0:00	BatchID 12733	
Analyte	Result	RL	Spike	Ref Samp %REC % Rec Limits Qual

Radium 226 5.9 0.3 5.89 ND 96.2 65 - 131

**Qualifiers:**

- 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

201682-4103

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:
	Project Name/Number:	Purchase Order #: BL5751

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
5161 2304 001	16-W6028	Field Blank 1	GW	20-Dec-16			4				Ra226 & Ra228
002	16-W6029	103	GW	20-Dec-16	1001		4				Ra226 & Ra228
003	16-W6030	44R	GW	20-Dec-16	1220		4				Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-Dec-16	1700		Kathy Boyd	12.28.16	11:27 0.4
2.						



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2016  
 Sample ID: 103  
 Sampling Personal: Jerry

Weather Conditions: Temp: 20 °F Wind: NOS-10 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 type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>32.66</u>	ft	
Total Well Depth:	<u>—</u>	ft	
Well Volume:	<u>—</u>	liters	
Depth to Top of Pump:	<u>—</u>	ft	
Water Level After Sample:	<u>36.50</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>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/>	No <input type="checkbox"/>	Recover:	<u>55</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	<u>30</u>
Duplicate Sample ID:	<u>—</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>20 Dec 16</u>	Time Purging Began:	<u>0926</u>	<u>am/pm</u>
Well Purged Dry?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>20 Dec 16</u>	Time of Sampling:	<u>1001</u>	<u>am/pm</u>
Bottle List:	<u>CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric</u>			
	<u>NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric</u>			

### 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. clear, slightly turbid, turbid	
1	0931	4.51	5059	6.72	4.95	251.2	8.77	33.49	500	clear
2	0936	4.04	5050	6.72	5.00	251.2	8.14	33.90	500	clear
3	0941	3.81	5072	6.74	5.38	249.7	4.75	34.19	500	clear
4	0946	3.57	5079	6.78	5.42	247.2	3.13	34.33	500	clear
5	0951	3.87	5068	6.78	5.43	246.1	2.50	34.45	500	clear
6	0956	3.85	5072	6.79	5.48	245.0	2.37	34.56	500	clear
7	1001	4.20	5059	6.79	5.37	243.0	2.29	34.59	500	clear
8										
9										
10										

Stabilized:  Yes  No

Total Volume Removed: 3500 mL

Comments:



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 44R  
Sampling Personal: Jerry King

Weather Conditions: Temp: 20 °F Wind: NWS-ID 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?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	28.27		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	28.40		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	8 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	No	Recover:	52 sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	20
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	20 Dec 16	Time Purging Began:	1200	am/pm
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	20 Dec 16	Time of Sampling:	1220	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### Field Measurements

Stabilization (3 consecutive)	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1205	6.58	9124	6.66	2.02	163.4	0.62	28.42	500	Clear
2	1210	6.70	9037	6.62	1.55	170.4	0.68	28.44	500	Clear
3	1215	6.30	9072	6.64	1.53	174.9	0.42	28.44	500	Clear
4	1220	6.23	9069	6.62	1.47	178.4	0.41	28.43	500	Clear
5										
6										
7										
8										
9										
10										

Stabilized:  Yes No

Total Volume Removed: 2000 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 Radiochem          2016				<b>Name of Sampler(s):</b> <i>Jeryth</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> <i>82-4103</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>W6028</i>	Field Blank (FB)1	<i>20 Dec 16</i>	NA	W		4					NA	NA	NA	MDU CCR Numerical RadChem	
	<del>20 Dec 16 Dup</del>		NA	W		4					NA	NA	NA		
<i>W6029</i>	<i>103</i>	<i>20 Dec 16</i>	<i>1001</i>	GW		4					<i>4.20</i>	<i>5059</i>	<i>6.79</i>		
<i>W6030</i>	<i>44R</i>	<i>20 Dec 16</i>	<i>1220</i>	GW		4					<i>6.23</i>	<i>9069</i>	<i>6.62</i>		

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	° C
1	<i>Jeryth</i>	<i>Log in</i>	<i>20 Dec 16 1420</i>	<i>Tracy</i>		<i>20 Dec 2016 1420</i>	<i>6.2°C ROI TM588</i>
2							
3							



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4122
IML Lab Reference No/SDG: S1612306
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6109 through 16-W6112
IML Laboratory Identifications: S1612306-001 through S1612306-004
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Field Blank (FB) 2, 101, 70, and 33.

I. RECEIPT

- All samples were received at the laboratory on 22 December 2016 at 800.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 5.0°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.

IV. ANALYSIS

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





**CASE NARRATIVE**

**MVTL Lab Reference No/SDG:** 201682-4122  
**IML Lab Reference No/SDG:** S1612306  
**Client:** Montana Dakota Utilities  
**Location:** MDU Heskett Ash Site  
**Project Identification:** CCR December 2016  
**MVTL Laboratory Identifications:** 16-W6109 through 16-W6112  
**IML Laboratory Identifications:** S1612306-001 through S1612306-004  
**Page 2 of 2**

**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:** 30 Jan 17  
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: 27 Jan 17  
Lab Number: 16-W6109  
Work Order #: 82-4122  
Account #: 002800  
Date Sampled: 21 Dec 16  
Date Received: 22 Dec 16 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: Field Blank 2

Temp at Receipt: 5.0C ROI

Event and Year: December 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			10 Jan 17	OL
Radium 228	See Attached Report			23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*CC*  
Claudette K. Carroll 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to 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: 27 Jan 17  
 Lab Number: 16-W6110  
 Work Order #: 82-4122  
 Account #: 002800  
 Date Sampled: 21 Dec 16 10:31  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: 101

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.79	units	NA	SM 4500 H+ B	21 Dec 16 10:31	JSM
Temperature - Field	5.74	Degrees C	NA	SM 2550B	21 Dec 16 10:31	JSM
Conductivity - Field	4805	umhos/cm	1	EPA 120.1	21 Dec 16 10:31	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>CC</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to 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: 27 Jan 17  
Lab Number: 16-W6111  
Work Order #: 82-4122  
Account #: 002800  
Date Sampled: 21 Dec 16 12:20  
Date Received: 22 Dec 16 8:00  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: 70

Temp at Receipt: 5.0C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.07	units	NA	SM 4500 H+ B	21 Dec 16 12:20	JSM
Temperature - Field	6.43	Degrees C	NA	SM 2550B	21 Dec 16 12:20	JSM
Conductivity - Field	3863	umhos/cm	1	EPA 120.1	21 Dec 16 12:20	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>cc</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to 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: 27 Jan 17
Lab Number: 16-W6112
Work Order #: 82-4122
Account #: 002800
Date Sampled: 21 Dec 16 14:53
Date Received: 22 Dec 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: 33

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

Table with 7 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include pH - Field, Temperature - Field, Conductivity - Field, Radium 226, and Radium 228.

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



Date: 1/27/2017

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-4122  
**Lab Order:** S1612306

**CASE NARRATIVE**  
**Report ID:** S1612306001

Samples 16-W6109 Field Blank 2, 16-W6110 101, 16-W6111 70, and 16-W6112 33 were received on December 28, 2016.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612306001

**ProjectName:** 201682-4122  
**Lab ID:** S1612306-001  
**ClientSample ID:** 16-W6109 Field Blank 2  
**COC:** 201682-4122

**WorkOrder:** S1612306  
**CollectionDate:** 12/21/2016  
**DateReceived:** 12/28/2016 11:20:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

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

#### Radionuclides - Total

Radium 226	0.4	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-4.3	pCi/L		1	Ga-Tech	01/23/2017 1233 WN
Radium 228 Precision (±)	1.8	pCi/L			Ga-Tech	01/23/2017 1233 WN

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  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612306001

**ProjectName:** 201682-4122  
**Lab ID:** S1612306-002  
**ClientSample ID:** 16-W6110 101  
**COC:** 201682-4122

**WorkOrder:** S1612306  
**CollectionDate:** 12/21/2016 10:31:00 AM  
**DateReceived:** 12/28/2016 11:20:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.6	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	01/23/2017 1535	WN
Radium 228 Precision (±)	1.8	pCi/L			Ga-Tech	01/23/2017 1535	WN

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** 1/27/2017  
**Report ID** S1612306001

**ProjectName:** 201682-4122  
**Lab ID:** S1612306-003  
**ClientSample ID:** 16-W6111 70  
**COC:** 201682-4122

**WorkOrder:** S1612306  
**CollectionDate:** 12/21/2016 12:20:00 PM  
**DateReceived:** 12/28/2016 11:20:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

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

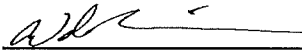
**Radionuclides - Total**

Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-2.2	pCi/L		1	Ga-Tech	01/23/2017 1837 WN
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	01/23/2017 1837 WN

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** 1/27/2017  
**Report ID** S1612306001

**ProjectName:** 201682-4122  
**Lab ID:** S1612306-004  
**ClientSample ID:** 16-W6112 33  
**COC:** 201682-4122

**WorkOrder:** S1612306  
**CollectionDate:** 12/21/2016 2:53:00 PM  
**DateReceived:** 12/28/2016 11:20:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1211	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1211	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	01/23/2017 2140	WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/23/2017 2140	WN

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.  
Work Order: S1612306  
Project: 201682-4122

Date: 1/27/2017  
Report ID: S1612306001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-412 (01/21/17 14:53)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		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-412 (01/21/17 17:54)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		38	1	40.3		93.5	64.4 - 99.5		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-412 (01/22/17 00:01)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		37	1	40.3	ND	92.5	55 - 113		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-412 (01/22/17 03:04)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		33	1	37	11.3	82.6	30		

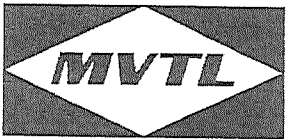
Radium 226 in Water -		Sample Type	MBLK		Units: pCi/L				
MB-1707 (01/11/17 13:52)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.3						

Radium 226 in Water -		Sample Type	LCS		Units: pCi/L				
LCS-1707 (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89		99.8	65 - 131		

Radium 226 in Water -		Sample Type	LCSD		Units: pCi/L				
LCSD-1707 (01/10/17 12:11)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		6.1	0.3	5.9	3.30	103	20		

Radium 226 in Water -		Sample Type	MS		Units: pCi/L				
S1612304-001AMS (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89	ND	96.2	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

Phone: (701) 258-9720

Toll Free: (800) 279-6885

Fax: (701) 258-9724

**Chain of Custody Record**

201682-4122

<b>Company Name and Address:</b>  <p style="text-align: center;">MVTl 2616 E Broadway Bismarck, ND 58501</p>	<b>Account #:</b>  	<b>Phone #:</b> 701-258-9720
<b>Billing Address (indicate if different from above):</b>  <p style="text-align: center;">PO Box 249 New Ulm, MN 56073</p>	<b>Contact:</b> Claudette	<b>Fax #:</b> For faxed report check box <input type="checkbox"/>
	<b>Name of Sampler:</b>	<b>E-mail:</b> ccarroll@mvtl.com For e-mail report check box <input type="checkbox"/>
	<b>Quote Number</b>	<b>Date Submitted:</b>
	<b>Project Name/Number:</b>	<b>Purchase Order #:</b> BL5752

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
51612306												
001	16-W6109	Field Blank 2	GW	21-Dec-16			4					Ra226 & Ra228
002	16-W6110	101	GW	21-Dec-16	1031		4					Ra226 & Ra228
003	16-W6111	70	GW	21-Dec-16	1220		4					Ra226 & Ra228
004	16-W6112	33	GW	21-Dec-16	1453		4					Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-Dec-16	1700		Kathy Boyd	12.28.16	11:20 2.4
2.						



# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2016  
Sample ID: 101  
Sampling Personal: *length*

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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:	37.02 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	41.85 ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 8 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: 52 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: 30
Duplicate Sample ID:	—	Pumping Rate: 100 mL/min
Purge Date:	21 Dec 16	Time Purging Began: 0921 <u>am</u> /pm
Well Purged Dry?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	21 Dec 16	Time of Sampling: 1031 <u>am</u> /pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric	

### 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								clear, slightly turbid, turbid	
1	0926	5.37	4815	6.83	6.45	100.7	120.6	37.68	500	Clear
2	0931	6.31	4804	6.77	3.34	41.2	109.0	38.05	500	Clear
3	0936	6.28	4789	6.78	2.44	29.9	95.3	38.49	500	Clear
4	0946	6.38	4783	6.78	2.00	36.7	29.9	39.15	<del>500</del> 1000	Clear
5	<del>0946</del>	5.92	4794	6.79	1.91	29.1	19.0	39.34	<del>500</del> 1000	clear
6	<del>0951</del>	5.90	4786	6.79	1.92	34.6	11.1	39.50	<del>500</del> 1000	Clear
7	1016	6.02	4799	6.79	2.06	27.7	6.86	39.69	1000	Clear
8	1021	5.84	4803	6.80	2.16	36.2	5.25	39.73	500	Clear
9	1026	5.83	4803	6.79	2.18	36.0	4.92	39.83	500	Clear
10	1031	5.77	4805	6.79	2.14	45.6	4.42	39.88	500	clear

Stabilized: Yes No  
Comments:

Total Volume Removed: 7,000 mL



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2016  
 Sample ID: 70  
 Sampling Personal: Jerry [Signature]

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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?	Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>20.92</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>22.45</u>	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	PSI:	<u>30</u>
Duplicate Sample ID:	<u>—</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>21 Dec 16</u>	Time Purging Began:	<u>1155</u>	<u>am/pm</u>
Well Purged Dry?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>21 Dec 16</u>	Time of Sampling:	<u>1220</u>	<u>am/pm</u>
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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 #
1	1200	6.60	3868	7.11	1.59	-27.0	1.57	22.04	500	Clear
2	1205	6.49	3874	7.08	1.53	15.2	0.80	22.18	500	Clear
3	1210	6.53	3864	7.09	1.35	29.1	0.89	22.22	500	Clear
4	1215	6.51	3862	7.07	1.38	30.0	0.64	22.35	500	Clear
5	1220	6.43	3863	7.07	1.30	42.2	0.66	22.32	500	Clear
6										
7										
8										
9										
10										

Stabilized:  Yes  No

Total Volume Removed: 2500 mL

Comments:



# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2016  
Sample ID: 33  
Sampling Personal: *Jengely*

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	41.80		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	42.37		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	5 sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	No	Recover:	55 sec.
Duplicate Sample?:	Yes	<input checked="" type="radio"/> No	PSI:	30
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	21 Dec 16	Time Purging Began:	1408	am/pm
Well Purged Dry?	Yes	<input checked="" type="radio"/> No	Time Purged Dry:	— am/pm
Sample Date:	21 Dec 16	Time of Sampling:	1453	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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 #
1	1413	7.47	5436	6.75	2.27	-49.4	55.7	42.02	500	Clear
2	1420	7.77	5221	6.66	1.52	-1.7	13.0	42.21	1500	Clear
3	1433	7.64	5180	6.65	1.43	3.0	6.63	42.33	500	Clear
4	1438	7.65	5176	6.64	1.41	6.1	4.07	42.35	500	Clear
5	1443	7.84	5152	6.64	1.41	7.3	2.96	42.37	500	Clear
6	1448	7.87	5145	6.65	1.50	9.8	2.29	42.30	500	Clear
7	1453	7.60	5156	6.64	1.52	13.2	1.85	42.35	500	Clear
8										
9										
10										

Stabilized:  Yes  No  
Comments:

Total Volume Removed: 4500 mL



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU                      Heskett                      CCR Radiochem                      2016				<b>Name of Sampler(s):</b> <i>Jeremy May</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>82-4122</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>W6109</i>	Field Blank (FB) 2	<i>21 Dec 16</i>	NA	W		4				NA	NA	NA	MDU CCR Numerical RadChem	
<del><i>21 Dec 16</i></del>	<del>Dup</del>		NA	W		4				NA	NA	NA		
<i>W6110</i>	101	<i>21 Dec 16</i>	<i>1031</i>	GW		4				<i>5.74</i>	<i>4805</i>	<i>6.79</i>		
<i>W6111</i>	70	<i>21 Dec 16</i>	<i>1220</i>	GW		4				<i>6.43</i>	<i>3863</i>	<i>7.07</i>		
<i>W6112</i>	33	<i>21 Dec 16</i>	<i>1453</i>	GW		4				<i>7.60</i>	<i>5156</i>	<i>6.64</i>		

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	° C
1	<i>Jeremy May</i>	<i>Walk in AZ</i>	<i>21 Dec 16 1703</i>	<i>Angel Simonson</i>		<i>8:00 am 22 Dec 16</i>	<i>R01 TM 562 S.D</i>
2							
3							





CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4123
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6113 through 16-W6116
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Field Blank (FB), 101, 70, 33.

I. RECEIPT

- All samples were received at the laboratory on 22 Dec 2016 at 0800.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 5.0°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

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).
The recoveries for two selenium dissolved matrix spikes/matrix spike duplicates were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4123  
Client: Montana Dakota Utilities  
Location: MDU Heskett  
Project Identification: CCR December 2016  
MVTL Laboratory Identifications: 16-W6113 through 16-W6116  
Page 2 of 2

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 17 Jan 17  
Claudette Carroll - MVTL Bismarck Laboratory Manager



**MINNESOTA VALLEY TESTING LABORATORIES, INC.**

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 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885  
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**Quality Control Report**

Lab IDs: 16-W6113 to 16-W6116

Project: MDU Heskett CCR Groundwater

Work Order: 201682-4123

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	< 0.001	0.1070	107	75-125	0.1070	0.1088	109	1.7	20	-	-	< 0.001
				0.100	16W6129q	< 0.001	0.1164	116	75-125	0.1164	0.1174	117	0.9	20	-	-	< 0.001
				0.100	16W6132q	< 0.001	0.0994	99	75-125	0.0994	0.1136	114	13.3	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.001	0.5586	112	75-125	0.5586	0.5452	109	2.4	20	-	-	< 0.001
				0.1000	16W6126q	< 0.001	0.4106	103	75-125	0.4106	0.4476	112	8.6	20	-	-	< 0.001
				0.1000	16W6132q	< 0.001	0.4598	115	75-125	0.4598	0.4642	116	1.0	20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.002	0.1156	116	75-125	0.1156	0.1132	113	2.1	20	-	-	< 0.002
				0.100	16W6129q	0.0033	0.1273	124	75-125	0.1273	0.1276	124	0.2	20	-	-	< 0.002
				0.100	16W6132q	< 0.002	0.1053	105	75-125	0.1053	0.1200	120	13.0	20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	112	80-120	0.500	16W6027q	< 0.002	0.5784	116	75-125	0.5784	0.5630	113	2.7	20	-	-	< 0.002
				0.1000	16W6126q	< 0.002	0.4088	102	75-125	0.4088	0.4568	114	11.1	20	-	-	< 0.002
				0.1000	16W6132q	< 0.002	0.4748	119	75-125	0.4748	0.4778	119	0.6	20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	0.0095	0.1108	101	75-125	0.1108	0.1218	112	9.5	20	-	-	< 0.002
				0.100	16W6129q	0.0224	0.1412	119	75-125	0.1412	0.1471	125	4.1	20	-	-	< 0.002
				0.100	16W6132q	0.0237	0.1142	90	75-125	0.1142	0.1342	110	16.1	20	-	-	< 0.002
Barium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	0.0070	0.5200	103	75-125	0.5200	0.5306	105	2.0	20	-	-	< 0.002
				0.1000	16W6126q	< 0.002	0.3976	99	75-125	0.3976	0.4676	117	16.2	20	-	-	< 0.002
				0.1000	16W6132q	0.0232	0.4460	106	75-125	0.4460	0.5030	120	12.0	20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.0005	0.1114	111	75-125	0.1114	0.1164	116	4.4	20	-	-	< 0.0005
				0.100	16W6129q	< 0.0005	0.1199	120	75-125	0.1199	0.1255	126	4.6	20	-	-	< 0.0005
				0.100	16W6132q	< 0.0005	0.1051	105	75-125	0.1051	0.1251	125	17.4	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.0005	0.5952	119	75-125	0.5952	0.5908	118	0.7	20	-	-	< 0.0005
				0.1000	16W6126q	< 0.0005	0.4442	111	75-125	0.4442	0.5184	130	15.4	20	-	-	< 0.0005
				0.1000	16W6132q	< 0.0005	0.4942	124	75-125	0.4942	0.5346	134	7.9	20	-	-	< 0.0005
Boron - Dissolved mg/l	0.40	115	80-120	0.300	16-W6107	0.28	0.55	90	75-125	0.55	0.56	93	1.8	20	-	-	< 0.1
				0.600	16-W6122	0.24	0.88	107	75-125	0.88	0.84	100	4.7	20	-	-	< 0.1



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## Quality Control Report

Lab IDs: 16-W6113 to 16-W6116

Project: MDU Heskett CCR Groundwater

Work Order: 201682-4123

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Total mg/l	0.40	110	80-120	0.400	16-W5963	< 0.1	0.44	110	75-125	0.44	0.44	110	0.0	20	-	-	< 0.1
	0.40	115	80-120	0.400	17-D2	1.01	1.40	97	75-125	1.40	1.39	95	0.7	20	-	-	< 0.1
	0.40	115	80-120	0.400	16-W6027	0.39	0.74	88	75-125	0.74	0.73	85	1.4	20	-	-	< 0.1
	0.40	110	80-120	0.400	16-W6126	< 0.1	0.45	112	75-125	0.45	0.45	112	0.0	20	-	-	< 0.1
				0.400	16-W6132	0.33	0.71	95	75-125	0.71	0.69	90	2.9	20	-	-	< 0.1
Cadmium - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	< 0.0005	0.1018	102	75-125	0.1018	0.1012	101	0.6	20	-	-	< 0.0005
				0.100	16W6129q	< 0.0005	0.1070	107	75-125	0.1070	0.1074	107	0.4	20	-	-	
				0.100	16W6132q	< 0.0005	0.0952	95	75-125	0.0952	0.1040	104	8.8	20	-	-	
Cadmium - Total mg/l	0.1000	119	80-120	0.500	16W6027q	< 0.0005	0.5794	116	75-125	0.5794	0.5494	110	5.3	20	-	-	< 0.0005
		110	80-120	0.400	16W6126q	< 0.0005	0.4290	107	75-125	0.4290	0.4758	119	10.3	20	-	-	
		116	80-120	0.400	16W6132q	< 0.0005	0.4688	117	75-125	0.4688	0.4662	117	0.6	20	-	-	
Calcium - Dissolved mg/l	20.0	100	80-120	1000	16W6027q	431	1340	91	75-125	1340	1340	91	0.0	20	-	-	< 1
				100	16D5134q	61.5	154	92	75-125	154	153	92	0.7	20	-	-	
Calcium - Total mg/l	20.0	104	80-120	500	16-W6123	360	840	96	75-125	840	830	94	1.2	20	-	-	< 1
Chloride mg/l	30.0	89	80-120	60.0	16-W6083	210	264	90	80-120	264	258	80	2.3	20	-	-	< 1
	30.0	89	80-120	30.0	16-W6116	10.3	38.0	92	80-120	38.0	37.9	92	0.3	20	-	-	< 1
	30.0	88	80-120												-	-	< 1
	30.0	92	80-120												-	-	< 1
Chromium - Dissolved mg/l	0.0160	102	80-120	0.100	16W6119q	0.0024	0.1051	103	75-125	0.1051	0.1084	106	3.1	20	-	-	< 0.002
				0.100	16W6129q	< 0.002	0.1152	115	75-125	0.1152	0.1150	115	0.2	20	-	-	
				0.100	16W6132q	< 0.002	0.0974	97	75-125	0.0974	0.1102	110	12.3	20	-	-	
Chromium - Total mg/l	0.1000	107	80-120	0.500	16W6027q	< 0.002	0.5284	106	75-125	0.5284	0.5096	102	3.6	20	-	-	< 0.002
		101	80-120	0.400	16W6126q	< 0.002	0.3858	96	75-125	0.3858	0.4254	106	9.8	20	-	-	
		103	80-120	0.400	16W6132q	< 0.002	0.4302	108	75-125	0.4302	0.4292	107	0.2	20	-	-	



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**Quality Control Report**

Lab IDs: 16-W6113 to 16-W6116

Project: MDU Heskett CCR Groundwater

Work Order: 201682-4123

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 - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.002	0.0996	100	75-125	0.0996	0.1026	103	3.0	20	-	-	< 0.002
				0.100	16W6129q	0.0021	0.1114	109	75-125	0.1114	0.1129	111	1.3	20	-	-	
				0.100	16W6132q	< 0.002	0.0959	96	75-125	0.0959	0.1080	108	11.9	20	-	-	
Cobalt - Total mg/l	0.1000 0.1000 0.1000	108	80-120	0.500	16W6027q	< 0.002	0.5316	106	75-125	0.5316	0.5120	102	3.8	20	-	-	< 0.002
		101	80-120	0.400	16W6126q	< 0.002	0.3908	98	75-125	0.3908	0.4402	110	11.9	20	-	-	
		105	80-120	0.400	16W6132q	< 0.002	0.4316	108	75-125	0.4316	0.4326	108	0.2	20	-	-	
Fluoride mg/l	0.50 0.50 0.50	100	90-110	0.500	16-W6106	< 0.1	0.57	114	80-120	0.57	0.59	118	3.4	20	-	-	< 0.1
		102	90-110	0.500	16-W6116	0.22	0.70	96	80-120	0.70	0.71	98	1.4	20	-	-	< 0.1
		106	90-110													-	-
Lead - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	< 0.0005	0.0908	91	75-125	0.0908	0.0992	99	8.8	20	-	-	< 0.0005
				0.100	16W6129q	< 0.0005	0.1026	103	75-125	0.1026	0.1083	108	5.4	20	-	-	
Lead - Total mg/l	0.1000 0.1000 0.1000	104	80-120	0.500	16W6027q	< 0.0005	0.4706	94	75-125	0.4706	0.4902	98	4.1	20	-	-	< 0.0005
		97	80-120	0.400	16W6126q	< 0.0005	0.3828	96	75-125	0.3828	0.4424	111	14.4	20	-	-	
		101	80-120	0.400	16W6132q	< 0.0005	0.3892	97	75-125	0.3892	0.4374	109	11.7	20	-	-	
Lithium - Dissolved mg/l	0.40 0.40	105	80-120	0.200	16-W6113	< 0.1	0.20	100	75-125	0.20	0.19	95	5.1	20	-	-	< 0.1
		102	80-120	0.400	16-W6132	1.09	1.58	122	75-125	1.58	1.46	92	7.9	20	-	-	< 0.1
Lithium - Total mg/l	0.40 0.40	105	80-120	0.400	16-W6027	1.35	1.65	75	75-125	1.65	1.68	83	1.8	20	-	-	< 0.1
		100	80-120	0.400	16-W6126	< 0.1	0.41	102	75-125	0.41	0.40	100	2.5	20	-	-	< 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	1000	16W6027q	1010	1890	88	75-125	1890	1880	87	0.5	20	-	-	< 1
				100	16D5134q	26.4	123	97	75-125	123	123	97	0.0	20	-	-	
Magnesium - Total mg/l	20.0	106	80-120	500	16-W6123	710	1200	98	75-125	1200	1190	96	0.8	20	-	-	< 1
Mercury - Dissolved mg/l	0.0020	95	85-115	0.002	16-W6116	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002



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MEMBER  
ACIL

**Quality Control Report**

Lab IDs: 16-W6113 to 16-W6116

Project: MDU Heskett CCR Groundwater

Work Order: 201682-4123

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
Mercury - Total mg/l	0.0020	95	85-115	0.002	AA66354	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
	0.0020	95	85-115	0.002	16-W6113	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
				0.002	16-W6132	< 0.0002	0.0017	85	70-130	0.0017	0.0017	85	0.0	20	-	-	
Molybdenum - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	< 0.0034	0.1149	112	75-125	0.1149	0.1200	117	4.3	20	-	-	< 0.002
				0.100	16W6129q	< 0.002	0.1246	125	75-125	0.1246	0.1296	130	3.9	20	-	-	
				0.100	16W6132q	< 0.002	0.1023	102	75-125	0.1023	0.1229	123	18.3	20	-	-	
Molybdenum - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.002	0.5704	114	75-125	0.5704	0.5564	111	2.5	20	-	-	< 0.002
	0.1000	98	80-120	0.400	16W6126q	< 0.002	0.4002	100	75-125	0.4002	0.4632	116	14.6	20	-	-	
	0.1000	99	80-120	0.400	16W6132q	< 0.002	0.4614	115	75-125	0.4614	0.5072	127	9.5	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	8.2	8.2	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.3	7.4	-	1.4	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.1	7.3	-	2.8	20	-	-	-
Potassium - Dissolved mg/l	10.0	88	80-120	200	16W6027q	25.7	217	96	75-125	217	220	97	1.4	20	-	-	< 1
				20.0	16D5134q	5.1	24.2	96	75-125	24.2	24.3	96	0.4	20	-	-	
Potassium - Total mg/l	10.0	91	80-120	100	16-W6123	18.6	116	97	75-125	116	114	95	1.7	20	-	-	< 1 < 1
Selenium - Dissolved mg/l	0.0160	107	80-120	0.100	16W6119q	0.1384	0.2768	138	75-125	0.2768	0.2807	142	1.4	20	-	-	< 0.002
				0.100	16W6129q	< 0.002	0.1404	140	75-125	0.1404	0.1450	145	3.2	20	-	-	
				0.100	16W6132q	0.0031	0.1248	122	75-125	0.1248	0.1432	140	13.7	20	-	-	
Selenium - Total mg/l	0.1000	102	80-120	0.500	16-W6027	0.0778	0.6528	115	75-125	0.6528	0.6284	110	3.8	20	-	-	< 0.002
	0.1000	118	80-120	0.400	16-W6126	< 0.002	0.4590	115	75-125	0.4590	0.4608	115	0.4	20	-	-	< 0.002
	0.1000	109	80-120	0.400	16-W6132	< 0.002	0.4656	116	75-125	0.4656	0.5016	125	7.4	20	-	-	
				0.100	16W6128Q	0.0475	0.1640	116	75-125			114			-	-	
Sodium - Dissolved mg/l	20.0	96	80-120	1000	16W6027q	1020	1900	88	75-125	1900	1900	88	0.0	20	-	-	< 1
				100	16D5134q	101	194	93	75-125	194	194	93	0.0	20	-	-	
Sodium - Total mg/l	20.0	97	80-120	500	16-W6123	680	1150	94	75-125	1150	1150	94	0.0	20	-	-	< 1 < 1
Sulfate mg/l	100	103	80-120	100	16-W6113	< 5	98.8	99	80-120	98.8	96.6	97	2.3	20	-	-	< 5

**Quality Control Report**

Lab IDs: 16-W6113 to 16-W6116

Project: MDU Heskett CCR Groundwater

Work Order: 201682-4123

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Thallium - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	< 0.0005	0.0933	93	75-125	0.0933	0.1004	100	7.3	20	-	-	< 0.0005
				0.100	16W6129q	< 0.0005	0.1038	104	75-125	0.1038	0.1102	110	6.0	20	-	-	
Thallium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	< 0.0005	0.4688	94	75-125	0.4688	0.4860	97	3.6	20	-	-	< 0.0005
	0.1000	98	80-120	0.400	16W6126q	< 0.0005	0.3812	95	75-125	0.3812	0.4366	109	13.5	20	-	-	
	0.1000	100	80-120	0.400	16W6132q	< 0.0005	0.3848	96	75-125	0.3848	0.4290	107	10.9	20	-	-	
Total Alkalinity mg/l CaCO3	410	94	90-110	410	16-W6098	1230	1599	90	80-120	1599	1597	90	0.1	20	95	80-120	< 20
	410	96	90-110	410	16-W6101	499	873	91	80-120	873	887	95	1.6	20			< 20
	410	97	90-110	410	16-W6115	420	693	67	80-120	693	714	72	3.0	20			< 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	1700	1720	-	1.2	20	-	-	< 5
	-	-	-	-	-	-	-	-	-	4860	4810	-	1.0	20	-	-	
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	75	66	-	12.8	20	-	-	< 2
	-	-	-	-	-	-	-	-	-	7	8	-	13.3	*	-	-	< 2
	-	-	-	-	-	-	-	-	-	4	1	-	120	*	-	-	

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

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

*C. Guertel*

17 Jan 17



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Page: 1 of 2

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

Report Date: 16 Jan 17  
 Lab Number: 16-W6113  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: Field Blank 2

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Dec 16	KMD
pH	* 6.1	units	N/A	SM4500 H+ B	22 Dec 16 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	22 Dec 16 15:40	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	22 Dec 16 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Dec 16 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	5 Jan 17 15:42	EMS
Chloride	< 1	mg/l	1.0	SM4500-CL-E	4 Jan 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	< 5	mg/l	10	I1750-85	22 Dec 16 13:38	SVS
Calcium - Total	< 1	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Magnesium - Total	< 1	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Sodium - Total	< 1	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Potassium - Total	< 1	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jan 17 12:35	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	5 Jan 17 14:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD

RL = Method Reporting Limit

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

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

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: 16 Jan 17  
 Lab Number: 16-W6113  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTl Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: Field Blank 2

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	< 0.005 <sup>^</sup> mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>cc</sup> 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 16 Jan 17  
 Lab Number: 16-W6114  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16 10:31  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: 101

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Dec 16	KMD
pH	* 7.2	units	N/A	SM4500 H+ B	22 Dec 16 17:00	SVS
Total Suspended Solids	7	mg/l	2	I3765-85	22 Dec 16 15:40	SVS
pH - Field	6.79	units	NA	SM 4500 H+ B	21 Dec 16 10:31	JSM
Temperature - Field	5.74	Degrees C	NA	SM 2550B	21 Dec 16 10:31	JSM
Total Alkalinity	456	mg/l CaCO3	20	SM2320-B	22 Dec 16 17:00	SVS
Conductivity - Field	4805	umhos/cm	1	EPA 120.1	21 Dec 16 10:31	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Dec 16 17:00	SVS
Sulfate	2670	mg/l	5.00	ASTM D516-07	5 Jan 17 15:42	EMS
Chloride	16.2	mg/l	1.0	SM4500-Cl-E	4 Jan 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	4280	mg/l	10	I1750-85	22 Dec 16 13:38	SVS
Calcium - Total	344	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Magnesium - Total	273	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Sodium - Total	535	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Potassium - Total	19.6	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Lithium - Total	0.54	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	0.98	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	354	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	282	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	580	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	17.0	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.57	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	0.95	mg/l	0.10	6010	5 Jan 17 14:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0167	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	0.0026	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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

Report Date: 16 Jan 17  
 Lab Number: 16-W6114  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16 10:31  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: 101

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001 mg/l		0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002 mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	0.0166 mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Beryllium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002 mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002 mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	< 0.002 mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	< 0.005 <sup>^</sup> mg/l		0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005 mg/l		0.0005	6020	9 Jan 17 13:30	KMD

\* Holding time exceeded

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

Approved by:

*Claudette K. Carroll* <sup>CC</sup> 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 16 Jan 17  
 Lab Number: 16-W6115  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16 12:20  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

PO #: 160249

Sample Description: 70

Temp at Receipt: 5.0C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Dec 16	KMD
pH	* 7.6	units	N/A	SM4500 H+ B	22 Dec 16 18:00	SVS
Total Suspended Solids	2	mg/l	2	I3765-85	22 Dec 16 15:40	SVS
pH - Field	7.07	units	NA	SM 4500 H+ B	21 Dec 16 12:20	JSM
Temperature - Field	6.43	Degrees C	NA	SM 2550B	21 Dec 16 12:20	JSM
Total Alkalinity	420	mg/l CaCO3	20	SM2320-B	22 Dec 16 18:00	SVS
Conductivity - Field	3863	umhos/cm	1	EPA 120.1	21 Dec 16 12:20	JSM
Fluoride	0.33	mg/l	0.10	SM4500-F-C	22 Dec 16 18:00	SVS
Sulfate	1810	mg/l	5.00	ASTM D516-07	5 Jan 17 15:42	EMS
Chloride	35.8	mg/l	1.0	SM4500-CL-E	4 Jan 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	3160	mg/l	10	I1750-85	22 Dec 16 13:38	SVS
Calcium - Total	346	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Magnesium - Total	138	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Sodium - Total	454	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Potassium - Total	11.5	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Lithium - Total	0.28	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	0.36	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	358	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	143	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	482	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	8.2	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.28	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	0.29	mg/l	0.10	6010	5 Jan 17 15:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0115	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	0.0044	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.0102	mg/l	0.0020	6020	13 Jan 17 11:42	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

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

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: 16 Jan 17  
Lab Number: 16-W6115  
Work Order #: 82-4123  
Account #: 002800  
Date Sampled: 21 Dec 16 12:20  
Date Received: 22 Dec 16 8:00  
Sampled By: MVTl Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: 70

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	0.0103	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	0.0035	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	0.0123	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	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> 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 16 Jan 17  
 Lab Number: 16-W6116  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16 14:53  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

PO #: 160249

Sample Description: 33

Temp at Receipt: 5.0C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Dec 16	KMD
pH	* 7.1	units	N/A	SM4500 H+ B	22 Dec 16 18:00	SVS
Total Suspended Solids	4	mg/l	2	I3765-85	22 Dec 16 15:40	SVS
pH - Field	6.64	units	NA	SM 4500 H+ B	21 Dec 16 14:53	JSM
Temperature - Field	7.60	Degrees C	NA	SM 2550B	21 Dec 16 14:53	JSM
Total Alkalinity	467	mg/l CaCO3	20	SM2320-B	22 Dec 16 18:00	SVS
Conductivity - Field	5156	umhos/cm	1	EPA 120.1	21 Dec 16 14:53	JSM
Fluoride	0.22	mg/l	0.10	SM4500-F-C	22 Dec 16 18:00	SVS
Sulfate	3080	mg/l	5.00	ASTM D516-07	5 Jan 17 15:42	EMS
Chloride	10.3	mg/l	1.0	SM4500-Cl-E	4 Jan 17 15:25	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Total Dissolved Solids	4860	mg/l	10	I1750-85	22 Dec 16 13:38	SVS
Calcium - Total	446	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Magnesium - Total	434	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Sodium - Total	398	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Potassium - Total	20.7	mg/l	1.0	6010	4 Jan 17 16:49	KMD
Lithium - Total	0.70	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	0.34	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	454	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	442	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	426	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	17.6	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.66	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	0.23	mg/l	0.10	6010	5 Jan 17 15:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0150	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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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: 16 Jan 17  
 Lab Number: 16-W6116  
 Work Order #: 82-4123  
 Account #: 002800  
 Date Sampled: 21 Dec 16 14:53  
 Date Received: 22 Dec 16 8:00  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Groundwater

Sample Description: 33

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 5.0C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	0.0141 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	< 0.005 mg/l ^	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 13:30	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> 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to concentration of other analytes  
 ! = 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: 2016  
Sample ID: 101  
Sampling Personal: *length*

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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:	37.02		ft
Total Well Depth:	—		
Well Volume:	— liters		
Depth to Top of Pump:	—		
Water Level After Sample:	41.85		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder	Control Settings
Sampling Method:	Bladder	Purge: 8 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Recover: 52 sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI: 30
Duplicate Sample ID:	—	Pumping Rate: 100 mL/min
Purge Date:	21 Dec 16	Time Purging Began: 0921 <u>am</u> /pm
Well Purged Dry?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	21 Dec 16	Time of Sampling: 1031 <u>am</u> /pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric	

### 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. clear, slightly turbid, turbid	
SEQ #	Time									
1	0926	5.37	4815	6.83	6.45	100.7	120.6	37.68	500	Clear
2	0931	6.31	4809	6.77	3.34	41.2	109.0	38.05	500	Clear
3	0936	6.28	4789	6.78	2.44	29.9	95.3	38.49	500	Clear
4	0946	6.38	4783	6.78	2.00	36.7	29.9	39.15	<del>500</del> 1000	Clear
5	<del>0946</del> 0946	5.92	4794	6.79	1.91	29.1	19.0	39.34	<del>500</del> 1000	Clear
6	<del>1006</del> 0951	5.90	4786	6.79	1.92	34.6	11.1	39.50	<del>500</del> 1000	Clear
7	1016	6.02	4799	6.79	2.06	27.7	6.86	39.69	1000	Clear
8	1021	5.84	4803	6.80	2.16	36.2	5.25	39.70	500	Clear
9	1026	5.83	4803	6.79	2.18	36.0	4.92	39.83	500	Clear
10	1031	5.79	4805	6.79	2.14	45.6	4.42	39.88	500	Clear

Stabilized: Yes  No

Total Volume Removed: 7,000 mL

Comments:





# Field Datasheet

## Groundwater Assessment

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

Company: MDU Heskett  
Event: 2016  
Sample ID: 70  
Sampling Personal: Jeremy [Signature]

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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?	Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>20.92</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>22.45</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>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	PSI:	<u>30</u>
Duplicate Sample ID:	<u>—</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>21 Dec 16</u>	Time Purging Began:	<u>1155</u>	<u>am/pm</u>
Well Purged Dry?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>21 Dec 16</u>	Time of Sampling:	<u>1220</u>	<u>am/pm</u>
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### Field Measurements

SEQ #	Time	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.
1	1200		6.60	3838	7.11	1.59	-27.0	1.57	22.04	500	Clear
2	1205		6.49	3874	7.08	1.53	15.2	0.80	22.18	500	Clear
3	1210		6.53	3864	7.09	1.35	29.1	0.89	22.22	500	Clear
4	1215		6.51	3862	7.07	1.38	30.0	0.64	22.35	500	Clear
5	1220		6.43	3863	7.07	1.30	42.2	0.66	22.32	500	Clear
6											
7											
8											
9											
10											

Stabilized: (Yes) No

Total Volume Removed: 2500 mL

Comments:



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2016  
 Sample ID: 33  
 Sampling Personal: Jenglyh

Weather Conditions: Temp: 35 °F Wind: W @ 20-25 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?	Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:		
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>41.80</u>	ft
Total Well Depth:	<u>—</u>	ft
Well Volume:	<u>—</u>	liters
Depth to Top of Pump:	<u>—</u>	ft
Water Level After Sample:	<u>42.37</u>	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	PSI:	<u>30</u>
Duplicate Sample ID:	<u>—</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>21 Dec 16</u>	Time Purging Began:	<u>1408</u>	am/pm
Well Purged Dry?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>21 Dec 16</u>	Time of Sampling:	<u>1453</u>	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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 #
1	<u>1413</u>	<u>7.47</u>	<u>5436</u>	<u>6.75</u>	<u>2.27</u>	<u>-49.4</u>	<u>55.7</u>	<u>42.02</u>	<u>500</u>	<u>Clear</u>
2	<u>1428</u>	<u>7.77</u>	<u>5221</u>	<u>6.66</u>	<u>1.52</u>	<u>-1.7</u>	<u>13.0</u>	<u>42.21</u>	<u>1500</u>	<u>Clear</u>
3	<u>1433</u>	<u>7.64</u>	<u>5180</u>	<u>6.65</u>	<u>1.43</u>	<u>3.0</u>	<u>6.63</u>	<u>42.33</u>	<u>500</u>	<u>Clear</u>
4	<u>1438</u>	<u>7.65</u>	<u>5176</u>	<u>6.64</u>	<u>1.41</u>	<u>6.1</u>	<u>4.07</u>	<u>42.35</u>	<u>500</u>	<u>Clear</u>
5	<u>1443</u>	<u>7.84</u>	<u>5152</u>	<u>6.64</u>	<u>1.41</u>	<u>7.3</u>	<u>2.96</u>	<u>42.37</u>	<u>500</u>	<u>Clear</u>
6	<u>1448</u>	<u>7.87</u>	<u>5145</u>	<u>6.65</u>	<u>1.50</u>	<u>9.8</u>	<u>2.29</u>	<u>42.30</u>	<u>500</u>	<u>Clear</u>
7	<u>1453</u>	<u>7.60</u>	<u>5156</u>	<u>6.64</u>	<u>1.52</u>	<u>13.2</u>	<u>1.85</u>	<u>42.35</u>	<u>500</u>	<u>Clear</u>
8										
9										
10										

Stabilized:  Yes  No  
 Comments:

Total Volume Removed: 4500 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 2016				<b>Name of Sampler(s):</b> <i>Jeremy Phyllis</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>82-4123</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>W6113</i>	Field Blank (FB) Z	<i>21 Dec 16</i>	NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.	
<i>21 Dec 16</i>	Dup		NA	W		X	X	X	NA	NA	NA		
<i>W6114</i>	101	<i>21 Dec 16</i>	<i>1031</i>	GW		X	X	X	<i>5.74</i>	<i>4805</i>	<i>6.79</i>		
<i>W6115</i>	70	<i>21 Dec 16</i>	<i>1220</i>	GW		X	X	X	<i>6.43</i>	<i>3863</i>	<i>7.07</i>		
<i>W6116</i>	33	<i>21 Dec 16</i>	<i>1453</i>	GW		X	X	X	<i>7.60</i>	<i>5156</i>	<i>6.64</i>		

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>[Signature]</i>	<i>W6114 #2</i>	<i>21 Dec 16 1703</i>	<i>[Signature]</i>		<i>22 Dec 16 800 am</i>	<i>201 TM 562 5.0</i>
2							
3							



CASE NARRATIVE – AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG: 201682-4137
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6126 through 16-W6132
Page 1 of 2

Table with 2 columns: MDU Sample Identification, MVTL Laboratory #. Rows include Field Blank (FB) 3, Dup 2, 2-90, 102, 3-90, 80R, 105.

I. RECEIPT

- All samples were received at the laboratory on 22 Dec 2016 at 1612.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 6.2°C.
All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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



CASE NARRATIVE – AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG: 201682-4137
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Page 2 of 2

- o For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
o The recoveries for two selenium dissolved matrix spikes/matrix spike duplicates were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
o Recovery for one selenium dissolved matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
o Recovery for one molybdenum total matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
o Recovery for one molybdenum dissolved matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
o Recovery for one beryllium dissolved matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
o The recoveries for two beryllium total matrix spikes duplicates were outside the acceptable limits. Recoveries of the matrix spikes were acceptable. RPD for the recoveries was within limits. Data was accepted based on acceptable recovery of the LCS. No further action was taken.

V. REPORTING

- Per email dated 9 Feb 2017 from Terri Olson at Barr, the data package was amended to remove extraneous QC samples from the QC report.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll DATE: 22 Feb 17
Claudette Carroll - MVTL Bismarck Laboratory Manager



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## Quality Control Report – Amended 22 Feb 2017

Lab IDs: 16-W6126 to 16-W6132

Project: MDU Heskett CCR GW

Work Order: 201682-4137

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	< 0.001	0.1070	107	75-125	0.1070	0.1088	109	1.7	20	-	-	< 0.001
				0.100	16W6129q	< 0.001	0.1164	116	75-125	0.1164	0.1174	117	0.9	20	-	-	
				0.100	16W6132q	< 0.001	0.0994	99	75-125	0.0994	0.1136	114	13.3	20	-	-	
Antimony - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.001	0.5586	112	75-125	0.5586	0.5452	109	2.4	20	-	-	< 0.001
				0.1000	16W6126q	< 0.001	0.4106	103	75-125	0.4106	0.4476	112	8.6	20	-	-	
				0.1000	16W6132q	< 0.001	0.4598	115	75-125	0.4598	0.4642	116	1.0	20	-	-	
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.002	0.1156	116	75-125	0.1156	0.1132	113	2.1	20	-	-	< 0.002
				0.100	16W6129q	0.0033	0.1273	124	75-125	0.1273	0.1276	124	0.2	20	-	-	
				0.100	16W6132q	< 0.002	0.1053	105	75-125	0.1053	0.1200	120	13.0	20	-	-	
Arsenic - Total mg/l	0.1000	112	80-120	0.500	16W6027q	< 0.002	0.5784	116	75-125	0.5784	0.5630	113	2.7	20	-	-	< 0.002
				0.1000	16W6126q	< 0.002	0.4088	102	75-125	0.4088	0.4568	114	11.1	20	-	-	
				0.1000	16W6132q	< 0.002	0.4748	119	75-125	0.4748	0.4778	119	0.6	20	-	-	
Barium - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	0.0095	0.1108	101	75-125	0.1108	0.1218	112	9.5	20	-	-	< 0.002
				0.100	16W6129q	0.0224	0.1412	119	75-125	0.1412	0.1471	125	4.1	20	-	-	
				0.100	16W6132q	0.0237	0.1142	90	75-125	0.1142	0.1342	110	16.1	20	-	-	
Barium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	0.0070	0.5200	103	75-125	0.5200	0.5306	105	2.0	20	-	-	< 0.002
				0.1000	16W6126q	< 0.002	0.3976	99	75-125	0.3976	0.4676	117	16.2	20	-	-	
				0.1000	16W6132q	0.0232	0.4460	106	75-125	0.4460	0.5030	120	12.0	20	-	-	
				0.1000	98	80-120	0.100										
Beryllium - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.0005	0.1114	111	75-125	0.1114	0.1164	116	4.4	20	-	-	< 0.0005
				0.100	16W6129q	< 0.0005	0.1199	120	75-125	0.1199	0.1255	126	4.6	20	-	-	
				0.100	16W6132q	< 0.0005	0.1051	105	75-125	0.1051	0.1251	125	17.4	20	-	-	
Beryllium - Total mg/l	0.1000	115	80-120	0.500	16W6027q	< 0.0005	0.5952	119	75-125	0.5952	0.5908	118	0.7	20	-	-	< 0.0005
				0.1000	16W6126q	< 0.0005	0.4442	111	75-125	0.4442	0.5184	130	15.4	20	-	-	
				0.1000	16W6132q	< 0.0005	0.4942	124	75-125	0.4942	0.5346	134	7.9	20	-	-	
Boron - Dissolved mg/l	0.40	115	80-120	0.600	16-W6132	0.29	0.98	115	75-125	0.98	0.85	93	14.2	20	-	-	< 0.1



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## Quality Control Report

Lab IDs: 16-W6126 to 16-W6132

Project: MDU Heskett CCR GW

Work Order: 201682-4137

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank	
Boron - Total mg/l	0.40	115	80-120	0.400	16-W6126	< 0.1	0.45	112	75-125	0.45	0.45	112	0.0	20	-	-	< 0.1	
	0.40	110	80-120	0.400	16-W6132	0.33	0.71	95	75-125	0.71	0.69	90	2.9	20	-	-	< 0.1	
Cadmium - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	< 0.0005	0.1018	102	75-125	0.1018	0.1012	101	0.6	20	-	-	< 0.0005	
				0.100	16W6129q	< 0.0005	0.1070	107	75-125	0.1070	0.1074	107	0.4	20	-	-	< 0.0005	
				0.100	16W6132q	< 0.0005	0.0952	95	75-125	0.0952	0.1040	104	8.8	20	-	-	< 0.0005	
Cadmium - Total mg/l	0.1000	119	80-120	0.500	16W6027q	< 0.0005	0.5794	116	75-125	0.5794	0.5494	110	5.3	20	-	-	< 0.0005	
	0.1000	110	80-120	0.400	16W6126q	< 0.0005	0.4290	107	75-125	0.4290	0.4758	119	10.3	20	-	-	< 0.0005	
	0.1000	116	80-120	0.400	16W6132q	< 0.0005	0.4688	117	75-125	0.4688	0.4662	117	0.6	20	-	-	< 0.0005	
Calcium - Dissolved mg/l	20.0	102	80-120	500	16-W6132	382	840	92	75-125	840	865	97	2.9	20	-	-	< 1	
Calcium - Total mg/l	20.0	102	80-120	1000	16-D5109	696	1650	95	75-125	1650	1680	98	1.8	20	-	-	< 1	
	20.0	106	80-120	5000	16-M4159	2000	7100	102	75-125	7100	7400	108	4.1	20	-	-	< 1	
	20.0	105	80-120	500	16-M4161	730	1290	112	75-125	107	105	101	1.9	20	-	-	< 1	
	20.0	106	80-120	1000	17-M3	1900	2710	81	75-125							-	-	< 1
				100	17-M8	12.6	114	101	75-125							-	-	< 1
				500	17-M9	194	690	99	75-125							-	-	< 1
				100	16-W6133	4.4	107	103	75-125							-	-	< 1
Chloride mg/l	30.0	88	80-120	30.0	16-W6116	10.3	38.0	92	80-120	38.0	37.9	92	0.3	20	-	-	< 1	
	30.0	92	80-120	30.0	17-D28	37.0	67.0	100	80-120	67.0	68.5	105	2.2	20	-	-	< 1	
	30.0	90	80-120												-	-	< 1	
	30.0	89	80-120												-	-	< 1	
Chromium - Dissolved mg/l	0.0160	102	80-120	0.100	16W6119q	0.0024	0.1051	103	75-125	0.1051	0.1084	106	3.1	20	-	-	< 0.002	
				0.100	16W6129q	< 0.002	0.1152	115	75-125	0.1152	0.1150	115	0.2	20	-	-	< 0.002	
				0.100	16W6132q	< 0.002	0.0974	97	75-125	0.0974	0.1102	110	12.3	20	-	-	< 0.002	
Chromium - Total mg/l	0.1000	107	80-120	0.500	16W6027q	< 0.002	0.5284	106	75-125	0.5284	0.5096	102	3.6	20	-	-	< 0.002	
	0.1000	101	80-120	0.400	16W6126q	< 0.002	0.3858	96	75-125	0.3858	0.4254	106	9.8	20	-	-	< 0.002	
	0.1000	103	80-120	0.400	16W6132q	< 0.002	0.4302	108	75-125	0.4302	0.4292	107	0.2	20	-	-	< 0.002	



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## Quality Control Report

Lab IDs: 16-W6126 to 16-W6132

Project: MDU Heskett CCR GW

Work Order: 201682-4137

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 - Dissolved mg/l	0.0160	101	80-120	0.100	16W6119q	< 0.002	0.0996	100	75-125	0.0996	0.1026	103	3.0	20	-	-	< 0.002
				0.100	16W6129q	0.0021	0.1114	109	75-125	0.1114	0.1129	111	1.3	20	-	-	
				0.100	16W6132q	< 0.002	0.0959	96	75-125	0.0959	0.1080	108	11.9	20	-	-	
Cobalt - Total mg/l	0.1000	108	80-120	0.500	16W6027q	< 0.002	0.5316	106	75-125	0.5316	0.5120	102	3.8	20	-	-	< 0.002
	0.1000	101	80-120	0.400	16W6126q	< 0.002	0.3908	98	75-125	0.3908	0.4402	110	11.9	20	-	-	
	0.1000	105	80-120	0.400	16W6132q	< 0.002	0.4316	108	75-125	0.4316	0.4326	108	0.2	20	-	-	
Fluoride mg/l	0.50	110	90-110	0.500	16-W6125	< 0.1	0.55	110	80-120	0.55	0.57	114	3.6	20	-	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.0160	106	80-120	0.100	16W6119q	< 0.0005	0.0908	91	75-125	0.0908	0.0992	99	8.8	20	-	-	< 0.0005
	0.1000	98	80-120	0.100	16W6129q	< 0.0005	0.1026	103	75-125	0.1026	0.1083	108	5.4	20	-	-	< 0.0005
				0.100	17-W63	< 0.001	0.0893	89	75-125	0.0893	0.0904	90	1.2	20	-	-	
Lead - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.0005	0.4706	94	75-125	0.4706	0.4902	98	4.1	20	-	-	< 0.0005
	0.1000	97	80-120	0.400	16W6126q	< 0.0005	0.3828	96	75-125	0.3828	0.4424	111	14.4	20	-	-	
	0.1000	101	80-120	0.400	16W6132q	< 0.0005	0.3892	97	75-125	0.3892	0.4374	109	11.7	20	-	-	
Lithium - Dissolved mg/l	0.40	102	80-120	0.400	16-W6132	1.09	1.58	122	75-125	1.58	1.46	92	7.9	20	-	-	< 0.1 < 0.1
Lithium - Total mg/l	0.40	105	80-120	0.400	16-W6027	1.35	1.65	75	75-125	1.65	1.68	83	1.8	20	-	-	< 0.1
	0.40	100	80-120	0.400	16-W6126	< 0.1	0.41	102	75-125	0.41	0.40	100	2.5	20	-	-	< 0.1
	0.40	105	80-120	0.400	16-W6132	1.00	1.42	105	75-125	1.42	1.40	100	1.4	20	-	-	< 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	500	16-W6132	755	1200	89	75-125	1200	1240	97	3.3	20	-	-	< 1 < 1





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## Quality Control Report

Lab IDs: 16-W6126 to 16-W6132

Project: MDU Heskett CCR GW

Work Order: 201682-4137

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank	
Magnesium - Total mg/l	20.0	105	80-120	1000	16-D5109	1230	2170	94	75-125	2170	2190	96	0.9	20	-	-	< 1	
	20.0	108	80-120	5000	16-M4159	66.0	5300	105	75-125	5300	5550	110	4.6	20	-	-	< 1	
	20.0	106	80-120	500	16-M4161	< 5	540	108	75-125	106	104	102	1.9	20	-	-	< 1	
	20.0	108	80-120	1000	17-M3	< 10	987	99	75-125						-	-	< 1	
					100	17-M8	16.9	119	102	75-125						-	-	< 1
					500	17-M9	< 5	515	103	75-125						-	-	< 1
				100	16-W6133	2.3	106	104	75-125						-	-	< 1	
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	16-W6127	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002	
				0.002	16-W6132	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002	
Mercury - Total mg/l	0.0020	95	85-115	0.002	16-W6132	< 0.0002	0.0017	85	70-130	0.0017	0.0017	85	0.0	20	-	-	< 0.0002	
Molybdenum - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	0.0034	0.1149	112	75-125	0.1149	0.1200	117	4.3	20	-	-	< 0.002	
				0.100	16W6129q	< 0.002	0.1246	125	75-125	0.1246	0.1296	130	3.9	20	-	-	< 0.002	
				0.100	16W6132q	< 0.002	0.1023	102	75-125	0.1023	0.1229	123	18.3	20	-	-	< 0.002	
Molybdenum - Total mg/l	0.1000	104	80-120	0.500	16W6027q	< 0.002	0.5704	114	75-125	0.5704	0.5564	111	2.5	20	-	-	< 0.002	
	0.1000	98	80-120	0.400	16W6126q	< 0.002	0.4002	100	75-125	0.4002	0.4632	116	14.6	20	-	-	< 0.002	
	0.1000	99	80-120	0.400	16W6132q	< 0.002	0.4614	115	75-125	0.4614	0.5072	127	9.5	20	-	-	< 0.002	
pH units	-	-	-	-	-	-	-	-	-	12.3	12.3	-	0.0	20	-	-	-	
	-	-	-	-	-	-	-	-	-	8.3	8.3	-	0.0	20	-	-	-	
Potassium - Dissolved mg/l	10.0	88	80-120	100	16-W6132	19.6	115	95	75-125	115	119	99	3.4	20	-	-	< 1	
Potassium - Total mg/l	10.0	95	80-120	200	16-D5109	172	364	96	75-125	364	368	98	1.1	20	-	-	< 1	
	10.0	93	80-120	1000	16-M4159	442	1430	99	75-125	1430	1500	106	4.8	20	-	-	< 1	
	10.0	91	80-120	100	16-M4161	23.8	129	105	75-125	26.3	26.0	108	1.1	20	-	-	< 1	
	10.0	94	80-120	200	17-M3	456	645	94	75-125						-	-	< 1	
				20.0	17-M8	7.4	26.6	96	75-125						-	-	< 1	
				100	17-M9	42.1	142	100	75-125						-	-	< 1	
				20.0	16-W6133	4.5	26.3	109	75-125						-	-	< 1	



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ACIL

## Quality Control Report

Lab IDs: 16-W6126 to 16-W6132

Project: MDU Heskett CCR GW

Work Order: 201682-4137

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank		
Selenium - Dissolved mg/l	0.0160	107	80-120	0.100	16W6119q	0.1384	0.2768	138	75-125	0.2768	0.2807	142	1.4	20	-	-	< 0.002		
				0.100	16W6129q	< 0.002	0.1404	140	75-125	0.1404	0.1450	145	3.2	20	-	-	-	-	< 0.002
				0.100	16W6132q	0.0031	0.1248	122	75-125	0.1248	0.1432	140	13.7	20	-	-	-	-	< 0.002
Selenium - Total mg/l	0.1000	118	80-120	0.400	16-W6126	< 0.002	0.4590	115	75-125	0.4590	0.4608	115	0.4	20	-	-	< 0.002		
				0.400	16-W6132	< 0.002	0.4656	116	75-125	0.4656	0.5016	125	7.4	20	-	-	-	-	< 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	500	16-W6132	710	1160	90	75-125	1160	1190	96	2.6	20	-	-	< 1		
Sodium - Total mg/l	20.0	98	80-120	1000	16-D5109	1760	2610	85	75-125	2610	2650	89	1.5	20	-	-	< 1		
		99	80-120	5000	16-M4159	4550	9450	98	75-125	9450	9900	107	4.7	20	-	-	< 1		
		98	80-120	500	16-M4161	474	1030	111	75-125						-	-	< 1		
		101	80-120	1000	17-M3	3620	4380	76	75-125							-	-	< 1	
				80-120	100	17-M8	65.6	162	96	75-125						-	-	< 1	
				80-120	500	17-M9	1140	1610	94	75-125						-	-	< 1	
Sulfate mg/l	100	101	80-120	100	16-W6125	< 5	99.0	99	80-120	99.0	101	101	2.0	20	-	-	< 5		
		101	80-120	4000	16-W6131	3080	6610	88	80-120	6610	6540	86	1.1	20	-	-	< 5		
		83	80-120	500	17-W61	83.6	493	82	80-120	493	494	82	0.2	20	-	-	< 5		
		96	80-120												-	-	< 5		
Thallium - Dissolved mg/l	0.0160	104	80-120	0.100	16W6119q	< 0.0005	0.0933	93	75-125	0.0933	0.1004	100	7.3	20	-	-	< 0.0005		
		99	80-120	0.100	16W6129q	< 0.0005	0.1038	104	75-125	0.1038	0.1102	110	6.0	20	-	-	< 0.0005		
Thallium - Total mg/l	0.1000	105	80-120	0.500	16W6027q	< 0.0005	0.4688	94	75-125	0.4688	0.4860	97	3.6	20	-	-	< 0.0005		
		98	80-120	0.400	16W6126q	< 0.0005	0.3812	95	75-125	0.3812	0.4366	109	13.5	20	-	-	< 0.0005		
		100	80-120	0.400	16W6132q	< 0.0005	0.3848	96	75-125	0.3848	0.4290	107	10.9	20	-	-	< 0.0005		
Total Alkalinity mg/l CaCO3	410	96	90-110	410	16-W6132	448	826	92	80-120	826	830	93	0.5	20	96	80-120	< 20		
				410	16-W6134	1170	1541	90	80-120	1541	1551	93	0.6	20			< 20		
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	7200	7080	-	1.7	20	-	-	< 5		
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	176	172	-	2.3	20	-	-	< 1		

Approved by: C. Cantor  
22 Feb 17



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Page: 1 of 2

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

Report Date: 16 Jan 17  
Lab Number: 16-W6126  
Work Order #: 82-4137  
Account #: 002800  
Date Sampled: 22 Dec 16  
Date Received: 22 Dec 16 16:12  
Sampled By: MVT Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: Field Blank 3

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Dec 16	SVS
pH	* 6.2	units	N/A	SM4500 H+ B	23 Dec 16 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	23 Dec 16 16:18	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	23 Dec 16 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	23 Dec 16 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	5 Jan 17 15:59	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	4 Jan 17 15:25	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 12:54	EV
Total Dissolved Solids	< 5	mg/l	10	I1750-85	23 Dec 16 14:40	SVS
Calcium - Total	< 1	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Magnesium - Total	< 1	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Sodium - Total	< 1	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Potassium - Total	< 1	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jan 17 12:48	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Potassium - Dissolved	< 1	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	5 Jan 17 16:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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

Report Date: 16 Jan 17
Lab Number: 16-W6126
Work Order #:82-4137
Account #: 002800
Date Sampled: 22 Dec 16
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: Field Blank 3

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium.

\* Holding time exceeded

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

Approved by: Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 16 Jan 17
Lab Number: 16-W6127
Work Order #: 82-4137
Account #: 002800
Date Sampled: 22 Dec 16
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: Dup 2

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

Table with columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include various chemical tests like pH, Total Suspended Solids, Total Alkalinity, Fluoride, Sulfate, Chloride, Mercury, etc.

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: 16 Jan 17  
Lab Number: 16-W6127  
Work Order #: 82-4137  
Account #: 002800  
Date Sampled: 22 Dec 16  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

Sample Description: Dup 2

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	0.1657	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	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> 17 Jan 17  
Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix                      # = Due to 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: 16 Jan 17
Lab Number: 16-W6128
Work Order #: 82-4137
Account #: 002800
Date Sampled: 22 Dec 16 12:22
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

Sample Description: 2-90

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include various chemical and physical parameters like pH, Total Suspended Solids, Temperature, Alkalinity, Conductivity, Fluoride, Sulfate, Chloride, Mercury, Calcium, Magnesium, Sodium, Potassium, Lithium, Boron, etc.

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: 16 Jan 17
Lab Number: 16-W6128
Work Order #: 82-4137
Account #: 002800
Date Sampled: 22 Dec 16 12:22
Date Received: 22 Dec 16 16:12
Sampled By: MVT L Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 2-90

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

Table with 6 columns: As Received Result, Method, Method Reference, Date Analyzed, Analyst. Rows include Antimony - Dissolved, Arsenic - Dissolved, Barium - Dissolved, Beryllium - Dissolved, Cadmium - Dissolved, Chromium - Dissolved, Cobalt - Dissolved, Lead - Dissolved, Molybdenum - Dissolved, Selenium - Dissolved, and Thallium - Dissolved.

\* Holding time exceeded

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

Approved by:

Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to 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: 16 Jan 17  
 Lab Number: 16-W6129  
 Work Order #: 82-4137  
 Account #: 002800  
 Date Sampled: 22 Dec 16 10:25  
 Date Received: 22 Dec 16 16:12  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 102

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Dec 16	SVS
pH	* 7.0	units	N/A	SM4500 H+ B	23 Dec 16 17:00	SVS
Total Suspended Solids	20	mg/l	2	I3765-85	23 Dec 16 16:18	SVS
pH - Field	6.93	units	NA	SM 4500 H+ B	22 Dec 16 10:25	JSM
Temperature - Field	4.17	Degrees C	NA	SM 2550B	22 Dec 16 10:25	JSM
Total Alkalinity	545	mg/l CaCO3	20	SM2320-B	23 Dec 16 17:00	SVS
Conductivity - Field	9170	umhos/cm	1	EPA 120.1	22 Dec 16 10:25	JSM
Fluoride	0.18	mg/l	0.10	SM4500-F-C	23 Dec 16 17:00	SVS
Sulfate	5410	mg/l	5.00	ASTM D516-07	5 Jan 17 15:59	EMS
Chloride	8.5	mg/l	1.0	SM4500-Cl-E	12 Jan 17 10:43	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 12:54	EV
Total Dissolved Solids	8470	mg/l	10	I1750-85	23 Dec 16 14:40	SVS
Calcium - Total	440	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Magnesium - Total	381	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Sodium - Total	1500	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Potassium - Total	20.2	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Lithium - Total	0.84	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Total	1.30	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	421	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Magnesium - Dissolved	368	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Sodium - Dissolved	1410	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Potassium - Dissolved	19.2	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Lithium - Dissolved	0.82	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	1.18	mg/l	0.10	6010	5 Jan 17 16:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	0.0042	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0244	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	0.0024	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

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: 16 Jan 17  
 Lab Number: 16-W6129  
 Work Order #: 82-4137  
 Account #: 002800  
 Date Sampled: 22 Dec 16 10:25  
 Date Received: 22 Dec 16 16:12  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

Sample Description: 102

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	0.0033	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	0.0224	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	0.0021	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD

\* Holding time exceeded

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

Approved by:

*lc*  
 Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
 @ = Due to sample matrix # = Due to 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 2

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

Report Date: 16 Jan 17  
 Lab Number: 16-W6130  
 Work Order #: 82-4137  
 Account #: 002800  
 Date Sampled: 22 Dec 16 13:05  
 Date Received: 22 Dec 16 16:12  
 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 3-90

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Dec 16	SVS
pH	* 7.1	units	N/A	SM4500 H+ B	23 Dec 16 17:00	SVS
Total Suspended Solids	2	mg/l	2	I3765-85	23 Dec 16 16:18	SVS
pH - Field	6.76	units	NA	SM 4500 H+ B	22 Dec 16 13:05	DJN
Temperature - Field	7.25	Degrees C	NA	SM 2550B	22 Dec 16 13:05	DJN
Total Alkalinity	533	mg/l CaCO3	20	SM2320-B	23 Dec 16 17:00	SVS
Conductivity - Field	5186	umhos/cm	1	EPA 120.1	22 Dec 16 13:05	DJN
Fluoride	0.15	mg/l	0.10	SM4500-F-C	23 Dec 16 17:00	SVS
Sulfate	2790	mg/l	5.00	ASTM D516-07	5 Jan 17 15:59	EMS
Chloride	37.6	mg/l	1.0	SM4500-Cl-E	12 Jan 17 10:43	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 12:54	EV
Total Dissolved Solids	4810	mg/l	10	I1750-85	23 Dec 16 14:40	SVS
Calcium - Total	565	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Magnesium - Total	260	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Sodium - Total	575	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Potassium - Total	13.8	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Lithium - Total	0.24	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	535	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Magnesium - Dissolved	252	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Sodium - Dissolved	555	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Potassium - Dissolved	13.4	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Lithium - Dissolved	0.23	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	< 0.5 @	mg/l	0.10	6010	5 Jan 17 16:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0142	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	0.0030	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.1730	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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www.mvtl.com



Page: 2 of 2

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

Report Date: 16 Jan 17  
Lab Number: 16-W6130  
Work Order #: 82-4137  
Account #: 002800  
Date Sampled: 22 Dec 16 13:05  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 3-90

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 13:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Barium - Dissolved	0.0139	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD
Molybdenum - Dissolved	0.0022	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Selenium - Dissolved	0.1670	mg/l	0.0020	6020	9 Jan 17 13:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	9 Jan 17 13:30	KMD

\* Holding time exceeded

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

Approved by: Claudette K. Carroll <sup>lc</sup> 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  
@ = Due to sample matrix # = Due to 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: 16 Jan 17
Lab Number: 16-W6131
Work Order #: 82-4137
Account #: 002800
Date Sampled: 22 Dec 16 11:12
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

Sample Description: 80R

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium.

\* Holding time exceeded

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

Approved by:

Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

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

Report Date: 16 Jan 17  
Lab Number: 16-W6132  
Work Order #: 82-4137  
Account #: 002800  
Date Sampled: 22 Dec 16 9:26  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 105

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Dec 16	SVS
pH	* 7.0	units	N/A	SM4500 H+ B	23 Dec 16 17:00	SVS
Total Suspended Solids	13	mg/l	2	I3765-85	23 Dec 16 16:18	SVS
pH - Field	6.61	units	NA	SM 4500 H+ B	22 Dec 16 9:26	DJN
Temperature - Field	7.66	Degrees C	NA	SM 2550B	22 Dec 16 9:26	DJN
Total Alkalinity	448	mg/l CaCO3	20	SM2320-B	23 Dec 16 17:00	SVS
Conductivity - Field	7195	umhos/cm	1	EPA 120.1	22 Dec 16 9:26	DJN
Fluoride	0.30	mg/l	0.10	SM4500-F-C	23 Dec 16 17:00	SVS
Sulfate	3920	mg/l	5.00	ASTM D516-07	13 Jan 17 11:02	EMS
Chloride	365	mg/l	1.0	SM4500-Cl-E	12 Jan 17 10:43	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 11:53	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	4 Jan 17 12:54	EV
Total Dissolved Solids	7200	mg/l	10	I1750-85	23 Dec 16 14:40	SVS
Calcium - Total	388	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Magnesium - Total	755	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Sodium - Total	730	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Potassium - Total	20.0	mg/l	1.0	6010	9 Jan 17 14:39	KMD
Lithium - Total	1.00	mg/l	0.10	6010	6 Jan 17 13:48	KMD
Boron - Total	0.33	mg/l	0.10	6010	5 Jan 17 13:35	KMD
Calcium - Dissolved	382	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Magnesium - Dissolved	755	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Sodium - Dissolved	710	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Potassium - Dissolved	19.6	mg/l	1.0	6010	4 Jan 17 13:49	KMD
Lithium - Dissolved	1.09	mg/l	0.10	6010	6 Jan 17 14:48	KMD
Boron - Dissolved	0.29	mg/l	0.10	6010	5 Jan 17 16:35	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0232	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	11 Jan 17 10:40	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD

RL = Method Reporting Limit

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

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

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: 16 Jan 17
Lab Number: 16-W6132
Work Order #: 82-4137
Account #: 002800
Date Sampled: 22 Dec 16 9:26
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW

PO #: 160249

Sample Description: 105

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

Table with 6 columns: Analyte, As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows include Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Lead, Molybdenum, Selenium, and Thallium.

\* Holding time exceeded

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

Approved by: Claudette K. Carroll 17 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 2-90  
Sampling Personal: Jany ph

Weather Conditions: Temp: 30 °F Wind: W @ 5-10 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 type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	21.15	ft	
Total Well Depth:		ft	
Well Volume:		liters	
Depth to Top of Pump:		ft	
Water Level After Sample:	21.69	ft	
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	6 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/>	Recover:	54 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	PSI:	20
Duplicate Sample ID:		Pumping Rate:	100 mL/min
Purge Date:	22 Dec 16	Time Purging Began:	1202 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	22 Dec 16	Time of Sampling:	1222 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric		

### 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	1207	7.18	7309	6.94	4.36	121.2	0.96	21.60	500	Clear
2	1212	7.06	7283	7.01	3.71	123.9	0.75	21.61	500	Clear
3	1217	7.11	7265	7.00	3.49	121.7	0.73	21.63	500	Clear
4	1222	7.17	7254	7.00	3.38	120.1	0.70	21.61	500	Clear
5										
6										
7										
8										
9										
10										

Stabilized:  Yes  No  
Comments:

Total Volume Removed: 2000 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 102  
Sampling Personal: *[Signature]*

Weather Conditions: Temp: 30 °F Wind: W @ 5-10 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 type="checkbox"/>	No <input type="checkbox"/>	Not Visible
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	17.22 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	— ft		
Water Level After Sample:	19.01 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"/>	Recover: 25 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/>	PSI: 30
Duplicate Sample ID:	—	Pumping Rate: 100 mL/min
Purge Date:	22 Dec 16	Time Purging Began: 0912 am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/>	Time Purged Dry: — am/pm
Sample Date:	22 Dec 16	Time of Sampling: 1025 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric	

### 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. clear, slightly turbid, turbid
SEQ #	Time									
1	0917	7.76	9816	6.93	1.04	-65.1	5.00	18.26	500	Clear
2	0922	6.92	9734	6.92	0.95	-63.3	3.30	18.48	500	Clear
3	0927	7.01	9570	6.90	0.89	-50.3	5.36	18.75	500	Clear
4	0932	6.15	9575	6.90	1.13	-40.9	3.89	18.45	500	Clear
5	0937	Air line froze up. Warmed up air line. Restarted Purging								
6	<del>0942</del>	<del>22 Dec 16</del>								
7	1005	4.17	8892	6.95	5.85	-26.5	3.89	18.30	500	Clear
8	1010	4.36	9051	6.92	3.33	-28.8	4.34	18.40	500	Clear
9	1015	4.21	9138	6.93	2.93	-32.6	4.54	18.44	500	Clear
10	1020	4.22	9174	6.93	2.85	-34.5	4.49	18.50	500	Clear

Stabilized:  Yes  No

Total Volume Removed: ~~4500~~ mL \* 22 Dec 16

Comments:

Final set of field meas 1025 4.17 9170 6.93 2.73 -35.2 4.20 18.49 500 Clear  
5000 mL removed page 1 of 2



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 3-90  
Sampling Personal: *Darren Nissman*

Weather Conditions: Temp: 33 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Casing Straight?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Grout Seal Intact?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	<u>Not Visible</u>
Repairs Necessary:	<input checked="" type="checkbox"/>		
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>18.43</u> ft		
Total Well Depth:	ft		
Well Volume:	liters		
Depth to Top of Pump:	<u>20.19</u> ft		
Water Level After Sample:	<u>18.56</u> ft		
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	PSI:	<u>—</u>
Duplicate Sample ID:	<u>Dup 2</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Dec 16</u>	Time Purging Began:	<u>1235</u> am/pm	
Well Purged Dry?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Time Purged Dry:	<u>—</u> am/pm
Sample Date:	<u>22 Dec 16</u>	Time of Sampling:	<u>1305</u> am/pm	
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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									clear, slightly turbid, turbid
1	1240	7.23	5209	6.79	6.40	-104.3	1.90	18.56	500	<u>clear</u>
2	1245	7.51	5196	6.77	6.77	-119.4	1.69	18.56	500	<u>clear</u>
3	1255	7.44	5196	6.77	4.81	-103.3	1.14	18.56	1000	<u>clear</u>
4	1300	7.24	5179	6.76	3.64	-95.2	1.12	18.56	500	<u>clear</u>
5	1305	7.25	5186	6.76	3.66	-93.7	1.12	18.56	500	<u>clear</u>
6										
7										
8										
9										
10										

Stabilized:  Yes  No  
Comments:

Total Volume Removed: 3000 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: MW80R  
Sampling Personal: *Darren Nieswaj*

Weather Conditions: Temp: 32 °F Wind: SW 20 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:	14.72 ft		
Total Well Depth:	-		
Well Volume:	-		
Depth to Top of Pump:	19.30 ft		
Water Level After Sample:	14.95 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 type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	-
Duplicate Sample ID:	-		Pumping Rate:	100 mL/min
Purge Date:	22 Dec 16	Time Purging Began:	10:47	am/pm
Well Purged Dry?:	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	
Sample Date:	22 Dec 16	Time of Sampling:	11:12	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### Field Measurements

SEQ #	Time	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.
2	1057		7.95	5789	6.99	2.26	105.7	1.88	14.91	500	clear
3	1102		8.21	5759	6.99	1.84	102.2	1.52	14.95	500	clear
4	1107		8.13	5761	7.00	1.77	100.8	1.46	14.95	500	clear
5	1112		8.24	5761	6.99	1.71	99.7	1.40	14.95	500	clear
6											
7											
8											
9											
10											

Stabilized: Yes No  
Comments:

Total Volume Removed: 2500 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: MW 1047 105  
Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 28 °F Wind: W 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:	13.24	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:	21.24	ft
Water Level After Sample:	13.50	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 type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	
Duplicate Sample ID:			Pumping Rate:	100 mL/min
Purge Date:	22 Dec	Time Purging Began:	8:51	am/pm
Well Purged Dry?:	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Time Purged Dry:	
Sample Date:	22 Dec	Time of Sampling:	0926	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### Field Measurements

SEQ #	Time	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.
2	0901		7.42	6103	6.64	4.16	111.5	3.60	13.52	500	ch
3	0906		7.49	6252	6.64	2.73	111.1	2.44	13.50	500	ch
4	0911		7.51	6787	6.62	2.60	111.4	2.84	13.50	500	ch
5	0916		7.50	7058	6.62	2.00	111.2	3.84	13.50	500	ch
6	0921		7.65	7170	6.62	1.96	110.4	3.81	13.50	500	ch
7	0926		7.66	7195	6.61	1.92	110.3	3.71	13.50	500	ch
8											
9											
10											

Stabilized:  Yes  No

Total Volume Removed: 3500 mL

Comments:

check ball isn't working on bladder pump water keeps going back down.



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b>				<b>Name of Sampler(s):</b>			
MDU	Heskett	CCR Groundwater	2016				
<b>Report To:</b> MDU				<b>Work Order Number:</b>			
<b>Attn:</b> Samantha Marshall				82-4137			
<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>							

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
W6126	Field Blank (FB) 3	22 Dec 16	NA	W		X	X	X	NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W6127	Dup-2	22 Dec 16	NA	W		X	X	X	NA	NA	NA	
W6128	2-90	22 Dec 16	1222	GW		X	X	X	7.17	7254	7.00	
W6129	102	22 Dec 16	1025	GW		X	X	X	4.17	9170	6.93	
W6130	3-90	22 Dec 16	1305	GW		X	X	X	7.25	5186	6.76	
W6131	80 R	22 Dec 16	1112	GW		X	X	X	8.24	5761	6.99	
W6132	105	22 Dec 16	0926	GW		X	X	X	7.66	7195	6.61	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1		Log in	22 Dec 16 1612			22 Dec 2016 1612	6.2°C ROT TM588
2							
3							



CASE NARRATIVE

MVTL Lab Reference No/SDG: 201682-4140
IML Lab Reference No/SDG: S1612305
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR December 2016
MVTL Laboratory Identifications: 16-W6139 through 16-W6145
IML Laboratory Identifications: S1612305-001 through S1612305-007
Page 1 of 2

Table with 3 columns: MDU Sample Identification, MVTL Laboratory #, IML Laboratory #. Rows include Field Blank (FB) 3, Dup 2, 2-90, 102, 3-90, 80R, 105.

I. RECEIPT

- All samples were received at the laboratory on 22 December 2016 at 1612.
Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
Samples were received on ice and evidence of cooling had begun.
Temperature of samples upon receipt was 6.2°C.
No other exceptions on sample receipt were encountered on this sample set unless noted here.
All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 28 December 2016.
All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

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: 201682-4140  
IML Lab Reference No/SDG: S1612305  
Client: Montana Dakota Utilities  
Location: MDU Heskett Ash Site  
Project Identification: CCR December 2016  
MVTL Laboratory Identifications: 16-W6139 through 16-W6145  
IML Laboratory Identifications: S1612305-001 through S1612305-007  
Page 2 of 2

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: 30 Jan 17  
Claudette Carroll - MVTL Bismarck Laboratory Manager





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

Report Date: 27 Jan 17  
Lab Number: 16-W6139  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: Field Blank 3

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			10 Jan 17	OL
Radium 228	See Attached Report			22 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll <sup>CC</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to 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: 27 Jan 17
Lab Number: 16-W6140
Work Order #: 82-4140
Account #: 002800
Date Sampled: 22 Dec 16
Date Received: 22 Dec 16 16:12
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: Dup 2

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

Table with 6 columns: As Received Result, Method RL, Method Reference, Date Analyzed, Analyst. Rows for Radium 226 and Radium 228.

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:
@ = Due to sample matrix # = Due to 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: 27 Jan 17  
Lab Number: 16-W6141  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16 12:22  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: 2-90

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.00	units	NA	SM 4500 H+ B	22 Dec 16 12:22	JSM
Temperature - Field	7.17	Degrees C	NA	SM 2550B	22 Dec 16 12:22	JSM
Conductivity - Field	7254	umhos/cm	1	EPA 120.1	22 Dec 16 12:22	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				22 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Carroll <sup>cc</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to 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: 27 Jan 17  
Lab Number: 16-W6142  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16 10:25  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: 102

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.93	units	NA	SM 4500 H+ B	22 Dec 16 10:25	JSM
Temperature - Field	4.17	Degrees C	NA	SM 2550B	22 Dec 16 10:25	JSM
Conductivity - Field	9170	umhos/cm	1	EPA 120.1	22 Dec 16 10:25	JSM
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>cc</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to 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: 27 Jan 17  
Lab Number: 16-W6143  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16 13:05  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: 3-90

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.76	units	NA	SM 4500 H+ B	22 Dec 16 13:05	DJN
Temperature - Field	7.25	Degrees C	NA	SM 2550B	22 Dec 16 13:05	DJN
Conductivity - Field	5186	umhos/cm	1	EPA 120.1	22 Dec 16 13:05	DJN
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll*

rc  
30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to 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: 27 Jan 17  
Lab Number: 16-W6144  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16 11:12  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

PO #: 160249

Sample Description: 80R

Temp at Receipt: 6.2C ROI

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.99	units	NA	SM 4500 H+ B	22 Dec 16 11:12	DJN
Temperature - Field	8.24	Degrees C	NA	SM 2550B	22 Dec 16 11:12	DJN
Conductivity - Field	5761	umhos/cm	1	EPA 120.1	22 Dec 16 11:12	DJN
Radium 226	See Attached Report				10 Jan 17	OL
Radium 228	See Attached Report				23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll* <sup>cc</sup> 30 Jan 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



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Samantha Marshall  
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400 N. 4th  
Bismarck ND 58501

Report Date: 27 Jan 17  
Lab Number: 16-W6145  
Work Order #: 82-4140  
Account #: 002800  
Date Sampled: 22 Dec 16 9:26  
Date Received: 22 Dec 16 16:12  
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR Radiochem

Sample Description: 105

PO #: 160249

Event and Year: December 2016

Temp at Receipt: 6.2C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.61 units	NA	SM 4500 H+ B	22 Dec 16 9:26	DJN
Temperature - Field	7.66 Degrees C	NA	SM 2550B	22 Dec 16 9:26	DJN
Conductivity - Field	7195 umhos/cm	1	EPA 120.1	22 Dec 16 9:26	DJN
Radium 226	See Attached Report			10 Jan 17	OL
Radium 228	See Attached Report			23 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

*Claudette K. Carroll*

*cc  
30 Jan 17*

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

CERTIFICATION: ND # ND-00016



Date: 1/27/2017

**CLIENT:** MVTL Laboratories, Inc.  
**Project:** 201682-4140  
**Lab Order:** S1612305

**CASE NARRATIVE**  
**Report ID:** S1612305001

Samples 16-W6139 Field Blank 3, 16-W6140 Dup 2, 16-W6141 2-90, 16-W6142 102, 16-W6143 3-90, 16-W6144 80R, and 16-W6145 105 were received on December 28, 2016.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager





Sample Analysis Report

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

Date Reported 1/27/2017
Report ID S1612305001

ProjectName: 201682-4140
Lab ID: S1612305-001
ClientSample ID: 16-W6139 Field Blank 3
COC: 201682-4140

WorkOrder: S1612305
CollectionDate: 12/22/2016
DateReceived: 12/28/2016 11:27:00 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 1/27/2017
Report ID S1612305001

ProjectName: 201682-4140
Lab ID: S1612305-002
ClientSample ID: 16-W6140 Dup 2
COC: 201682-4140

WorkOrder: S1612305
CollectionDate: 12/22/2016
DateReceived: 12/28/2016 11:27:00 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** 1/27/2017  
**Report ID** S1612305001

**ProjectName:** 201682-4140  
**Lab ID:** S1612305-003  
**ClientSample ID:** 16-W6141 2-90  
**COC:** 201682-4140

**WorkOrder:** S1612305  
**CollectionDate:** 12/22/2016 12:22:00 PM  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

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

#### Radionuclides - Total

Radium 226	0.4	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-0.9	pCi/L		1	Ga-Tech	01/22/2017 2119 WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/22/2017 2119 WN

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  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612305001

**ProjectName:** 201682-4140  
**Lab ID:** S1612305-004  
**ClientSample ID:** 16-W6142 102  
**COC:** 201682-4140

**WorkOrder:** S1612305  
**CollectionDate:** 12/22/2016 10:25:00 AM  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.5	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009	MB
Radium 228	-1.5	pCi/L		1	Ga-Tech	01/23/2017 023	WN
Radium 228 Precision (±)	1.8	pCi/L			Ga-Tech	01/23/2017 023	WN

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  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612305001

**ProjectName:** 201682-4140  
**Lab ID:** S1612305-005  
**ClientSample ID:** 16-W6143 3-90  
**COC:** 201682-4140

**WorkOrder:** S1612305  
**CollectionDate:** 12/22/2016 1:05:00 PM  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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#### Radionuclides - Total

Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-1.0	pCi/L		1	Ga-Tech	01/23/2017 327 WN
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	01/23/2017 327 WN

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  
Wade Nieuwsma, Assistant Laboratory Manager



### Sample Analysis Report

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

**Date Reported** 1/27/2017  
**Report ID** S1612305001

**ProjectName:** 201682-4140  
**Lab ID:** S1612305-006  
**ClientSample ID:** 16-W6144 80R  
**COC:** 201682-4140

**WorkOrder:** S1612305  
**CollectionDate:** 12/22/2016 11:12:00 AM  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

#### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init
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#### Radionuclides - Total

Radium 226	0.2	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009 MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009 MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	01/23/2017 630 WN
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	01/23/2017 630 WN

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** 1/27/2017  
**Report ID** S1612305001

**ProjectName:** 201682-4140  
**Lab ID:** S1612305-007  
**ClientSample ID:** 16-W6145 105  
**COC:** 201682-4140

**WorkOrder:** S1612305  
**CollectionDate:** 12/22/2016 9:26:00 AM  
**DateReceived:** 12/28/2016 11:27:00 AM  
**FieldSampler:**  
**Matrix:** Water

**Comments**

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
<b>Radionuclides - Total</b>							
Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1009	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1009	MB
Radium 228	0.2	pCi/L		1	Ga-Tech	01/23/2017 932	WN
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	01/23/2017 932	WN

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  
Wade Nieuwsma, Assistant Laboratory Manager



### ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.  
Work Order: S1612305  
Project: 201682-4140

Date: 1/27/2017  
Report ID: S1612305001

Radium 228 by Ga/Tech		Sample Type	MBLK		Units: pCi/L				
MB-412 (01/21/17 14:53)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		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-412 (01/21/17 17:54)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		38	1	40.3		93.5	64.4 - 99.5		

Radium 228 by Ga/Tech		Sample Type	MS		Units: pCi/L				
MS-412 (01/22/17 00:01)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Total Radium 228		37	1	40.3	ND	92.5	55 - 113		

Radium 228 by Ga/Tech		Sample Type	MSD		Units: pCi/L				
MSD-412 (01/22/17 03:04)	Analyte	RunNo:	142633	PrepDate:	01/03/17 0:00	BatchID	12769		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Total Radium 228		33	1	37	11.3	82.6	30		

Radium 226 in Water -		Sample Type	MBLK		Units: pCi/L				
MB-1707 (01/11/17 13:52)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		ND	0.3						

Radium 226 in Water -		Sample Type	LCS		Units: pCi/L				
LCS-1707 (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89		99.8	65 - 131		

Radium 226 in Water -		Sample Type	LCSD		Units: pCi/L				
LCSD-1707 (01/10/17 12:11)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual	
Radium 226		6.1	0.3	5.9	3.30	103	20		

Radium 226 in Water -		Sample Type	MS		Units: pCi/L				
S1612304-001AMS (01/10/17 10:09)	Analyte	RunNo:	142395	PrepDate:	01/03/17 0:00	BatchID	12733		
		Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual	
Radium 226		5.9	0.3	5.89	ND	96.2	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

201682-4140

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"/>
	Name of Sampler:	E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box <input type="checkbox"/>
Billing Address (indicate if different from above):  <u>PO Box 249</u> <u>New Ulm, MN 56073</u>	Quote Number	Date Submitted:
	Project Name/Number:	Purchase Order #:  BL5753

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
51612305 001	16-W6139	Field Blank 3	GW	22-Dec-16			4					Ra226 & Ra228
002	16-W6140	Dup 2	GW	22-Dec-16			4					Ra226 & Ra228
003	16-W6141	2-90	GW	22-Dec-16	1222		4					Ra226 & Ra228
004	16-W6142	102	GW	22-Dec-16	1025		4					Ra226 & Ra228
005	16-W6143	3-90	GW	22-Dec-16	1305		4					Ra226 & Ra228
006	16-W6144	80R	GW	22-Dec-16	1112		4					Ra226 & Ra228
007	16-W6145	105	GW	22-Dec-16	926		4					Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
T. Olson	23-Dec-16	1700		Kathy Boyd	12-28-16	6.4
2.					11:27	2.4
						1.3

3 results



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2016  
 Sample ID: 2-90  
 Sampling Personal: *[Signature]*

Weather Conditions: Temp: 30 °F Wind: W @ 5-10 Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	Yes	<input checked="" type="checkbox"/> No	
Well Labeled?	<input checked="" type="checkbox"/> Yes	No	
Casing Straight?	<input checked="" type="checkbox"/> Yes	No	
Grout Seal Intact?	Yes	No	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	2"		
Water Level Before Purge:	21.15		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	21.69		ft
Measurement Method:	Electric Water Level Indicator		

### Sampling Information

Purging Method:	Bladder	Control Settings	
Sampling Method:	Bladder	Purge:	6 sec.
Dedicated Equip?:	Yes <input checked="" type="checkbox"/> No	Recover:	54 sec.
Duplicate Sample?:	Yes <input checked="" type="checkbox"/> No	PSI:	20
Duplicate Sample ID:	Pumping Rate: 100 mL/min		
Purge Date:	22 Dec 16	Time Purging Began:	1202 am/pm
Well Purged Dry?:	Yes <input checked="" type="checkbox"/> No	Time Purged Dry:	— am/pm
Sample Date:	22 Dec 16	Time of Sampling:	1222 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric		

### 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								clear, slightly turbid, turbid	
1	1207	7.18	7309	6.94	4.36	121.2	0.96	21.60	500	Clear
2	1212	7.06	7283	7.01	3.71	123.9	0.75	21.61	500	Clear
3	1217	7.11	7265	7.00	3.49	121.7	0.73	21.63	500	Clear
4	1222	7.17	7254	7.00	3.38	120.1	0.70	21.61	500	Clear
5										
6										
7										
8										
9										
10										

Stabilized:  Yes  No  
 Comments:

Total Volume Removed: 2000 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
Event: 2016  
Sample ID: 102  
Sampling Personal: Jerry My

Weather Conditions: Temp: 30 °F Wind: W @ 5-10 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 type="checkbox"/>	No <input type="checkbox"/>	<u>Not Visible</u>
Repairs Necessary:			
Casing Diameter:	<u>2"</u>		
Water Level Before Purge:	<u>17.22</u>	ft	
Total Well Depth:	<u>          </u>	ft	
Well Volume:	<u>          </u>	liters	
Depth to Top of Pump:	<u>          </u>	ft	
Water Level After Sample:	<u>19.01</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>5</u> sec.
Dedicated Equip?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Recover:	<u>55</u> sec.
Duplicate Sample?:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	PSI:	<u>30</u>
Duplicate Sample ID:	<u>          </u>	Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Dec 16</u>	Time Purging Began:	<u>0912</u> am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Time Purged Dry:	<u>          </u> am/pm
Sample Date:	<u>22 Dec 16</u>	Time of Sampling:	<u>1025</u> am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric		

### 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	Description: Clarity, Color, Odor, Ect.
SEQ #	Time								clear, slightly turbid, turbid
1	0917	7.76	9816	6.93	1.04	-65.1	5.00	18.26	500 Clear
2	0922	6.92	9734	6.92	0.95	-63.3	3.30	18.48	500 Clear
3	0927	7.01	9570	6.90	0.89	-50.3	5.36	18.75	500 Clear
4	0932	6.15	9575	6.90	1.13	-40.9	3.89	18.45	500 Clear
5	0937	Air line froze up. Wanned up air line. Restarted purging.							
6	<del>0942</del>	<del>          </del>	<del>          </del>	<del>          </del>	<del>          </del>	<del>          </del>	<del>          </del>	<del>          </del>	<del>500 Clear</del>
7	1005	4.17	9892	6.95	5.85	-26.5	3.89	18.30	500 Clear
8	1010	4.36	9051	6.92	3.33	-28.8	4.34	18.40	500 Clear
9	1015	4.21	9138	6.93	2.93	-32.6	4.54	18.44	500 Clear
10	1020	4.22	9174	6.93	2.85	-34.5	4.49	18.50	500 Clear

Stabilized:  Yes  No  
Comments:

Total Volume Removed: 4500 mL

\* 22 Dec 16 ↓

Final set of field readings 1025 4.17 9170 6.93 2.73 -35.2 4.20

Continued on next page  
18.49 500 Clear  
5000 mL removed

page 1 of 2



# Field Datasheet

## Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company: MDU Heskett  
 Event: 2016  
 Sample ID: 3-90  
 Sampling Personal: Darren Niswan

Weather Conditions: Temp: 33 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

### Well Information

Well Locked?	<del>Yes</del> <input checked="" type="radio"/> No	
Well Labeled?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Casing Straight?	<input checked="" type="radio"/> Yes <input type="radio"/> No	
Grout Seal Intact?	<input checked="" type="radio"/> Yes <input type="radio"/> No	<u>Not Visible</u>
Repairs Necessary:	<input checked="" type="checkbox"/>	
Casing Diameter:	<u>2"</u>	
Water Level Before Purge:	<u>18.43</u>	ft
Total Well Depth:		ft
Well Volume:		liters
Depth to Top of Pump:	<u>20.19</u>	ft
Water Level After Sample:	<u>18.56</u>	ft
Measurement Method:	Electric Water Level Indicator	

### Sampling Information

Purging Method:	Bladder		Control Settings	
Sampling Method:	Bladder		Purge:	<u>5</u> sec.
Dedicated Equip?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Recover:	<u>55</u> sec.
Duplicate Sample?:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	PSI:	<u>-</u>
Duplicate Sample ID:	<u>Dup 2</u>		Pumping Rate:	<u>100</u> mL/min
Purge Date:	<u>22 Dec 16</u>	Time Purging Began:	<u>1235</u>	am/pm
Well Purged Dry?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Time Purged Dry:	<u>-</u> am/pm
Sample Date:	<u>22 Dec 16</u>	Time of Sampling:	<u>1305</u>	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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								clear, slightly turbid, turbid	
1	1240	7.23	5209	6.79	6.40	-104.3	1.90	18.56	500	clear
2	1245	7.51	5196	6.77	6.77	-119.4	1.69	18.56	500	clear
3	1255	7.44	5196	6.77	4.81	-103.3	1.14	18.56	1000	clear
4	1300	7.24	5179	6.76	3.64	-95.2	1.12	18.56	500	clear
5	1305	7.25	5186	6.76	3.66	-93.7	1.12	18.56	500	clear
6										
7										
8										
9										
10										

Stabilized:  Yes  No  
 Comments:

Total Volume Removed: 3000 mL



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

# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2016  
 Sample ID: MW 80R  
 Sampling Personal: *Darren Niesway*

Weather Conditions: Temp: 32 °F Wind: SW 20 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:	14.72	ft	
Total Well Depth:	-	ft	
Well Volume:	-	liters	
Depth to Top of Pump:	19.30	ft	
Water Level After Sample:	14.95	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 type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	-
Duplicate Sample ID:				
Purge Date:	22 Dec 16	Time Purging Began:	10:47	am/pm
Well Purged Dry?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Time Purged Dry:	
Sample Date:	22 Dec 16	Time of Sampling:	11:12	am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			
	NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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	Description: Clarity, Color, Odor, Ect.	
SEQ #	Time									
1	1052	7.72	5779	6.98	3.76	111.9	2.86	14.89	500	Clear
2	1057	7.95	5789	6.99	2.26	105.7	1.88	14.91	500	Clear
3	1102	8.21	5759	6.99	1.84	102.2	1.52	14.95	500	Clear
4	1107	8.13	5761	6.700	1.77	100.8	1.46	14.95	500	Clear
5	1112	8.24	5761	6.99	1.71	99.7	1.40	14.95	500	Clear
6										
7										
8										
9										
10										

Stabilized:  Yes  No  
 Comments:

Total Volume Removed: 2500 mL



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# Field Datasheet

## Groundwater Assessment

Company: MDU Heskett  
 Event: 2016  
 Sample ID: MW 104W 105  
 Sampling Personal: Darrian Nieswaag

Weather Conditions: Temp: 28 °F Wind: W 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:	13.24 ft	
Total Well Depth:	— ft	
Well Volume:	— liters	
Depth to Top of Pump:	21.24 ft	
Water Level After Sample:	13.50 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 type="checkbox"/>	No <input checked="" type="checkbox"/>	PSI:	—
Duplicate Sample ID:	—		Pumping Rate:	100 mL/min
Purge Date:	22 Dec		Time Purging Began:	8:51 am/pm
Well Purged Dry?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Time Purged Dry:	— am/pm
Sample Date:	22 Dec		Time of Sampling:	09:26 am/pm
Bottle List:	CCR: 1L Raw, 500mL Nitric, 500mL Nitric (filtered), 4-1L Nitric			
	NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfuric			

### 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								clear, slightly turbid, turbid	
1	0856	7.65	6178	6.65	5.14	111.6	3.38	13.46	500	clear
2	0901	7.42	6103	6.64	4.16	111.5	3.60	13.52	500	clear
3	0906	7.49	6252	6.64	2.73	111.1	2.44	13.50	500	clear
4	0911	7.51	6787	6.62	2.60	111.4	2.84	13.50	500	clear
5	0916	7.50	7088	6.62	2.00	111.2	3.84	13.50	500	clear
6	0921	7.65	7170	6.62	1.96	110.4	3.81	13.50	500	clear
7	0926	7.66	7195	6.61	1.92	110.3	3.71	13.50	500	clear
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 3500 mL

Comments:

0

check ball isn't working on bladder pump water keeps going back down.



**Laboratories, Inc.**

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

**Chain of Custody Record**

<b>Project Name:</b> MDU Heskett CCR Radiochem 2016				<b>Name of Sampler(s):</b> <i>Jeremy Chip / Darren Nleswong</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>  82-4140			

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>W6139</i>	Field Blank (FB)3	22 Dec 16	NA	W		4				NA	NA	NA	MDU CCR Numerical RadChem
<i>W6139</i>	Dup -2	22 Dec 16	NA	W		4				NA	NA	NA	
<i>W6141</i>	<i>W6141</i> 2-90	22 Dec 16	1222	GW		4				7.17	7254	7.00	
<i>W6142</i>	102	22 Dec 16	1025	GW		4				4.17	9170	6.93	
<i>W6143</i>	3-90	22 Dec 16	1305	GW		4				7.25	5186	6.76	
<i>W6144</i>	80R	22 Dec 16	1112	GW		4				8.24	5761	6.99	
<i>W6145</i>	105	22 Dec 16	0926	GW		4				7.66	7195	6.61	

*W6140*  
*23 Dec 16*  
*AS (A)*

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	<i>Jeremy Chip</i>	<i>Log in</i>	<i>22 Dec 16</i> <i>1612</i>	<i>Angel Simonson</i>		<i>22 Dec 16</i> <i>1612</i>	<i>6.2°C</i> <i>ROT</i> <i>TM580</i>
2							
3							