MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: 2017

Sample ID: MW70

Sampling Personal: Darren Nelson

Weather Conditions: Temp: 64 °F Wind: Light Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		
Casing Diameter:	2"		
Water Level Before Purge:	21.22		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	—		ft
Water Level After Sample:	22.42		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		
Purge Date:	27July17	Time Purging Began:	0845 am/pm
Well Purged Dry?	Yes	No	Time Purged Dry: — am/pm
Sample Date:	27July17	Time of Sampling:	0910 am/pm

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	20	
Pumping Rate:	100	mL/min

Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric
	250 mL Sulfuric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	0850	11.62	4658	6.95	1.39	275.2	6.18	21.76	500	clr
2	0855	11.10	4671	6.95	0.62	274.5	4.39	22.13	500	clr
3	0800	11.28	4676	6.96	0.62	274.0	0.35	22.21	500	clr
4	0905	11.46	4672	6.96	0.64	273.7	0.42	22.30	500	clr
5	0910	11.44	4681	6.96	0.68	272.9	0.43	22.39	500	clr
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

Comments:

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darron Nieswand

Instrument (Circle One): #1 650 MDS 08F100203 | #2 650 MDS 04H14736 | #3 556 MPS 12E102056

Pre Site Calibration

Date: 27July17 **Time:** 0743

	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
pH						
Buffer 7	21.90	7.05	7.00	6.95-7.05	-16.1	0 +/- 50
Buffer 10	21.94	10.01	10.00	9.95-10.05	-193.7	-180 +/- 50
Conductivity						Check
Buffer 10000	21.34	10242	10000	±10%	Buffer 5000	5010
ORP						
231 mV @ 25C	10.81	248.1	231.0	±10 mV		
DO					Barometric Pressure (mm Hg)	
	21.68	8.56	8.33	mg/L	720.4	

Post Site Check

Time: 1220

	Temp °C	Reading
pH		
Buffer 7	22.31	6.98
Conductivity		
Buffer 5000	22.05	5001

Date: / Time:

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

Time:

	Temp °C	Reading
pH		
Buffer 7		
Conductivity		
Buffer 5000		

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
MDU Heskett	July 2017	82-2038

Report To:	MDU	Carbon Copy:	Name of Sampler(s):
Attn:	Samantha Marshall	Attn:	Darren Miesway
Address:	400 N. 4th St Bismarck, ND 58501	Address:	
phone:	701-222-7829		
email:			

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type		1 liter	500mL Nitric	500mL Nitric (filtered)					Temp (°C)	Spec. Cond.	pH	Analysis Required
W3197	MW104	27July17	1057	GW		X	X	X					11.92	14256	6.91	MDU CCR List with TSS and Dissolved CCR Metals.
W3198	MW70	27July17	0910	GW		X	X	X					11.44	4681	6.96	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1	27July17 1226	(Log In) Walk In #2	ROI 4.8 TM562 / TM588
2			

Received by:	
Name:	Date/Time
	27Jul 2017 1226

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
MEMBER ACIL

CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-2059
IML Lab Reference No/SDG: S1708054
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR July 2017
MVTL Laboratory Identifications: 17-W3214 through 17-W3215
IML Laboratory Identifications: S1708054-001 through S1708054-002

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
MW104	17-W3214	S1708054-001
MW70	17-W3215	S1708054-002

I. RECEIPT

- All samples were received at the laboratory on 27 Jul 2017 at 1226.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 4.8°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 2 Aug 2017.
  - 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.

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

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MEMBER ACIL

CASE NARRATIVE

MVTL Lab Reference No/SDG:	**201782-2059**
IML Lab Reference No/SDG:	**S1708054**
Client:	**Montana Dakota Utilities**
Location:	**MDU Heskett Ash Site**
Project Identification:	**CCR July 2017**
MVTL Laboratory Identifications:	**17-W3214 through 17-W3215**
IML Laboratory Identifications:	**S1708054-001 through S1708054-002**

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 5Sep17

Claudette Carroll - MVTL Bismarck Laboratory Manager

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www.mvtl.com

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 31 Aug 17
Lab Number: 17-W3214
Work Order #: 82-2059
Account #: 002800
Date Sampled: 27 Jul 17 10:57
Date Received: 27 Jul 17 12:26
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW104

Temp at Receipt: 4.8C ROI

Event and Year: July 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.91	units	NA	SM 4500 H+ B	27 Jul 17 10:57	DJN
Temperature - Field	11.9	Degrees C	NA	SM 2550B	27 Jul 17 10:57	DJN
Conductivity - Field	14256	umhos/cm	1	EPA 120.1	27 Jul 17 10:57	DJN
Radium 226	See Attached Report				15 Aug 17	OL
Radium 228	See Attached Report				16 Aug 17	OL

Approved by: Claudette K. Carroll CC 5Sep17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

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www.mvtl.com

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 31 Aug 17
Lab Number: 17-W3215
Work Order #: 82-2059
Account #: 002800
Date Sampled: 27 Jul 17 9:10
Date Received: 27 Jul 17 12:26
Sampled By: MVTL Field Services

Project Name: MDU Heskett
Sample Description: MW70

Temp at Receipt: 4.8C ROI

Event and Year: July 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.96	units	NA	SM 4500 H+ B	27 Jul 17 9:10	DJN
Temperature - Field	11.4	Degrees C	NA	SM 2550B	27 Jul 17 9:10	DJN
Conductivity - Field	4681	umhos/cm	1	EPA 120.1	27 Jul 17 9:10	DJN
Radium 226	See Attached Report				15 Aug 17	OL
Radium 228	See Attached Report				16 Aug 17	OL

Approved by: Claudette K. Carroll CC 5Sep17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

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

Your Environmental Monitoring Partner

Date: 8/25/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201782-2059
Lab Order: S1708054

CASE NARRATIVE

Report ID: S1708054001

Samples 17-W3214 MW104, and 17-W3215 MW70 were received on August 2, 2017.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Your Environmental Monitoring Partner

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	**Date Reported** **Report ID**	8/25/2017 S1708054001
ProjectName:	201782-2059	**WorkOrder:**	S1708054
Lab ID:	S1708054-001	**CollectionDate:**	7/27/2017 10:57:00 AM
ClientSample ID:	17-W3214 MW104	**DateReceived:**	8/2/2017 11:50:00 AM
COC:	201782-2059	**FieldSampler:**	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/15/2017 1032	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/15/2017 1032	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	08/16/2017 1425	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	08/16/2017 1425	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
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
C	Calculated Value
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	**Date Reported**	8/25/2017
		Report ID	S1708054001
ProjectName:	201782-2059	**WorkOrder:**	S1708054
Lab ID:	S1708054-002	**CollectionDate:**	7/27/2017 9:10:00 AM
ClientSample ID:	17-W3215 MW70	**DateReceived:**	8/2/2017 11:50:00 AM
COC:	201782-2059	**FieldSampler:**	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/15/2017 1032	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/15/2017 1032	MB
Radium 228	-0.7	pCi/L		1	Ga-Tech	08/16/2017 1729	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	08/16/2017 1729	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
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
C	Calculated Value
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

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

Your Environmental Monitoring Partner

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1708054
Project: 201782-2059

Date: 8/25/2017
Report ID: S1708054001

Radium 228 by Ga/Tech Sample Type **MBLK** Units: pCi/L

MB-455 (08/15/17 10:52)	RunNo: 149274	PrepDate: 08/09/17 12:00			BatchID 13581		
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-455 (08/15/17 13:56)	RunNo: 149274	PrepDate: 08/09/17 12:00			BatchID 13581		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	38	1	39.5		97.3	65.9 - 132	

Radium 228 by Ga/Tech Sample Type **MS** Units: pCi/L

MS-455 (08/15/17 20:03)	RunNo: 149274	PrepDate: 08/09/17 12:00			BatchID 13581		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	44	1	39.5	ND	112	50 - 139	

Radium 228 by Ga/Tech Sample Type **MSD** Units: pCi/L

MSD-455 (08/15/17 23:06)	RunNo: 149274	PrepDate: 08/09/17 12:00			BatchID 13581		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	41	1	44	7.62	104	20	

Radium 226 in Water - Sample Type **MBLK** Units: pCi/L

MB-1782 (08/15/17 10:32)	RunNo: 149108	PrepDate: 08/07/17 0:00			BatchID 13561		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 in Water - Sample Type **LCS** Units: pCi/L

LCS-1782 (08/15/17 10:32)	RunNo: 149108	PrepDate: 08/07/17 0:00			BatchID 13561		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	6.6	0.2	6.41		102	67.1 - 122	

Radium 226 in Water - Sample Type **MS** Units: pCi/L

MS-1782 (08/15/17 10:32)	RunNo: 149108	PrepDate: 08/07/17 0:00			BatchID 13561		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	6.2	0.2	6.41	ND	97.1	65 - 131	

Radium 226 in Water - Sample Type **MSD** Units: pCi/L

MSD-1782 (08/15/17 10:32)	RunNo: 149108	PrepDate: 08/07/17 0:00			BatchID 13561		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.4	0.2	6.2	2.14	99.2	20	

Qualifiers:

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

MVTL 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

201782-2059

Company Name and Address: MVTL 2616 E Broadway Bismarck, ND 58501	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box ☐
	Name of Sampler:	E-mail: ccarroll@mvtl.com For e-mail report check box ☐
Billing Address (indicate if different from above): PO Box 249 New Ulm, MN 56073	Quote Number	Date Submitted: 31-Jul-17
	Project Name/Number:	Purchase Order #: BL5932

Sample Information						Bottle Type						Analysis
$1708054 IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials Umpreserved	Glass Jar	Other		Analysis Required
001	17-W3214	MW104	GW	27-Jul-17	1057		4					Ra226 & Ra228
002	17-W3215	MW70	GW	27-Jul-17	910		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	31-Jul-17	1700	Intact	Randy Herman	8/2/17	11:50	24.4°C
2.							

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: 2017

Sample ID: MW 104

Sampling Personal: Darren Nissen

Weather Conditions: Temp: 68 °F Wind: Light Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	(No)	
Well Labeled?	(Yes)	No	
Casing Straight?	(Yes)	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	14.09 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	— ft
Water Level After Sample:	14.48 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	10	
Pumping Rate:	100	mL/min

Purge Date:	27July17	Time Purging Began:	1022 ~~am~~/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	—— ~~am/pm~~
Sample Date:	27July17	Time of Sampling:	1057 ~~am~~/pm

Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric
	250 mL 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	1027	11.87	14176	6.92	1.94	259.0	4.45	14.44	500	cl
2	1032	11.61	14201	6.92	1.03	262.0	2.13	14.41	500	cl
3	1037	11.65	14177	6.92	1.09	263.0	1.28	14.42	500	cl
4	1042	11.47	14196	6.91	0.74	264.2	1.11	14.41	500	cl
5	1047	12.06	14233	6.91	0.63	265.2	0.88	14.42	500	cl
6	1052	12.01	14251	6.91	0.65	265.7	0.83	14.43	500	cl
7	1057	11.92	14256	6.91	~~0.65~~ 0.57	266.1	0.80	14.43	500	cl
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 3500 mL

Comments: cl

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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: 2017
Sample ID: MW 70
Sampling Personal: Darren Nelson

Weather Conditions: Temp: 64 °F Wind: Light Precip: Sunny / Partly Cloudy / (Cloudy)

Well Information

Well Locked?	Yes	(No)	
Well Labeled?	(Yes)	No	
Casing Straight?	(Yes)	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		
Casing Diameter:	2"		
Water Level Before Purge:	21.22	ft	
Total Well Depth:	—	ft	
Well Volume:	—	liters	
Depth to Top of Pump:	—	ft	
Water Level After Sample:	22.42	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	5	sec.
Recover:	55	sec.
PSI:	20	
Pumping Rate:	100	mL/min

Purge Date:	27 July 17	Time Purging Began:	0845 (am)/pm
Well Purged Dry?	Yes	(No)	Time Purged Dry:	— am/pm
Sample Date:	27 July 17	Time of Sampling:	0910 (am)/pm

Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric
	250 mL 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	0850	11.62	4658	6.95	1.39	275.2	6.18	21.76	500	clear
2	0855	11.10	4671	6.95	0.62	274.5	4.39	22.13	500	clear
3	0900	11.28	4676	6.96	0.62	274.0	0.35	22.21	500	clear
4	0905	11.46	4672	6.96	0.64	273.7	0.42	22.30	500	clear
5	0910	11.44	4681	6.96	0.68	272.9	0.43	22.39	500	clear
6										
7										
8										
9										
10										

Stabilized: (Yes) No
Total Volume Removed: 2500 mL
Comments:

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darron Nieswand

Instrument (Circle One): #1 650 MDS 08F100203 | #2 650 MDS 04H14736 | #3 556 MPS 12E102056

Pre Site Calibration

Date: 27July17 **Time:** 0743

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	21.90	7.05	7.00	6.95-7.05	-16.1	0 +/- 50
Buffer 10	21.94	10.01	10.00	9.95-10.05	-193.7	-180 +/- 50

Conductivity						Check
Buffer 10000	21.34	10242	10000	±10%	Buffer 5000	5010

ORP				
231 mV @ 25C	10.81	248.1	231.0	±10 mV

DO					Barometric Pressure (mm Hg)
	21.68	8.56	8.33	mg/L	720.4

Post Site Check

Time: 1220

pH	Temp °C	Reading
Buffer 7	22.31	6.98

Conductivity		
Buffer 5000	22.05	5001

Date: / Time:

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7				6.95-7.05		0 +/- 50
Buffer 10				9.95-10.05		-180 +/- 50

Conductivity						Check
Buffer 10000				±10%	Buffer 5000	

ORP				
231 mV @ 25C				±10 mV

DO					Barometric Pressure (mm Hg)
				mg/L	

Time:

pH	Temp °C	Reading
Buffer 7		

Conductivity		
Buffer 5000		

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
MDU Heskett	July 2017	82-2059

Report To:	MDU	Carbon Copy:	Name of Sampler(s):
Attn:	Samantha Marshall	Attn:	
Address:	400 N. 4th St Bismarck, ND 58501	Address:	
phone:	701-222-7829		
email:			

Sample Information					Bottle Type		Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	1 liter Nitric		Temp (°C)	Spec. Cond.	pH	Analysis Required
W3214	MW104	27July17	1057	GW	4		11.92	14256	6.91	Rad 226 & Rad 228
W3215	MW70	25July17	0910	GW	4		11.44	4681	6.96	

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1	27July17 1226	Log In Walk In #2	rec'd 4.8 TM562 / TM588
2			

Received by:	
Name:	Date/Time
	27Jul2017 1224

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September 1, 2017

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

RE: Groundwater Sampling Event - MDU Heskett Ash Site

Dear Ms. Marshall:

On August 24, 2017, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule.

All wells were located and were found to be in generally good condition. The wells for CCR were purged and sampled using a dedicated bladder pump and BARR's SOP for low flow purging and sampling. Samples were collected from well MW70. The samples collected were, placed on ice and transported back to the MVTL laboratory in Bismarck, ND for analysis. The field data report for the sampling event accompanies this letter.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: 2017

Sample ID: MW-70

Sampling Personal: Darren Nitsos

Weather Conditions: Temp: 55 °F Wind: E 10 Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	(No)	
Well Labeled?	(Yes)	No	
Casing Straight?	(Yes)	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	21.08 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	32.76 ft
Water Level After Sample:	22.58 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	7	sec.
Recover:	53	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	24 Aug 17	Time Purging Began:	0822 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	am/pm
Sample Date:	24 Aug 17	Time of Sampling:	0852 (am)/pm

Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric
	250 mL Sulfuric

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
			±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0827	10.96	4776	6.95	2.68	280.3	12.3	21.94	500	clear
2	0832	11.93	4766	6.98	0.60	280.7	1.83	22.01	500	clear
3	0837	11.76	4759	6.97	0.43	280.8	2.21	22.07	500	clear
4	0842	11.58	4761	6.97	0.34	280.5	3.37	22.21	500	clear
5	0847	11.63	4757	6.97	0.35	280.2	3.48	22.28	500	clear
6	0852	11.54	4755	6.98	0.34	~~278~~ 279.9	3.62	22.35	500	Clear
7										
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 3000 mL

Comments:

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CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-2335
Client: Montana Dakota Utilities
Location: MDU Heskett
Project Identification: CCR August 2017
MVTL Laboratory Identifications: 17-W3590
Page 1 of 1

MDU Sample Identification	MVTL Laboratory #
MW70	17-W3590

I. RECEIPT

- All samples were received at the laboratory on 25 Aug 17 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 2.3°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

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 analytes, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 14Sep17
Claudette Carroll - MVTL Bismarck Laboratory Manager

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

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Quality Control Report

Lab ID: 17-W3590 **Project:** MDU Heskett - CCR **Work Order:** 201782-2335

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Total mg/l	0.1000	99	80-120	0.400	17-W3585q	< 0.001	0.3956	99	75-125	0.3956	0.4032	101	1.9	20	-	-	< 0.001
				0.400	17W3622q	< 0.001	0.3874	97	75-125	0.3874	0.4106	103	5.8	20	-	-	
				0.400	17W3541q	< 0.001	0.3848	96	75-125	0.3848	0.3822	96	0.7	20	-	-	
Arsenic - Total mg/l	0.1000	98	80-120	0.400	17-W3585	0.0025	0.3964	98	75-125	0.3964	0.4056	101	2.3	20	-	-	< 0.002
				0.400	17-W3622	0.0143	0.4042	97	75-125	0.4042	0.4282	103	5.8	20	-	-	
				0.400	17-W3541	< 0.002	0.3932	98	75-125	0.3932	0.3790	95	3.7	20	-	-	
Barium - Total mg/l	0.1000	92	80-120	0.400	17-W3585q	0.0150	0.3738	90	75-125	0.3738	0.3874	93	3.6	20	-	-	< 0.002
				0.400	17W3622q	0.0302	0.3992	92	75-125	0.3992	0.4096	95	2.6	20	-	-	
				0.400	17W3541q	0.0054	0.3726	92	75-125	0.3726	0.3684	91	1.1	20	-	-	
Beryllium - Total mg/l	0.1000	97	80-120	0.400	17-W3585q	< 0.0005	0.3878	97	75-125	0.3878	0.3928	98	1.3	20	-	-	< 0.0005
				0.400	17W3622q	< 0.0005	0.3900	98	75-125	0.3900	0.3888	97	0.3	20	-	-	
				0.400	17W3541q	< 0.0005	0.3902	98	75-125	0.3902	0.3766	94	3.5	20	-	-	
Boron - Total mg/l	0.40	105	80-120	0.800	17-D3076	0.43	1.14	89	75-125	1.14	1.14	89	0.0	20	-	-	< 0.1
	0.40	105	80-120	2.00	17-W3585	< 0.5	1.94	97	75-125	1.94	1.99	100	2.5	20	-	-	< 0.1
	0.40	110	80-120	0.400	17-W3622	0.18	0.57	97	75-125	0.57	0.57	97	0.0	20	-	-	< 0.1
															-	-	< 0.1
Cadmium - Total mg/l	0.1000	105	80-120	0.400	17-W3585q	< 0.0005	0.3990	100	75-125	0.3990	0.3992	100	0.1	20	-	-	< 0.0005
				0.400	17W3622q	< 0.0005	0.3924	98	75-125	0.3924	0.4028	101	2.6	20	-	-	
				0.400	17W3541q	< 0.0005	0.3802	95	75-125	0.3802	0.3844	96	1.1	20	-	-	
Calcium - Total mg/l	20.0	107	80-120	100	17W3604q	25.7	126	100	75-125	126	126	100	0.0	20	-	-	< 1
															-	-	< 1
Chloride mg/l	30.0	89	80-120	30.0	17-W3603	7.3	35.5	94	80-120	35.5	35.0	92	1.4	20	-	-	< 1
	30.0	88	80-120												-	-	< 1
Chromium - Total mg/l	0.1000	97	80-120	0.400	17-W3585q	0.0023	0.3666	91	75-125	0.3666	0.3760	93	2.5	20	-	-	< 0.002
				0.400	17W3622q	< 0.002	0.3662	92	75-125	0.3662	0.3686	92	0.7	20	-	-	
				0.400	17W3541q	< 0.002	0.3604	90	75-125	0.3604	0.3518	88	2.4	20	-	-	
Cobalt - Total mg/l	0.1000	96	80-120	0.400	17-W3585q	< 0.002	0.3702	93	75-125	0.3702	0.3756	94	1.4	20	-	-	< 0.002
				0.400	17W3622q	< 0.002	0.3646	91	75-125	0.3646	0.3708	93	1.7	20	-	-	
				0.400	17W3541q	< 0.002	0.3656	91	75-125	0.3656	0.3592	90	1.8	20	-	-	
Fluoride mg/l	0.50	108	90-110	0.500	17-W3590	0.31	0.82	102	80-120	0.82	0.83	104	1.2	20	-	-	< 0.1
															-	-	< 0.1

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Quality Control Report

Lab ID: 17-W3590 **Project:** MDU Heskett **Work Order:** 201782-2335

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Lead - Total mg/l	0.1000	97	80-120	0.400	17-W3585q	< 0.001	0.3504	88	75-125	0.3504	0.3574	89	2.0	20	-	-	< 0.0005
				0.400	17W3622q	< 0.001	0.3626	91	75-125	0.3626	0.3698	92	2.0	20	-	-	
				0.400	17W3541q	< 0.001	0.3546	89	75-125	0.3546	0.3472	87	2.1	20	-	-	
Lithium - Total mg/l	0.40	102	80-120	0.400	17-W3585	0.10	0.48	95	75-125	0.48	0.50	100	4.1	20	-	-	< 0.1
	0.40	102	80-120	0.400	17-W3622	0.14	0.56	105	75-125	0.56	0.58	110	3.5	20	-	-	< 0.1
															-	-	< 0.1
Mercury - Total mg/l	0.0020	100	85-115	0.002	17-W3585	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	< 0.0002
				0.002	17-W3622	< 0.0002	0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	
Molybdenum - Total mg/l	0.1000	93	80-120	0.400	17-W3585q	0.0024	0.3978	99	75-125	0.3978	0.3986	99	0.2	20	-	-	< 0.002
				0.400	17W3622q	< 0.002	0.3820	96	75-125	0.3820	0.3950	99	3.3	20	-	-	
				0.400	17W3541q	< 0.002	0.3878	97	75-125	0.3878	0.3790	95	2.3	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	6.7	6.7	-	0.0	20	-	-	-
Selenium - Total mg/l	0.1000	107	80-120	0.400	17-W3585q	0.3381	0.7208	96	75-125	0.7208	0.7292	98	1.2	20	-	-	< 0.002
				0.400	17W3622q	< 0.005	0.3920	98	75-125	0.3920	0.3888	97	0.8	20	-	-	
				0.400	17W3541q	< 0.005	0.3964	99	75-125	0.3964	0.4010	100	1.2	20	-	-	
Sulfate mg/l	100	100	80-120	100	17-W3588	< 5	94.4	94	80-120	94.4	115	115	19.7	20	-	-	< 5
Thallium - Total mg/l	0.1000	97	80-120	0.400	17-W3585q	< 0.0005	0.3462	87	75-125	0.3462	0.3602	90	4.0	20	-	-	< 0.0005
				0.400	17W3622q	< 0.0005	0.3678	92	75-125	0.3678	0.3744	94	1.8	20	-	-	
				0.400	17W3541q	< 0.0005	0.3488	87	75-125	0.3488	0.3458	86	0.9	20	-	-	
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	4030	4030	-	0.0	20	-	-	< 10

Approved by: C. Arnold
14Sep17

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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 11 Sep 17
Lab Number: 17-W3590
Work Order #: 82-2335
Account #: 002800
Date Sampled: 24 Aug 17 8:52
Date Received: 25 Aug 17 8:00
Sampled By: MVTL Field Services

PO #: 165275

Temp at Receipt: 2.3C ROI

Project Name: MDU Heskett

Sample Description: MW70

Event and Year: Aug 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	25 Aug 17	EMS
pH - Field	6.98	units	NA	SM 4500 H+ B	24 Aug 17 8:52	DJN
pH	* 7.5	units	0.1	SM4500 H+ B	25 Aug 17 18:00	SVS
Temperature - Field	11.5	Degrees C	NA	SM 2550B	24 Aug 17 8:52	DJN
Conductivity - Field	4755	umhos/cm	1	EPA 120.1	24 Aug 17 8:52	DJN
Fluoride	0.31	mg/l	0.10	SM4500-F-C	28 Aug 17 17:00	EMS
Sulfate	2530	mg/l	5.00	ASTM D516-07	7 Sep 17 15:55	EMS
Chloride	31.2	mg/l	1.0	SM4500-Cl-E	8 Sep 17 10:30	RAG
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 17 11:30	EV
Total Dissolved Solids	4030	mg/l	10	I1750-85	25 Aug 17 16:16	SVS
Calcium - Total	426	mg/l	1.0	6010D	5 Sep 17 15:30	SZ
Lithium - Total	0.37	mg/l	0.10	6010D	6 Sep 17 9:52	SZ
Boron - Total	0.47	mg/l	0.10	6010D	6 Sep 17 12:58	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	6 Sep 17 16:20	BT
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	7 Sep 17 10:38	BT
Barium - Total	0.0100	mg/l	0.0020	6020B	6 Sep 17 16:20	BT
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	6 Sep 17 16:20	BT
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	6 Sep 17 16:20	BT
Chromium - Total	< 0.002	mg/l	0.0020	6020B	6 Sep 17 16:20	BT
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	6 Sep 17 16:20	BT
Lead - Total	< 0.001 ^	mg/l	0.0005	6020B	6 Sep 17 16:20	BT
Molybdenum - Total	0.0027	mg/l	0.0020	6020B	6 Sep 17 16:20	BT
Selenium - Total	0.0147	mg/l	0.0020	6020B	6 Sep 17 16:20	BT
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	6 Sep 17 16:20	BT

* Holding time exceeded

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

Approved by: Claudette K. Carroll CC 14Sep17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
MDU Heskett	August 2017	82-2335

Report To:	MDU	Carbon Copy:	Name of Sampler(s):
Attn:	Samantha Marshall	Attn:	Darren Niesmaag
Address:	400 N. 4th St Bismarck, ND 58501	Address:	
phone:	701-222-7829		
email:			

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type		1 liter	500mL Nitric	500mL Nitric (filtered)					Temp (°C)	Spec. Cond.	pH	Analysis Required
43590	MW70	24Aug17	0852	GW		X	X	X					11.54	4755	6.98	MDU CCR List with TSS and Dissolved CCR Metals.

Comments:

Relinquished By:		Sample Condition:	
Name:	Date/Time	Location:	Temp (°C)
1 Dan Niesmaag	24Aug17 1804	Log In ~~Walk In #2~~	R0F2.3 TM562 ~~TM588~~
2			

Received by:	
Name:	Date/Time
NBuchmann	25Aug17 0800

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

CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-2336
IML Lab Reference No/SDG: S1708480
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR August 2017
MVTL Laboratory Identifications: 17-W3591
IML Laboratory Identifications: S1708480-001

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
MW70	17-W3591	S1708480-001

I. RECEIPT

- All samples were received at the laboratory on 25 Aug 2017 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 2.3°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 30 Aug 2017.
  - 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.

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

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CASE NARRATIVE

MVTL Lab Reference No/SDG: 201782-2336
IML Lab Reference No/SDG: S1708480
Client: Montana Dakota Utilities
Location: MDU Heskett Ash Site
Project Identification: CCR August 2017
MVTL Laboratory Identifications: 17-W3591
IML Laboratory Identifications: S1708480-001

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:** 30CT17
Claudette Carroll - MVTL Bismarck Laboratory Manager

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MEMBER ACIL

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 3 Oct 17
Lab Number: 17-W3591
Work Order #: 82-2336
Account #: 002800
Date Sampled: 24 Aug 17 8:52
Date Received: 25 Aug 17 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett

PO #: 165275

Sample Description: MW70

Temp at Receipt: 2.3C ROI

Event and Year: Aug 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.98	units	NA	SM 4500 H+ B	24 Aug 17 8:52	DJN
Temperature - Field	11.5	Degrees C	NA	SM 2550B	24 Aug 17 8:52	DJN
Conductivity - Field	4755	umhos/cm	1	EPA 120.1	24 Aug 17 8:52	DJN
Radium 226	See Attached Report				12 Sep 17	OL
Radium 228	See Attached Report				12 Sep 17	OL

Approved by: Claudette K. Carroll 30CT17

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

Your Environmental Monitoring Partner

Date: 9/19/2017

CLIENT: MVTL Laboratories, Inc.
Project: 201782-2336
Lab Order: S1708480

CASE NARRATIVE

Report ID: S1708480001

Sample 17-W3591 MW70 was received on August 30, 2017.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Your Environmental Monitoring Partner

Sample Analysis Report

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

Date Reported 9/19/2017
Report ID S1708480001

ProjectName: 201782-2336
Lab ID: S1708480-001
ClientSample ID: 17-W3591 MW70
COC: 201782-2336

WorkOrder: S1708480
CollectionDate: 8/24/2017 8:52:00 AM
DateReceived: 8/30/2017 10:05:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.17	pCi/L		0.2	SM 7500 Ra-B	09/12/2017 1417	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/12/2017 1417	MB
Radium 228	-0.7	pCi/L		1	Ga-Tech	09/12/2017 2237	MB
Radium 228 Precision (±)	1.2	pCi/L			Ga-Tech	09/12/2017 2237	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
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
C	Calculated Value
G	Analyzed at IML Gillette laboratory
J	Analyte detected below quantitation limits
M	Value exceeds Monthly Ave or MCL or is less than LCL
O	Outside the Range of Dilutions
X	Matrix Effect

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

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

Your Environmental Monitoring Partner

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1708480
Project: 201782-2336

Date: 9/19/2017
Report ID: S1708480001

Radium 228 by Ga/Tech Sample Type **MBLK** Units: pCi/L

MB-458 (09/11/17 16:02)	RunNo: 150089	PrepDate: 08/30/17 14:00			BatchID 13664		
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-458 (09/11/17 19:05)	RunNo: 150089	PrepDate: 08/30/17 14:00			BatchID 13664		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	39	1	39.3		99.8	65.9 - 132	

Radium 228 by Ga/Tech Sample Type **MS** Units: pCi/L

MS-458 (09/12/17 01:12)	RunNo: 150089	PrepDate: 08/30/17 14:00			BatchID 13664		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	36	1	39.3	ND	90.4	50 - 139	

Radium 228 by Ga/Tech Sample Type **MSD** Units: pCi/L

MSD-458 (09/12/17 04:16)	RunNo: 150089	PrepDate: 08/30/17 14:00			BatchID 13664		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	42	1	36	16.0	106	20	

Radium 226 in Water - Sample Type **MBLK** Units: pCi/L

MB-1789 (09/12/17 11:40)	RunNo: 149947	PrepDate: 08/30/17 0:00			BatchID 13647		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 in Water - Sample Type **LCS** Units: pCi/L

LCS-1789 (09/12/17 11:40)	RunNo: 149947	PrepDate: 08/30/17 0:00			BatchID 13647		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	6.1	0.2	6.41		94.9	67.1 - 122	

Radium 226 in Water - Sample Type **MS** Units: pCi/L

MS-1789 (09/12/17 11:40)	RunNo: 149947	PrepDate: 08/30/17 0:00			BatchID 13647		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.9	0.2	6.41	ND	92.4	65 - 131	

Radium 226 in Water - Sample Type **MSD** Units: pCi/L

MSD-1789 (09/12/17 11:40)	RunNo: 149947	PrepDate: 08/30/17 0:00			BatchID 13647		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Radium 226	6.0	0.2	5.9	1.47	93.8	20	

Qualifiers:

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

MVTL 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

201782-2336

Company Name and Address: MVTL 2616 E Broadway Bismarck, ND 58501	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box ☐
	Name of Sampler:	E-mail: ccarroll@mvtl.com For e-mail report check box ☐
Billing Address (indicate if different from above): PO Box 249 New Ulm, MN 56073	Quote Number	Date Submitted: 28-Aug-17
	Project Name/Number:	Purchase Order #: BL5949

Sample Information						Bottle Type						Analysis
S1708480 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
001	17-W3591	MW70	GW	24-Aug-17	852		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	28-Aug-17	1700			8.30.17	10:05	20.7 C
2.							

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: 2017

Sample ID: MW 70

Sampling Personal: Darren Nitsos

Weather Conditions: Temp: 55 °F Wind: E 10 Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	(No)	
Well Labeled?	(Yes)	No	
Casing Straight?	(Yes)	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	21.08 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	32.76 ft
Water Level After Sample:	22.58 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	7	sec.
Recover:	53	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	24 Aug 17	Time Purging Began:	0822 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	am/pm
Sample Date:	24 Aug 17	Time of Sampling:	0852 (am)/pm

Bottle List:	1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric
	250 mL 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	0827	10.96	4776	6.95	2.68	283	12.3	21.94	500	clear
2	0832	11.93	4766	6.98	0.60	280.7	1.83	22.01	500	clear
3	0837	11.76	4759	6.97	0.43	280.8	2.21	22.07	500	clear
4	0842	11.58	4761	6.97	0.34	280.5	3.37	22.21	500	clear
5	0847	11.63	4757	6.97	0.35	280.2	3.48	22.28	500	clear
6	0852	11.54	4755	6.98	0.34	~~278~~ 279.9	3.62	22.35	500	Clear
7										
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 3000 mL

Comments:

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

Chain of Custody Record

Project Name:	Event:	Work Order Number:
MDU Heskett	August 2017	82-2336

Report To:	MDU	Carbon Copy:	Name of Sampler(s):
Attn:	Samantha Marshall	Attn:	Darren Nieswaag
Address:	400 N. 4th St Bismarck, ND 58501	Address:	
phone:	701-222-7829		
email:			

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type		1 liter Nitric							Temp (°C)	Spec. Cond.	pH	Analysis Required
W3591	MW20	24Aug17	0852	GW		4							11.54	4755	6.98	Rad 226 & Rad 228

Comments:

Relinquished By:			Sample Condition:	
	Name:	Date/Time	Location:	Temp (°C)
1	Darren Nieswaag	24Aug17 1809	~~Log In~~ Walk In #2	RDI 2.3 TM562 / ~~TM588~~
2				

Received by:	
Name:	Date/Time
NBuchmann	25Aug17 0800

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October 21, 2016

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

RE: Groundwater Sampling Event- MDU Heskett Ash Site

Dear Ms. Marshall:

It was brought to MVTL's attention by BARR that the field data report for the August sampling event had an error. The error was the amount of volume removed for well 105. The initial report had 8500mL listed for volume removed but after reviewing the field sheet the actual volume removed was 7500mL. The attached field data report has the corrected data.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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MVTL Laboratories Inc.
FIELD DATA REPORT

WO# 82-2728 82-2749 82-2696
82-2724 82-2748 82-2694

MDU Heskett
GROUNDWATER SAMPLING - NDDH
Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	TOTAL DEPTH	WATER LEVEL END	VOLUME IN WELL (L)	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	pH	Turbidity NTU	SAMPLE APPEARANCE
2-90	30-Aug-16	16:17	30-Aug-16	16:37	1686.60	1665.02	21.58	24.80	NA	2.0	2000.0	Bladder	11.62	7676	6.86	0.53	clear
3-90	30-Aug-16	14:55	30-Aug-16	15:15	1686.01	1666.98	19.03	21.93	19.12	1.8	2000.0	Bladder	13.89	5222	6.80	1.61	clear
13	29-Aug-16	8:31	29-Aug-16	9:01	1724.98	1694.76	30.22	41.90	30.72	7.2	3000.0	Bladder	12.41	10873	6.81	1.15	clear
33	30-Aug-16	12:53	30-Aug-16	13:52	1717.91	1675.83	42.08	46.55	42.73	2.8	6000.0	Bladder	13.67	5298	6.45	1.69	clear
70	30-Aug-16	8:30	30-Aug-16	8:50	1706.36	1685.02	21.34	43.06	22.67	13.4	2000.0	Bladder	9.54	4136	6.90	4.76	clear
80R	31-Aug-16	10:04	31-Aug-16	10:24	NA	NA	14.80	30.10	15.09	9.4	2000.0	Bladder	12.62	5734	7.01	1.42	clear
44R	29-Aug-16	11:51	29-Aug-16	12:16	NA	NA	28.74	45.88	28.83	10.6	2500.0	Bladder	11.77	9498	6.50	0.73	clear
101	30-Aug-16	9:53	30-Aug-16	11:43	NA	NA	37.18	57.09	41.59	12.3	11000.0	Bladder	14.11	4968	6.67	4.88	clear
102	29-Aug-16	13:17	29-Aug-16	14:07	NA	NA	17.78	33.20	21.88	9.5	5000.0	Bladder	13.76	8160	6.76	2.87	clear
103	29-Aug-16	10:09	29-Aug-16	10:44	NA	NA	33.16	47.10	37.14	8.6	3500.0	Bladder	11.07	5247	6.64	1.63	clear
104	31-Aug-16	8:30	31-Aug-16	9:00	NA	NA	14.41	32.85	14.71	11.4	3000.0	Bladder	12.44	14048	6.88	4.30	clear
105	31-Aug-16	11:29	31-Aug-16	12:44	NA	NA	13.60	32.39	13.90	11.6	7500.0	Bladder	13.06	7590	6.64	4.71	clear
1-90	NA	NA	31-Aug-16	13:52	1675.86	1664.00	11.86	17.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
2	NA	NA	31-Aug-16	13:55	1698.60	1659.92	38.68	63.70	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
4B	NA	NA	31-Aug-16	14:01	1662.80	1645.10	17.70	26.15	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
8	NA	NA	31-Aug-16	13:59	1664.90	1647.87	17.03	28.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only

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MEMBER ACIL

CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2694**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3783** through **16-W3788**

MDU Sample Identification	MVTL Laboratory #
Dup1	16-W3783
Field Blank (FB)	16-W3784
MW13	16-W3785
MW103	16-W3786
MW44R	16-W3787
MW102	16-W3788

I. RECEIPT

- All samples were received at the laboratory on 30 Aug 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 3.4°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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

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

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CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2694**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3783** through **16-W3788**
Page 2 of 2

Recovery for the matrix spike was acceptable. RPD for the matrix spike duplicate and the matrix spike recoveries was within limits. No further action was taken.

- One selenium (dissolved) matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the matrix spike duplicate and the matrix spike recoveries was within limits. No further action was taken.
- One arsenic (total) matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the matrix spike duplicate and the matrix spike recoveries was within limits. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 19Sep16
Claudette Carroll - MVTL Bismarck Laboratory Manager

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

Report Date: 19 Sep 16
Lab Number: 16-W3783
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Dup 1

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.7	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	12	mg/l	1	I3765-85	30 Aug 16 15:44	ML
Total Alkalinity	544	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Fluoride	0.22	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	4910	mg/l	5.00	ASTM D516-07	2 Sep 16 9:10	EMS
Chloride	6.1	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	6980	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	472	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Total	364	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Total	1340	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Total	17.6	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Total	1.06	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	1.14	mg/l	0.10	6010	12 Sep 16 12:45	KMD
Calcium - Dissolved	452	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	390	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	1610	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	19.9	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	1.11	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	1.22	mg/l	0.10	6010	12 Sep 16 12:45	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	0.0030	mg/l	0.0020	6020	16 Sep 16 19:18	CC
Barium - Total	0.0233	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.005 @	mg/l	0.0020	6020	16 Sep 16 19:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	0.0030	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.0022	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	0.0038	mg/l	0.0020	6020	16 Sep 16 19:18	CC
Barium - Dissolved	0.0210	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	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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www.mvtl.com
MEMBER ACIL

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

Report Date: 19 Sep 16
Lab Number: 16-W3783
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Dup 1

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.005 @	mg/l	0.0020	6020	16 Sep 16 19:18	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	16 Sep 16 19:18	CC
Molybdenum - Dissolved	0.0022	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.0022	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll CC 19Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

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Samantha Marshall
Montana Dakota Utilities
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Bismarck ND 58501

Report Date: 19 Sep 16
Lab Number: 16-W3784
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.0	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	30 Aug 16 15:44	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	< 5	mg/l	5.00	ASTM D516-07	2 Sep 16 9:10	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	< 1	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Sodium - Total	< 1	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Potassium - Total	< 1	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	30 Aug 16 15:23	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	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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www.mvtl.com

Samantha Marshall
Montana Dakota Utilities
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Bismarck ND 58501

Report Date: 19 Sep 16
Lab Number: 16-W3784
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll 19Sep16 cc

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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Report Date: 19 Sep 16
Lab Number: 16-W3785
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 9:01
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW13

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.8	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	10	mg/l	1	I3765-85	30 Aug 16 15:44	ML
pH - Field	6.81	units	NA	SM 4500 H+ B	29 Aug 16 9:01	DJN
Temperature - Field	12.4	Degrees C	NA	SM 2550B	29 Aug 16 9:01	DJN
Total Alkalinity	503	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Conductivity - Field	10873	umhos/cm	1	EPA 120.1	29 Aug 16 9:01	DJN
Fluoride	0.85	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	6440	mg/l	5.00	ASTM D516-07	2 Sep 16 9:10	EMS
Chloride	80.7	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	9660	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	402	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Total	620	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Total	1890	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Total	23.0	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Total	0.94	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.72	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	426	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	655	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	2040	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	25.1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.92	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.61	mg/l	0.10	6010	30 Aug 16 15:23	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0071	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.0502	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	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: 19 Sep 16
Lab Number: 16-W3785
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 9:01
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW13

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0066	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.0540	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll cc 19Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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CERTIFICATION: ND # ND-00016

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
www.mvtl.com
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Report Date: 19 Sep 16
Lab Number: 16-W3786
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 10:44
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW103

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.7	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	4	mg/l	1	I3765-85	30 Aug 16 15:44	ML
pH - Field	6.64	units	NA	SM 4500 H+ B	29 Aug 16 10:44	DJN
Temperature - Field	11.1	Degrees C	NA	SM 2550B	29 Aug 16 10:44	DJN
Total Alkalinity	445	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Conductivity - Field	5247	umhos/cm	1	EPA 120.1	29 Aug 16 10:44	DJN
Fluoride	0.18	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	2790	mg/l	5.00	ASTM D516-07	2 Sep 16 9:10	EMS
Chloride	145	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	4460	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	555	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Magnesium - Total	496	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Sodium - Total	240	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Potassium - Total	20.1	mg/l	1.0	6010	2 Sep 16 12:24	SZ
Lithium - Total	0.81	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.21	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	540	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	484	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	262	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	20.4	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.83	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	< 0.2 @	mg/l	0.10	6010	30 Aug 16 15:23	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0101	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.0618	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	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
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400 N. 4th
Bismarck ND 58501

Report Date: 19 Sep 16
Lab Number: 16-W3786
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 10:44
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW103

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0084	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.0718	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

CC

Approved by: Claudette K. Carroll 19Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

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Samantha Marshall
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Bismarck ND 58501

Report Date: 19 Sep 16
Lab Number: 16-W3787
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 12:16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW44R

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.6	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	4	mg/l	1	I3765-85	30 Aug 16 15:44	ML
pH - Field	6.50	units	NA	SM 4500 H+ B	29 Aug 16 12:16	DJN
Temperature - Field	11.8	Degrees C	NA	SM 2550B	29 Aug 16 12:16	DJN
Total Alkalinity	453	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Conductivity - Field	9498	umhos/cm	1	EPA 120.1	29 Aug 16 12:16	DJN
Fluoride	0.65	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	5780	mg/l	5.00	ASTM D516-07	2 Sep 16 9:31	EMS
Chloride	271	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	8880	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	444	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Total	1020	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Total	1080	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Total	32.8	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Total	1.89	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.44	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	434	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	1000	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	1060	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	32.3	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	1.76	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.43	mg/l	0.10	6010	30 Aug 16 15:23	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0068	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.0815	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	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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Report Date: 19 Sep 16
Lab Number: 16-W3787
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 12:16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW44R

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0066	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.0797	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll CC 19Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Report Date: 19 Sep 16
Lab Number: 16-W3788
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 14:07
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW102

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Aug 16	ML
pH	* 6.8	units	N/A	SM4500 H+ B	30 Aug 16 17:00	ML
Total Suspended Solids	11	mg/l	1	I3765-85	30 Aug 16 15:44	ML
pH - Field	6.76	units	NA	SM 4500 H+ B	29 Aug 16 14:07	DJN
Temperature - Field	13.8	Degrees C	NA	SM 2550B	29 Aug 16 14:07	DJN
Total Alkalinity	544	mg/l CaCO3	20	SM2320-B	30 Aug 16 17:00	ML
Conductivity - Field	8160	umhos/cm	1	EPA 120.1	29 Aug 16 14:07	DJN
Fluoride	0.22	mg/l	0.10	SM4500-F-C	30 Aug 16 17:00	ML
Sulfate	4020	mg/l	5.00	ASTM D516-07	2 Sep 16 9:31	EMS
Chloride	6.4	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:15	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 11:29	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	31 Aug 16 12:30	EV
Total Dissolved Solids	6940	mg/l	5	I1750-85	30 Aug 16 14:30	ML
Calcium - Total	464	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Total	358	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Total	1320	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Total	16.2	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Total	1.06	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	1.11	mg/l	0.10	6010	12 Sep 16 12:45	KMD
Calcium - Dissolved	447	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	382	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	1560	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	17.9	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	1.08	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	1.20	mg/l	0.10	6010	12 Sep 16 12:45	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	0.0031	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0234	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.005 @	mg/l	0.0020	6020	16 Sep 16 19:18	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	0.0030	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	0.0033	mg/l	0.0020	6020	12 Sep 16 10:30	KMD

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

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Report Date: 19 Sep 16
Lab Number: 16-W3788
Work Order #:82-2694
Account #: 002800
Date Sampled: 29 Aug 16 14:07
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW102

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0208	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.005 @	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll cc 19 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Quality Control Report

Lab IDs: 16-W3783 to 16-W3788 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2694

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.1000	97	80-120	0.100	16W3830q	< 0.001	0.0990	99	75-125	0.0990	0.1070	107	7.8	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	98	80-120	0.400	16W3829q	< 0.001	0.3952	99	75-125	0.3952	0.4246	106	7.2	20	-	-	< 0.001
				0.100	16W3786q	< 0.001	0.1002	100	75-125	0.1002	0.1004	100	0.2	20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.1000	98	80-120	0.100	16W3830q	< 0.002	0.1042	104	75-125	0.1042	0.1146	115	9.5	20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	111	80-120	0.400	16W3829q	< 0.002	0.4044	101	75-125	0.4044	0.4444	111	9.4	20	-	-	< 0.002
	0.1000	99	80-120	0.100	16W3786q	< 0.002	0.1075	108	75-125	0.1075	0.1054	105	2.0	20	-	-	< 0.002
				0.400	16W3957q	< 0.002	0.4454	111	75-125	0.4454	0.4466	112	0.3	20	-	-	< 0.002
				0.400	16W3968q	< 0.002	0.4664	117	75-125	0.4664	0.5048	126	7.9	20	-	-	
				0.400	16W4006q	0.0023	0.4334	108	75-125	0.4334	0.4374	109	0.9	20	-	-	
Barium - Dissolved mg/l	0.1000	101	80-120	0.100	16W3830q	0.0185	0.1186	100	75-125	0.1186	0.1230	104	3.6	20	-	-	< 0.002
Barium - Total mg/l	0.1000	97	80-120	0.400	16W3829q	0.0133	0.4256	103	75-125	0.4256	0.4442	108	4.3	20	-	-	< 0.002
				0.100	16W3786q	0.0101	0.1090	99	75-125	0.1090	0.1132	103	3.8	20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.1000	107	80-120	0.100	16-W3830	< 0.001	0.0865	86	75-125	0.0865	0.0913	91	5.4	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	102	80-120	0.400	16W3829q	< 0.0005	0.4548	114	75-125	0.4548	0.4746	119	4.3	20	-	-	< 0.0005
				0.100	16W3786q	< 0.0005	0.1174	117	75-125	0.1174	0.1162	116	1.0	20	-	-	< 0.0005
Boron - Dissolved mg/l	0.40	112	80-120	1.50	16-W3788	1.34	2.94	107	75-125	2.94	2.94	107	0.0	20	-	-	< 0.1
	0.40	108	80-120	0.600	16-W3788	1.20	1.87	112	75-125	1.87	1.83	105	2.2	20	-	-	< 0.1
															-	-	< 0.1
															-	-	< 0.1
Boron - Total mg/l	0.40	112	80-120	0.400	16-D3542	1.51	1.92	102	75-125	1.92	1.99	120	3.6	20	-	-	< 0.1
	0.40	108	80-120	0.400	16-W3786	0.21	0.58	92	75-125	0.58	0.59	95	1.7	20	-	-	< 0.1
	0.40	102	80-120	0.400	16-W3829	0.42	0.78	90	75-125	0.78	0.80	95	2.5	20	-	-	< 0.1
				0.400	16-W3855	0.26	0.66	100	75-125	0.66	0.69	108	4.4	20	-	-	< 0.1
				0.400	16-D3704	0.58	1.01	108	75-125	1.01	1.05	118	3.9	20	-	-	< 0.1
															-	-	< 0.1
Cadmium - Dissolved mg/l	0.1000	105	80-120	0.100	16W3830q	< 0.0005	0.0982	98	75-125	0.0982	0.1066	107	8.2	20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000	106	80-120	0.400	16W3829q	< 0.0005	0.4002	100	75-125	0.4002	0.4410	110	9.7	20	-	-	< 0.0005
				0.100	16W3786q	< 0.0005	0.1031	103	75-125	0.1031	0.1020	102	1.1	20	-	-	< 0.0005

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Quality Control Report

Lab IDs: 16-W3783 to 16-W3788 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2694

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Calcium - Dissolved mg/l	20.0	108	80-120	500	16-W3827	505	1040	107	75-125	1040	1020	103	1.9	20	-	-	< 1
	20.0	106	80-120	500	16-W3869	445	1020	115	75-125	1020	995	110	2.5	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Calcium - Total mg/l	20.0	108	80-120	100	16W3725q	98.6	192	93	75-125	192	190	91	1.0	20	-	-	< 1
	20.0	106	80-120	100	16W3746q	27.1	124	97	75-125	124	127	100	2.4	20	-	-	< 1
	20.0	111	80-120	500	16W3786q	555	1020	93	75-125	1020	1020	93	0.0	20	-	-	< 1
				1000	16W3783q	472	1470	100	75-125	1470	1580	111	7.2	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Chloride mg/l	30.0	100	80-120	30.0	16-W3716	1.9	29.8	93	80-120	29.8	30.0	94	0.7	20	-	-	< 1
															-	-	< 1
Chromium - Dissolved mg/l	0.1000	93	80-120	0.100	16W3830q	< 0.002	0.0973	97	75-125	0.0973	0.1060	106	8.6	20	-	-	< 0.002
Chromium - Total mg/l	0.1000	92	80-120	0.400	16W3829q	< 0.002	0.3686	92	75-125	0.3686	0.4086	102	10.3	20	-	-	< 0.002
				0.100	16W3786q	< 0.002	0.1020	102	75-125	0.1020	0.1018	102	0.2	20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.1000	93	80-120	0.100	16W3830q	< 0.002	0.0963	96	75-125	0.0963	0.1025	102	6.2	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	102	80-120	0.400	16W3829q	< 0.002	0.3676	92	75-125	0.3676	0.4074	102	10.3	20	-	-	< 0.002
	0.1000	93	80-120	0.100	16W3786q	< 0.002	0.0980	98	75-125	0.0980	0.0993	99	1.3	20	-	-	< 0.002
				0.400	16W3957q	< 0.002	0.3992	100	75-125	0.3992	0.4066	102	1.8	20	-	-	< 0.002
				0.400	16W3968q	0.0024	0.4122	102	75-125	0.4122	0.4440	110	7.4	20	-	-	
				0.400	16W4006q	< 0.002	0.3966	99	75-125	0.3966	0.3934	98	0.8	20	-	-	
Fluoride mg/l	0.50	104	90-110	0.500	16-W3787	0.65	1.07	84	80-120	1.07	1.08	86	0.9	20	-	-	< 0.1
															-	-	< 0.1
Lead - Dissolved mg/l	0.1000	99	80-120	0.100	16W3830q	< 0.0005	0.0920	92	75-125	0.0920	0.0940	94	2.2	20	-	-	< 0.0005
Lead - Total mg/l	0.1000	96	80-120	0.400	16W3829q	< 0.0005	0.3788	95	75-125	0.3788	0.3914	98	3.3	20	-	-	< 0.0005
				0.100	16W3786q	< 0.0005	0.0882	88	75-125	0.0882	0.0908	91	2.9	20	-	-	< 0.0005

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Quality Control Report

Lab IDs: 16-W3783 to 16-W3788 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2694

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Lithium - Dissolved mg/l	0.40	100	80-120	0.800 0.800	16-W3827 16-W3869	1.24 1.39	1.87 2.13	79 93	75-125 75-125	1.87 2.13	1.91 2.05	84 82	2.1 3.8	20 20	- - -	- - -	< 0.1 < 0.1 < 0.1
Lithium - Total mg/l	0.40	92	80-120	0.400 0.400	16-W3786 16-W3829	0.81 0.44	1.19 0.92	95 120	75-125 75-125	1.19 0.92	1.18 0.93	92 122	0.8 1.1	20 20	- - -	- - -	< 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0 20.0	111 108	80-120 80-120	500 500	16-W3827 16-W3869	720 880	1260 1460	108 116	75-125 75-125	1260 1460	1240 1420	104 108	1.6 2.8	20 20	- - -	- - -	< 1 < 1 < 1
Magnesium - Total mg/l	20.0 20.0 20.0	111 108 114	80-120 80-120 80-120	100 100 500 1000	16W3725q 16W3746q 16W3786q 16W3783q	33.5 15.0 496 364	133 115 975 1400	100 100 96 104	75-125 75-125 75-125 75-125	133 115 975 1400	132 117 960 1480	98 102 93 112	0.8 1.7 1.6 5.6	20 20 20 20	- - - - -	- - - - -	< 1 < 1 < 1 < 1 < 1 < 1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	16-W3788	< 0.0002	0.0020	100	70-130	0.0020	0.0019	95	5.1	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	100	85-115	0.002 0.002	16-W3675 16-W3788	< 0.0002 < 0.0002	0.0018 0.0018	90 90	70-130 70-130	0.0018 0.0018	0.0019 0.0018	95 90	5.4 0.0	20 20	- -	- -	< 0.0002
Molybdenum - Dissolved mg/l	0.1000	91	80-120	0.100	16-W3830	0.0021	0.1069	105	75-125	0.1069	0.1137	112	6.2	20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	96	80-120	0.400 0.100	16W3829q 16W3786q	0.0051 < 0.002	0.4414 0.1136	109 114	75-125 75-125	0.4414 0.1136	0.4610 0.1182	114 118	4.3 4.0	20 20	- -	- -	< 0.002 < 0.002
pH units	- -	- -	- -	- -	- -	- -	- -	- -	- -	6.8 7.0	6.8 7.0	- -	0.0 0.0	20 20	- -	- -	- -
Potassium - Dissolved mg/l	10.0 10.0	106 103	80-120 80-120	100 100	16-W3827 16-W3869	23.4 20.5	136 140	113 120	75-125 75-125	136 140	134 137	111 116	1.5 2.2	20 20	- - -	- - -	< 1 < 1 < 1 < 1

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Quality Control Report

Lab IDs: 16-W3783 to 16-W3788 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2694

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0 10.0 10.0	106 103 98	80-120 80-120 80-120	20.0 20.0 100 200	16W3725q 16W3746q 16W3786q 16W3783q	9.6 4.6 20.1 17.6	29.7 23.8 120 226	100 96 100 104	75-125 75-125 75-125 75-125	29.7 23.8 120 226	29.3 24.3 118 242	98 98 98 112	1.4 2.1 1.7 6.8	20 20 20 20	- - - - - -	- - - - - -	< 1 < 1 < 1 < 1 < 1 < 1
Selenium - Dissolved mg/l	0.1000	110	80-120	0.100	16W3830q	< 0.002	0.1160	116	75-125	0.1160	0.1259	126	8.2	20	-	-	< 0.002
Selenium - Total mg/l	0.1000	115	80-120	0.400 0.100	16W3829q 16W3786q	0.0210 0.0618	0.4736 0.1796	113 118	75-125 75-125	0.4736 0.1796	0.5240 0.1859	126 124	10.1 3.4	20 20	- -	- -	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0 20.0	112 110	80-120 80-120	500 500	16-W3827 16-W3869	805 885	1340 1450	107 113	75-125 75-125	1340 1450	1300 1420	99 107	3.0 2.1	20 20	- - - -	- - - -	< 1 < 1 < 1 < 1
Sodium - Total mg/l	20.0 20.0 20.0	112 110 104	80-120 80-120 80-120	100 100 500 1000	16W3725q 16W3746q 16W3786q 16W3783q	256 107 240 1340	342 196 730 2350	86 89 98 101	75-125 75-125 75-125 75-125	342 196 730 2350	339 198 720 2470	83 91 96 113	0.9 1.0 1.4 5.0	20 20 20 20	- - - - - -	- - - - - -	< 1 < 1 < 1 < 1 < 1 < 1
Sulfate mg/l	100 100	99 97	90-110 90-110	100 100	16-W3784 16-W3789	< 5 216	96.8 314	97 98	80-120 80-120	96.8 314	97.7 325	98 109	0.9 3.4	20 20	- -	- -	< 5 < 5
Thallium - Dissolved mg/l	0.1000	96	80-120	0.100	16W3830q	< 0.0005	0.0902	90	75-125	0.0902	0.0930	93	3.1	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	84	80-120	0.400 0.100	16W3829q 16W3786q	< 0.0005 < 0.0005	0.3548 0.0910	89 91	75-125 75-125	0.3548 0.0910	0.3738 0.0926	93 93	5.2 1.7	20 20	- -	- -	< 0.0005 < 0.0005
Total Alkalinity mg/l CaCO3	410	99	90-110	410 410	16-W3785 16-W3791	503 445	896 845	96 98	80-120 80-120	896 845	895 847	96 98	0.1 0.2	20 20	95	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	4460	4490	-	0.7	20	-	-	< 5

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Quality Control Report

Lab IDs: 16-W3783 to 16-W3788 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2694

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	54	53	-	1.9	20	-	-	< 1
	-	-	-	-	-	-	-	-	-	11	11	-	0.0	20	-	-	

Approved by: Amended C. Carlo
23Sep2016

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2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW13

Sampling Personal: Darren Wiesmann

Weather Conditions: Temp: 63 °F Wind: NW 5 Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	~~No~~	
Well Labeled?	(Yes)	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	30.22	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	37.10	ft
Water Level After Sample:	30.72	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	~~3~~ 4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	0831 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	0901 ~~am~~/pm

Bottle List:			
	500 mL Nitric	1 Liter Raw	
	500 mL Nitric (filtered)	4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	0836	11.30	10887	6.80	3.20	237.1	4.18	30.69	500	clear
2	0841	11.70	10885	6.81	2.97	234.6	3.85	30.72	500	clear
3	0846	11.74	10893	6.81	2.61	228.7	2.85	30.72	500	clear
4	0851	11.80	10872	6.81	2.61	226.6	1.17	30.72	500	clear
5	0856	12.30	10882	6.81	2.53	222.6	1.24	30.72	500	clear
6	0901	12.41	10873	6.81	2.54	220.7	1.15	30.72	500	clear
7										
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 3000 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW103

Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 68 °F Wind: Light Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	33.16	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	40.10	ft
Water Level After Sample:	37.14	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	1009 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	1044 am/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
			±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1014	10.93	5272	6.62	4.60	202.3	3.79	34.42	500	clr
2	1019	11.26	5269	6.64	~~5.88~~ 4.88	201.2	3.52	34.54	500	clr
3	1024	10.95	5267	6.64	4.22	200.1	2.25	34.73	500	clr
4	1029	10.86	5263	6.64	4.11	~~199.0~~ 199.0	2.16	34.87	500	clr
5	1034	10.59	5261	6.64	5.68	197.9	1.55	35.06	500	clr
6	1039	10.74	5250	6.64	5.54	197.5	1.60	35.16	500	clr
7	1044	11.07	5247	6.64	5.23	197.0	1.63	35.24	500	clr
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: ~~5500~~ 3500 mL

Comments:

(1)

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW44R

Sampling Personal: Darren Nitschang

Weather Conditions: Temp: 72 °F Wind: NW 5 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		
Casing Diameter:	2"		
Water Level Before Purge:	~~28.64~~ 28.94		ft
Total Well Depth:	—		ft
Well Volume:	—		liters
Depth to Top of Pump:	35.16		ft
Water Level After Sample:	28.83		ft
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

Control Settings

Purge:	84	sec.
Recover:	54	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29Aug16	Time Purging Began:	1151 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	29Aug16	Time of Sampling:	1216 am/pm

Bottle List:			
	500 mL Nitric	1 Liter Raw	
	500 mL Nitric (filtered)	4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
			±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1156	12.11	~~9537~~	6.50	2.14	194.3	1.35	28.83	500	Clear
2	1201	11.87	9499	6.50	1.98	193.1	1.45	28.83	500	Clear
3	1206	12.01	9495	6.50	1.53	191.0	~~1.54~~	28.83	500	Clear Turbidity 0.66
4	1211	11.84	9495	6.50	1.52	188.6	0.70	28.83	500	Clear
5	1216	11.77	9498	6.50	1.54	187.3	0.73	28.83	500	Clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW102

Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 76 °F Wind: NW 5 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	~~Yes~~	No	
Well Labeled?	~~Yes~~	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	17.78	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	27.05	ft
Water Level After Sample:	21.88	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	
Sampling Method:	Bladder	
Dedicated Equip?:	~~Yes~~	No
Duplicate Sample?:	~~Yes~~	No
Duplicate Sample ID:	Dup-1	

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	1317 am/pm
Well Purged Dry?	Yes ~~No~~	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	1407 am/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	1322	12.62	10041	6.74	0.76	-77.5	5.19	18.86	500	clr
2	1327	13.16	9933	6.73	1.04	-64.4	10.7	19.11	500	clr
3	1332	13.25	9655	6.71	1.11	-55.8	16.1	19.22	500	clr
4	1337	13.00	9397	6.70	0.92	-57.1	13.5	19.31	500	clr
5	1342	12.96	8893	6.70	1.20	-48.8	7.80	19.63	~~500~~ 1000	clr
6	1357	13.47	8402	6.72	0.85	-45.3	2.96	19.94	~~500~~ 1000	clr
7	~~MT~~ 1402	14.17	8219	6.75	0.91	-43.4	2.88	19.95	500	clr
8	1407	13.76	8160	6.76	0.93	-41.9	2.87	20.02	500	clr
9										
10										

Stabilized: (Yes) No

Total Volume Removed: ~~4000~~ mL 5000

Comments:

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

Chain of Custody Record

Project Name: MDU Heskett CCR Groundwater August 2016

Name of Sampler(s): Darren Nieswaag

Report To: MDU
Attn: Samantha Marshall
Address: 400 N. 4th St
Bismarck, ND 58501
Phone: 701-222-7829

Carbon Copy:
Attn:
Address:

Work Order Number: 82-2694

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO_3	1 liter	500 ml HNO_3 (filtered)					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W3783	Dup 1	29Aug16	NA	W		X	X	X					NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W3784	Field Blank (FB)	29Aug16	NA	W		X	X	X					NA	NA	NA	
W3785	mw13	29Aug16	0901	GW		X	X	X					12.41	10873	6.81	
W3786	mw103	29Aug16	1044	GW		X	X	X					11.07	5247	6.64	
W3787	mw44R	29Aug16	1216	GW		X	X	X					11.77	9498	6.50	
W3788	mw102	29Aug16	1407	GW		X	X	X					13.76	8160	6.76	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	Darren Nieswaag	Walk in	29Aug16 1656	C. Jackson		30Aug16 0800	ROI 3,4
2							TM 588
3							29Aug16 1656

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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MEMBER ACIL

October 21, 2016

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

RE: Groundwater Sampling Event- MDU Heskett Ash Site

Dear Ms. Marshall:

It was brought to MVTL's attention by BARR that the field data report for the August sampling event had an error. The error was the amount of volume removed for well 105. The initial report had 8500mL listed for volume removed but after reviewing the field sheet the actual volume removed was 7500mL. The attached field data report has the corrected data.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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MVTL Laboratories Inc.
FIELD DATA REPORT

WO# 82-2728 82-2749 82-2696
82-2724 82-2748 82-2694

MDU Heskett
GROUNDWATER SAMPLING - NDDH
Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	TOTAL DEPTH	WATER LEVEL END	VOLUME IN WELL (L)	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	pH	Turbidity NTU	SAMPLE APPEARANCE
2-90	30-Aug-16	16:17	30-Aug-16	16:37	1686.60	1665.02	21.58	24.80	NA	2.0	2000.0	Bladder	11.62	7676	6.86	0.53	clear
3-90	30-Aug-16	14:55	30-Aug-16	15:15	1686.01	1666.98	19.03	21.93	19.12	1.8	2000.0	Bladder	13.89	5222	6.80	1.61	clear
13	29-Aug-16	8:31	29-Aug-16	9:01	1724.98	1694.76	30.22	41.90	30.72	7.2	3000.0	Bladder	12.41	10873	6.81	1.15	clear
33	30-Aug-16	12:53	30-Aug-16	13:52	1717.91	1675.83	42.08	46.55	42.73	2.8	6000.0	Bladder	13.67	5298	6.45	1.69	clear
70	30-Aug-16	8:30	30-Aug-16	8:50	1706.36	1685.02	21.34	43.06	22.67	13.4	2000.0	Bladder	9.54	4136	6.90	4.76	clear
80R	31-Aug-16	10:04	31-Aug-16	10:24	NA	NA	14.80	30.10	15.09	9.4	2000.0	Bladder	12.62	5734	7.01	1.42	clear
44R	29-Aug-16	11:51	29-Aug-16	12:16	NA	NA	28.74	45.88	28.83	10.6	2500.0	Bladder	11.77	9498	6.50	0.73	clear
101	30-Aug-16	9:53	30-Aug-16	11:43	NA	NA	37.18	57.09	41.59	12.3	11000.0	Bladder	14.11	4968	6.67	4.88	clear
102	29-Aug-16	13:17	29-Aug-16	14:07	NA	NA	17.78	33.20	21.88	9.5	5000.0	Bladder	13.76	8160	6.76	2.87	clear
103	29-Aug-16	10:09	29-Aug-16	10:44	NA	NA	33.16	47.10	37.14	8.6	3500.0	Bladder	11.07	5247	6.64	1.63	clear
104	31-Aug-16	8:30	31-Aug-16	9:00	NA	NA	14.41	32.85	14.71	11.4	3000.0	Bladder	12.44	14048	6.88	4.30	clear
105	31-Aug-16	11:29	31-Aug-16	12:44	NA	NA	13.60	32.39	13.90	11.6	7500.0	Bladder	13.06	7590	6.64	4.71	clear
1-90	NA	NA	31-Aug-16	13:52	1675.86	1664.00	11.86	17.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
2	NA	NA	31-Aug-16	13:55	1698.60	1659.92	38.68	63.70	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
4B	NA	NA	31-Aug-16	14:01	1662.80	1645.10	17.70	26.15	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
8	NA	NA	31-Aug-16	13:59	1664.90	1647.87	17.03	28.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only

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CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2696**
IML Lab Reference No/SDG: **S1609012**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett Ash Site**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3795** through **16-W3800**
IML Laboratory Identifications: **S1609012-001** through **S1609012-006**
Page 1 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Dup1	16-W3795	S1609012-001
Field Blank (FB)	16-W3796	S1609012-002
MW13	16-W3797	S1609012-003
MW103	16-W3798	S1609012-004
MW44R	16-W3799	S1609012-005
MW102	16-W3800	S1609012-006

I. RECEIPT

- All samples were received at the laboratory on 30 August 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 3.4°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 1 September 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.

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.

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

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CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2696**
IML Lab Reference No/SDG: **S1609012**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett Ash Site**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3795** through **16-W3800**
IML Laboratory Identifications: **S1609012-001** through **S1609012-006**

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:** 26 Sep 16
Claudette Carroll - MVTL Bismarck Laboratory Manager

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Report Date: 26 Sep 16
Lab Number: 16-W3795
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: Dup 1

Temp at Receipt: 3.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			14 Sep 16	OL
Radium 228	See Attached Report			17 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 26 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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Report Date: 26 Sep 16
Lab Number: 16-W3796
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 3.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			14 Sep 16	OL
Radium 228	See Attached Report			17 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

cc

Approved by: Claudette K. Carroll 26 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Report Date: 26 Sep 16
Lab Number: 16-W3797
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16 9:01
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW13

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.81	units	NA	SM 4500 H+ B	29 Aug 16	9:01	DJN
Temperature - Field	12.4	Degrees C	NA	SM 2550B	29 Aug 16	9:01	DJN
Conductivity - Field	10873	umhos/cm	1	EPA 120.1	29 Aug 16	9:01	DJN
Radium 226	See Attached Report				14 Sep 16		OL
Radium 228	See Attached Report				17 Sep 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 26 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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Report Date: 26 Sep 16
Lab Number: 16-W3798
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16 10:44
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW103

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.64	units	NA	SM 4500 H+ B	29 Aug 16 10:44	DJN
Temperature - Field	11.1	Degrees C	NA	SM 2550B	29 Aug 16 10:44	DJN
Conductivity - Field	5247	umhos/cm	1	EPA 120.1	29 Aug 16 10:44	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 26Sep16

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
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CERTIFICATION: ND # ND-00016

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Report Date: 26 Sep 16
Lab Number: 16-W3799
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16 12:16
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW44R

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.50	units	NA	SM 4500 H+ B	29 Aug 16 12:16	DJN
Temperature - Field	11.8	Degrees C	NA	SM 2550B	29 Aug 16 12:16	DJN
Conductivity - Field	9498	umhos/cm	1	EPA 120.1	29 Aug 16 12:16	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 26 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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Report Date: 26 Sep 16
Lab Number: 16-W3800
Work Order #:82-2696
Account #: 002800
Date Sampled: 29 Aug 16 14:07
Date Received: 30 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW102

Temp at Receipt: 3.4C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.76	units	NA	SM 4500 H+ B	29 Aug 16 14:07	DJN
Temperature - Field	13.8	Degrees C	NA	SM 2550B	29 Aug 16 14:07	DJN
Conductivity - Field	8160	umhos/cm	1	EPA 120.1	29 Aug 16 14:07	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll cc 26 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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

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

Your Environmental Monitoring Partner

Date: 9/26/2016

CLIENT: MVTL Laboratories, Inc.
Project: 201682-2696
Lab Order: S1609012

CASE NARRATIVE

Report ID: S1609012001

Samples 16-W3795 Dup 1, 16-W3796 Field Blank, 16-W3797 MW13, 16-W3798 MW103, 16-W3799 MW44R, and 16-W3800 MW102 were received on September 1, 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

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

Your Environmental Monitoring Partner

Sample Analysis Report

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

Date Reported 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-001
ClientSample ID: 16-W3795 Dup 1
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	0.4	pCi/L		1	Ga-Tech	09/17/2016 1710	MB
Radium 228 Precision (±)	3.1	pCi/L			Ga-Tech	09/17/2016 1710	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-002
ClientSample ID: 16-W3796 Field Blank
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.18	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-1.2	pCi/L		1	Ga-Tech	09/17/2016 2011	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	09/17/2016 2011	MB

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-003
ClientSample ID: 16-W3797 MW13
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016 9:01:00 AM
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-3.4	pCi/L		1	Ga-Tech	09/17/2016 2312	MB
Radium 228 Precision (±)	3.5	pCi/L			Ga-Tech	09/17/2016 2312	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-004
ClientSample ID: 16-W3798 MW103
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016 10:44:00 AM
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-2.4	pCi/L		1	Ga-Tech	09/18/2016 213	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	09/18/2016 213	MB

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-005
ClientSample ID: 16-W3799 MW44R
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016 12:16:00 PM
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-1.9	pCi/L		1	Ga-Tech	09/18/2016 514	MB
Radium 228 Precision (±)	3.5	pCi/L			Ga-Tech	09/18/2016 514	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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 9/26/2016
Report ID S1609012001

ProjectName: 201682-2696
Lab ID: S1609012-006
ClientSample ID: 16-W3800 MW102
COC: 201682-2696

WorkOrder: S1609012
CollectionDate: 8/29/2016 2:07:00 PM
DateReceived: 9/1/2016 10:41:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	09/18/2016 815	MB
Radium 228 Precision (±)	3.0	pCi/L			Ga-Tech	09/18/2016 815	MB

These results apply only to the samples tested. **RL - Reporting Limit**

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Inter-Mountain Labs
Your Environmental Monitoring Partner
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.
Work Order: S1609012
Project: 201682-2696

Date: 9/26/2016
Report ID: S1609012001

Radium 228 by Ga/Tech Sample Type **MBLK** Units: pCi/L

MB-384 (09/16/16 17:01)	RunNo: 138877	PrepDate: 09/07/16 12:00			BatchID: 12303		
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-384 (09/16/16 20:02)	RunNo: 138877	PrepDate: 09/07/16 12:00			BatchID: 12303		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	37	1	38.5		96.0	61.3 - 120	

Radium 228 by Ga/Tech Sample Type **MS** Units: pCi/L

MS-384 (09/17/16 02:04)	RunNo: 138877	PrepDate: 09/07/16 12:00			BatchID: 12303		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Total Radium 228	46	1	38.5	ND	119	64.3 - 120	

Radium 228 by Ga/Tech Sample Type **MSD** Units: pCi/L

MSD-384 (09/17/16 05:05)	RunNo: 138877	PrepDate: 09/07/16 12:00			BatchID: 12303		
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
Total Radium 228	42	1	46	8.12	110	20	

Radium 226 in Water - Total by SM7500RA_B Sample Type **MBLK** Units: pCi/L

MB-1660 (09/14/16 09:51)	RunNo: 138729	PrepDate: 09/07/16 0:00			BatchID: 12295		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	ND	0.2					

Radium 226 in Water - Total by SM7500RA_B Sample Type **LCS** Units: pCi/L

LCS-1660 (09/14/16 09:51)	RunNo: 138729	PrepDate: 09/07/16 0:00			BatchID: 12295		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	5.3	0.2	5.99		88.4	67.1 - 122	

Radium 226 in Water - Total by SM7500RA_B Sample Type **MS** Units: pCi/L

S1608482-001AMS (09/14/16 09:51)	RunNo: 138729	PrepDate: 09/07/16 0:00			BatchID: 12295		
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
Radium 226	10.1	0.2	12	0.3	81.5	65 - 131	

Qualifiers:

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

MVTL 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

201682-2696

Company Name and Address: MVTL, 2616 E Broadway, Bismarck, ND 58501	Account #:	Phone #: 701-258-9720
	Contact: Claudette	Fax #: For faxed report check box ☐
Billing Address (indicate if different from above): PO Box 249, New Ulm, MN 56073	Name of Sampler:	E-mail: ccarroll@mvtl.com For e-mail report check box ☐
	Quote Number	Date Submitted: 8/30/2016
	Project Name/Number:	Purchase Order #: BL5652

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
1660902-001	16-W3795	Dup 1		8/29/2016								Ra226 & Ra228
-002	16-W3796	Field Blank		8/29/2016								
-003	16-W3797	MW13		8/29/2016	901							
-004	16-W3798	MW103		8/29/2016	1044							
-005	16-W3799	MW44R		8/29/2016	1216							
-006	16-W3800	MW102		8/29/2016	1407							

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
C. Jackson	08/30/16	1700		Lisa Eckstad	9/1/16	10:41	19.6 °C
2.							

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW13

Sampling Personal: Darren Wiesmann

Weather Conditions: Temp: 63 °F Wind: NW 5 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	~~No~~	
Well Labeled?	(Yes)	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	30.22	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	37.10	ft
Water Level After Sample:	30.72	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	~~5~~ 4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	0831 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	0901 (am)/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	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	0836	11.30	10887	6.80	3.20	237.1	4.18	30.69	500	Clear
2	0841	11.70	10885	6.81	2.97	234.6	3.85	30.72	500	Clear
3	0846	11.74	10893	6.81	2.61	228.7	2.85	30.72	500	Clear
4	0851	11.80	10872	6.81	2.61	226.6	1.17	30.72	500	Clear
5	0856	12.30	10882	6.81	2.53	222.6	1.24	30.72	500	clear
6	0901	12.41	10873	6.81	2.54	220.7	1.15	30.72	500	clear
7										
8										
9										
10										

Stabilized: (Yes) No

Total Volume Removed: 3000 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW103

Sampling Personal: Darren Nieswand

Weather Conditions: Temp: 68 °F Wind: Light Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	33.16 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	40.10 ft
Water Level After Sample:	37.14 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	1009 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	1044 am/pm

Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	1014	10.93	5272	6.62	4.60	202.3	3.79	34.42	500	clr
2	1019	11.26	5269	6.64	4.88	201.2	3.52	34.54	500	clr
3	1024	10.95	5267	6.64	4.22	200.1	2.25	34.73	500	clr
4	1029	10.86	5263	6.64	4.11	199.0	2.16	34.87	500	clr
5	1034	10.59	5261	6.64	5.68	197.9	1.55	35.06	500	clr
6	1039	10.74	5250	6.64	5.54	197.5	1.60	35.16	500	clr
7	1044	11.07	5247	6.64	5.23	197.0	1.63	35.24	500	clr
8										
9										
10										

Stabilized: Yes / No

Total Volume Removed: 3500 mL

Comments:

(1)

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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: August 2016
Sample ID: MW44R
Sampling Personal: Darren Nitschmann

Weather Conditions: Temp: 72 °F Wind: NW 5 Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	~~28.64~~ 28.74 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	35.16 ft
Water Level After Sample:	28.83 ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

Control Settings		
Purge:	84	sec.
Recover:	54	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29Aug16	Time Purging Began:	1151 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	29Aug16	Time of Sampling:	1216 am/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	1156	12.11	~~9537~~	6.50	2.14	194.3	1.35	28.83	500	Clear
2	1201	11.87	~~9499~~	6.50	1.98	193.1	1.45	28.83	500	Clear
3	1206	12.01	9495	6.50	1.53	191.0	~~1.57~~	28.83	500	Clear Turbidity 0.66
4	1211	11.84	9495	6.50	1.52	188.6	0.70	28.83	500	Clear
5	1216	11.77	9498	6.50	1.54	187.3	0.73	28.83	500	Clear
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2500 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW102

Sampling Personal: Darren Nieswaag

Weather Conditions: Temp: 76 °F Wind: NW 5 Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	~~Yes~~	No	
Well Labeled?	Yes	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	17.78	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	27.05	ft
Water Level After Sample:	21.88	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder	
Sampling Method:	Bladder	
Dedicated Equip?:	Yes	No
Duplicate Sample?:	Yes	No
Duplicate Sample ID:	Dup-1	

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	29 Aug 16	Time Purging Began:	1317 am/pm
Well Purged Dry?	Yes / ~~No~~	Time Purged Dry:	— am/pm
Sample Date:	29 Aug 16	Time of Sampling:	1407 am/~~pm~~

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	1322	12.62	10041	6.74	0.76	-77.5	5.19	18.86	500	clr
2	1327	13.16	9933	6.73	1.04	-64.4	10.7	19.11	500	clr
3	1332	13.25	9655	6.71	1.11	-55.8	16.1	19.22	500	clr
4	1337	13.00	9397	6.70	0.92	-57.1	13.5	19.31	500	clr
5	~~1342~~	12.96	8893	6.70	1.20	-48.8	7.80	19.63	~~500~~ 1000	clr
6	1357	13.47	8402	6.72	0.85	-45.3	2.96	19.94	~~500~~ 1000	clr
7	~~1352~~ 1402	14.17	8219	6.75	0.91	-43.4	2.88	19.95	500	clr
8	1407	13.76	8160	6.76	0.93	-41.9	2.87	20.02	500	clr
9										
10										

Stabilized: Yes / No

Comments:

Total Volume Removed: ~~4000~~ 5000 mL

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

Chain of Custody Record

Project Name: MDU Heskett CCR Radiochem August 2016

Name of Sampler(s): Darren Nicswaag

Report To: MDU
Attn: Samantha Marshall
Address: 400 N. 4th St
Bismarck, ND 58501
Phone: 701-222-7829

Carbon Copy:
Attn:
Address:

Work Order Number: 82-2696

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO_3							Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W3795	Dup 1	29Aug16	NA	W		4							NA	NA	NA	MDU CCR Numerical RadChem
W3796	Field Blank (FB)	29Aug16	NA	W		4							NA	NA	NA	
W3797	MW13	29Aug16	0901	GW		4							12.41	10873	6.81	
W3798	MW103	29Aug16	1044	GW		4							11.07	5247	6.64	
W3799	MW44R	29Aug16	1216	GW		4							11.77	9498	6.50	
W3800	MW102	29Aug16	1407	GW		4							13.76	8160	6.76	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	[signature]	Walk in 2	29Aug16 1656	C. Jackson		30Aug16 0800	ROI 3.4
2							TM588
3							29Aug16 DN 1656

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MEMBER ACIL

October 21, 2016

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

RE: Groundwater Sampling Event- MDU Heskett Ash Site

Dear Ms. Marshall:

It was brought to MVTL's attention by BARR that the field data report for the August sampling event had an error. The error was the amount of volume removed for well 105. The initial report had 8500mL listed for volume removed but after reviewing the field sheet the actual volume removed was 7500mL. The attached field data report has the corrected data.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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

MVTL Laboratories Inc.
FIELD DATA REPORT

WO# 82-2728 82-2749 82-2696
82-2724 82-2748 82-2694

MDU Heskett
GROUNDWATER SAMPLING - NDDH
Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	TOTAL DEPTH	WATER LEVEL END	VOLUME IN WELL (L)	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	pH	Turbidity NTU	SAMPLE APPEARANCE
2-90	30-Aug-16	16:17	30-Aug-16	16:37	1686.60	1665.02	21.58	24.80	NA	2.0	2000.0	Bladder	11.62	7676	6.86	0.53	clear
3-90	30-Aug-16	14:55	30-Aug-16	15:15	1686.01	1666.98	19.03	21.93	19.12	1.8	2000.0	Bladder	13.89	5222	6.80	1.61	clear
13	29-Aug-16	8:31	29-Aug-16	9:01	1724.98	1694.76	30.22	41.90	30.72	7.2	3000.0	Bladder	12.41	10873	6.81	1.15	clear
33	30-Aug-16	12:53	30-Aug-16	13:52	1717.91	1675.83	42.08	46.55	42.73	2.8	6000.0	Bladder	13.67	5298	6.45	1.69	clear
70	30-Aug-16	8:30	30-Aug-16	8:50	1706.36	1685.02	21.34	43.06	22.67	13.4	2000.0	Bladder	9.54	4136	6.90	4.76	clear
80R	31-Aug-16	10:04	31-Aug-16	10:24	NA	NA	14.80	30.10	15.09	9.4	2000.0	Bladder	12.62	5734	7.01	1.42	clear
44R	29-Aug-16	11:51	29-Aug-16	12:16	NA	NA	28.74	45.88	28.83	10.6	2500.0	Bladder	11.77	9498	6.50	0.73	clear
101	30-Aug-16	9:53	30-Aug-16	11:43	NA	NA	37.18	57.09	41.59	12.3	11000.0	Bladder	14.11	4968	6.67	4.88	clear
102	29-Aug-16	13:17	29-Aug-16	14:07	NA	NA	17.78	33.20	21.88	9.5	5000.0	Bladder	13.76	8160	6.76	2.87	clear
103	29-Aug-16	10:09	29-Aug-16	10:44	NA	NA	33.16	47.10	37.14	8.6	3500.0	Bladder	11.07	5247	6.64	1.63	clear
104	31-Aug-16	8:30	31-Aug-16	9:00	NA	NA	14.41	32.85	14.71	11.4	3000.0	Bladder	12.44	14048	6.88	4.30	clear
105	31-Aug-16	11:29	31-Aug-16	12:44	NA	NA	13.60	32.39	13.90	11.6	7500.0	Bladder	13.06	7590	6.64	4.71	clear
1-90	NA	NA	31-Aug-16	13:52	1675.86	1664.00	11.86	17.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
2	NA	NA	31-Aug-16	13:55	1698.60	1659.92	38.68	63.70	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
4B	NA	NA	31-Aug-16	14:01	1662.80	1645.10	17.70	26.15	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
8	NA	NA	31-Aug-16	13:59	1664.90	1647.87	17.03	28.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only

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MEMBER ACIL

September 9, 2016

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

RE: Groundwater Sampling Event- MDU Heskett Ash Site

Dear Ms. Marshall:

From August 29-31, 2016, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule analytical list. All wells were located and were found to be in generally good condition. The wells for CCR were purged and sampled using a dedicated bladder pump and BARR's SOP for low flow purging and sampling. The samples collected were, placed on ice and transported back to the MVTL laboratory in Bismarck, ND for analysis. The field data report for the sampling event accompanies this letter.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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MVTL Laboratories Inc.
FIELD DATA REPORT

WO# 82-2728 82-2749 82-2696
82-2724 82-2748 82-2694

MDU Heskett
GROUNDWATER SAMPLING - NDDH
Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	TOTAL DEPTH	WATER LEVEL END	VOLUME IN WELL (L)	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	pH	Turbidity NTU	SAMPLE APPEARANCE
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1-90	NA	NA	31-Aug-16	13:52	1675.86	1664.00	11.86	17.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
2	NA	NA	31-Aug-16	13:55	1698.60	1659.92	38.68	63.70	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
4B	NA	NA	31-Aug-16	14:01	1662.80	1645.10	17.70	26.15	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
8	NA	NA	31-Aug-16	13:59	1664.90	1647.87	17.03	28.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only

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CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2724**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3827** through **16-W3833**
Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
Dup 2	16-W3827
Field Blank (FB)	16-W3828
MW70	16-W3829
MW101	16-W3830
MW33	16-W3831
MW3-90	16-W3832
MW2-90	16-W3833

I. RECEIPT

- All samples were received at the laboratory on 31 Aug 2016 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 6.2°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.

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CASE NARRATIVE

MVTL Lab Reference No/SDG:	**201682-2724**
Client:	**Montana Dakota Utilities**
Location:	**MDU Heskett**
Project Identification:	**CCR August 2016**
MVTL Laboratory Identifications:	**16-W3827** through **16-W3833**

IV. ANALYSIS

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll **DATE:** 16 Sep 16

Claudette Carroll - MVTL Bismarck Laboratory Manager

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Report Date: 15 Sep 16
Lab Number: 16-W3827
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Dup 2

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 7.0	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	3	mg/l	1	I3765-85	31 Aug 16 16:05	ML
Total Alkalinity	493	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Fluoride	0.91	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	4770	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	84.1	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	6900	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	497	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Magnesium - Total	765	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Sodium - Total	805	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Potassium - Total	25.6	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Lithium - Total	1.33	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.42	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	505	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	720	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	805	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	23.4	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	1.24	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0098	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.1435	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Barium - Dissolved	0.0096	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	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

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

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Report Date: 15 Sep 16
Lab Number: 16-W3827
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Dup 2

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.1606	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll 16 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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www.mvtl.com

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

Report Date: 15 Sep 16
Lab Number: 16-W3828
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.2	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	31 Aug 16 16:05	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	< 5	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	< 1	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Sodium - Total	< 1	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Potassium - Total	< 1	mg/l	1.0	6010	2 Sep 16 15:39	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	< 1	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	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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Report Date: 15 Sep 16
Lab Number: 16-W3828
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll CC 16 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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Report Date: 15 Sep 16
Lab Number: 16-W3829
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 8:50
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW70

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.8	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	11	mg/l	1	I3765-85	31 Aug 16 16:05	ML
pH - Field	6.90	units	NA	SM 4500 H+ B	30 Aug 16 8:50	DJN
Temperature - Field	9.54	Degrees C	NA	SM 2550B	30 Aug 16 8:50	DJN
Total Alkalinity	419	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Conductivity - Field	4136	umhos/cm	1	EPA 120.1	30 Aug 16 8:50	DJN
Fluoride	0.31	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	2080	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	34.0	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	3460	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	358	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Magnesium - Total	148	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Sodium - Total	493	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Potassium - Total	10.3	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Lithium - Total	0.44	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.42	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	396	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	160	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	575	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	10.8	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.44	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0133	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	0.0051	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	0.0210	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	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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Report Date: 15 Sep 16
Lab Number: 16-W3829
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 8:50
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW70

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0094	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	0.0034	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	0.0210	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

CC

Approved by: Claudette K. Carroll 16Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Report Date: 15 Sep 16
Lab Number: 16-W3830
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 11:43
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW101

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.7	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	9	mg/l	1	I3765-85	31 Aug 16 16:05	ML
pH - Field	6.67	units	NA	SM 4500 H+ B	30 Aug 16 11:43	DJN
Temperature - Field	14.1	Degrees C	NA	SM 2550B	30 Aug 16 11:43	DJN
Total Alkalinity	459	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Conductivity - Field	4968	umhos/cm	1	EPA 120.1	30 Aug 16 11:43	DJN
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	2680	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	18.9	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	4220	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	338	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Magnesium - Total	274	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Sodium - Total	545	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Potassium - Total	18.6	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Lithium - Total	0.85	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	1.03	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	378	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	298	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	635	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	19.8	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.83	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	1.03	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	12 Sep 16 9:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Barium - Total	0.0199	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Molybdenum - Total	0.0031	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	12 Sep 16 9:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	12 Sep 16 9:20	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	12 Sep 16 10:30	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	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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Report Date: 15 Sep 16
Lab Number: 16-W3830
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 11:43
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW101

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0185	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	13 Sep 16 10:50	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD
Molybdenum - Dissolved	0.0021	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	12 Sep 16 10:30	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	12 Sep 16 10:30	KMD

* Holding time exceeded

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

Approved by: Claudette K. Carroll CC 16 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

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

Report Date: 15 Sep 16
Lab Number: 16-W3831
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 13:53
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW33

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.6	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	31 Aug 16 16:05	ML
pH - Field	6.45	units	NA	SM 4500 H+ B	30 Aug 16 13:53	DJN
Temperature - Field	13.7	Degrees C	NA	SM 2550B	30 Aug 16 13:53	DJN
Total Alkalinity	484	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Conductivity - Field	5298	umhos/cm	1	EPA 120.1	30 Aug 16 13:53	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	3190	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	12.1	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	4980	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	452	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Magnesium - Total	450	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Sodium - Total	422	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Potassium - Total	19.9	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Lithium - Total	0.89	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.40	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	515	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	510	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	505	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	22.8	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.93	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.41	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14 Sep 16 14:15	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Barium - Total	0.0157	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14 Sep 16 19:37	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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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

Report Date: 15 Sep 16
Lab Number: 16-W3831
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 13:53
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW33

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0160	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Cobalt - Dissolved	0.0024	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	15 Sep 16 15:19	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	15 Sep 16 15:19	CC

* Holding time exceeded

Approved by: Claudette K. Carroll CC 16 Sep 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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Report Date: 15 Sep 16
Lab Number: 16-W3832
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 15:15
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW3-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.9	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	31 Aug 16 16:05	ML
pH - Field	6.80	units	NA	SM 4500 H+ B	30 Aug 16 15:15	DJN
Temperature - Field	13.9	Degrees C	NA	SM 2550B	30 Aug 16 15:15	DJN
Total Alkalinity	530	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Conductivity - Field	5222	umhos/cm	1	EPA 120.1	30 Aug 16 15:15	DJN
Fluoride	0.12	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	2810	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	38.8	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	4620	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	545	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Magnesium - Total	258	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Sodium - Total	565	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Potassium - Total	12.4	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Lithium - Total	0.30	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	580	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	268	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	630	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	12.5	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	0.28	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	< 0.2 @	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14 Sep 16 14:15	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Barium - Total	0.0138	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Selenium - Total	0.0973	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14 Sep 16 19:37	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC

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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Report Date: 15 Sep 16
Lab Number: 16-W3832
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 15:15
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW3-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0128	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Selenium - Dissolved	0.0972	mg/l	0.0020	6020	15 Sep 16 15:19	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	15 Sep 16 15:19	CC

* Holding time exceeded

CC

Approved by: Claudette K. Carroll 16Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Report Date: 15 Sep 16
Lab Number: 16-W3833
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 16:37
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW2-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	31 Aug 16	ML
pH	* 6.9	units	N/A	SM4500 H+ B	31 Aug 16 17:00	ML
Total Suspended Solids	4	mg/l	1	I3765-85	31 Aug 16 16:05	ML
pH - Field	6.86	units	NA	SM 4500 H+ B	30 Aug 16 16:37	DJN
Temperature - Field	11.6	Degrees C	NA	SM 2550B	30 Aug 16 16:37	DJN
Total Alkalinity	493	mg/l CaCO3	20	SM2320-B	31 Aug 16 17:00	ML
Conductivity - Field	7676	umhos/cm	1	EPA 120.1	30 Aug 16 16:37	DJN
Fluoride	0.92	mg/l	0.10	SM4500-F-C	31 Aug 16 17:00	ML
Sulfate	4810	mg/l	5.00	ASTM D516-07	2 Sep 16 9:51	EMS
Chloride	84.7	mg/l	1.0	SM4500-Cl-E	1 Sep 16 11:50	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	9 Sep 16 11:30	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Sep 16 13:06	EV
Total Dissolved Solids	6920	mg/l	5	I1750-85	31 Aug 16 14:18	ML
Calcium - Total	470	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Magnesium - Total	725	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Sodium - Total	765	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Potassium - Total	23.8	mg/l	1.0	6010	2 Sep 16 16:39	SZ
Lithium - Total	1.55	mg/l	0.10	6010	7 Sep 16 9:47	KMD
Boron - Total	0.39	mg/l	0.10	6010	6 Sep 16 14:12	KMD
Calcium - Dissolved	540	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Magnesium - Dissolved	770	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Sodium - Dissolved	855	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Potassium - Dissolved	24.9	mg/l	1.0	6010	12 Sep 16 13:23	KMD
Lithium - Dissolved	1.36	mg/l	0.10	6010	7 Sep 16 10:47	KMD
Boron - Dissolved	0.37	mg/l	0.10	6010	6 Sep 16 15:12	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14 Sep 16 14:15	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Barium - Total	0.0099	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Selenium - Total	0.1557	mg/l	0.0020	6020	14 Sep 16 14:15	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14 Sep 16 14:15	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14 Sep 16 19:37	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC

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CERTIFICATION: ND # ND-00016

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Report Date: 15 Sep 16
Lab Number: 16-W3833
Work Order #:82-2724
Account #: 002800
Date Sampled: 30 Aug 16 16:37
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR GW August 2016
Sample Description: MW2-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0096	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Sep 16 19:37	CC
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	14 Sep 16 19:37	CC
Selenium - Dissolved	0.1634	mg/l	0.0020	6020	15 Sep 16 15:19	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	15 Sep 16 15:19	CC

* Holding time exceeded

CC
Approved by: Claudette K. Carroll 16Sep16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Quality Control Report

Lab IDs: 16-W3827 to 16-W3833 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2724

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.1000	97	80-120	0.100	16W3830q	< 0.001	0.0990	99	75-125	0.0990	0.1070	107	7.8	20	-	-	< 0.001
	0.1000	110	80-120	0.100	16-W3869	< 0.001	0.1084	108	75-125	0.1084	0.1138	114	4.9	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	98	80-120	0.400	16W3829q	< 0.001	0.3952	99	75-125	0.3952	0.4246	106	7.2	20	-	-	< 0.001
	0.1000	104	80-120	0.100	16W3786q	< 0.001	0.1002	100	75-125	0.1002	0.1004	100	0.2	20	-	-	< 0.001
				0.400	16W3855q	< 0.001	0.4272	107	75-125	0.4272	0.4114	103	3.8	20	-	-	< 0.001
				0.400	16W3874q	< 0.001	0.4506	113	75-125	0.4506	0.4456	111	1.1	20	-	-	
				0.400	16W3898q	< 0.001	0.4428	111	75-125	0.4428	0.4556	114	2.8	20	-	-	
Arsenic - Dissolved mg/l	0.1000	98	80-120	0.100	16W3830q	< 0.002	0.1042	104	75-125	0.1042	0.1146	115	9.5	20	-	-	< 0.002
	0.1000	110	80-120	0.100	16-W3869	< 0.002	0.1165	116	75-125	0.1165	0.1212	121	4.0	20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	99	80-120	0.400	16W3829q	< 0.002	0.4044	101	75-125	0.4044	0.4444	111	9.4	20	-	-	< 0.002
	0.1000	104	80-120	0.100	16W3786q	< 0.002	0.1075	108	75-125	0.1075	0.1054	105	2.0	20	-	-	< 0.002
				0.400	16W3855q	0.0032	0.4442	110	75-125	0.4442	0.4186	104	5.9	20	-	-	< 0.002
				0.400	16W3874q	0.0064	0.4668	115	75-125	0.4668	0.4570	113	2.1	20	-	-	
				0.400	16W3898q	0.0028	0.4684	116	75-125	0.4684	0.4740	118	1.2	20	-	-	
Barium - Dissolved mg/l	0.1000	101	80-120	0.100	16W3830q	0.0185	0.1186	100	75-125	0.1186	0.1230	104	3.6	20	-	-	< 0.002
	0.1000	102	80-120	0.100	16-W3869	0.0171	0.1272	110	75-125	0.1272	0.1258	109	1.1	20	-	-	< 0.002
Barium - Total mg/l	0.1000	97	80-120	0.400	16W3829q	0.0133	0.4256	103	75-125	0.4256	0.4442	108	4.3	20	-	-	< 0.002
	0.1000	105	80-120	0.100	16W3786q	0.0101	0.1090	99	75-125	0.1090	0.1132	103	3.8	20	-	-	< 0.002
				0.400	16W3855q	0.0702	0.4890	105	75-125	0.4890	0.4828	103	1.3	20	-	-	< 0.002
				0.400	16W3874q	0.0482	0.4812	108	75-125	0.4812	0.4888	110	1.6	20	-	-	
				0.400	16W3898q	0.0304	0.4766	112	75-125	0.4766	0.4784	112	0.4	20	-	-	
Beryllium - Dissolved mg/l	0.1000	107	80-120	0.100	16-W3830	< 0.001	0.0865	86	75-125	0.0865	0.0913	91	5.4	20	-	-	< 0.0005
	0.1000	112	80-120	0.100	16-W3869	< 0.0005	0.1179	118	75-125	0.1179	0.1197	120	1.5	20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	102	80-120	0.400	16W3829q	< 0.0005	0.4548	114	75-125	0.4548	0.4746	119	4.3	20	-	-	< 0.0005
	0.1000	106	80-120	0.100	16W3786q	< 0.0005	0.1174	117	75-125	0.1174	0.1162	116	1.0	20	-	-	< 0.0005
				0.400	16W3855q	< 0.0005	0.5018	125	75-125	0.5018	0.4690	117	6.8	20	-	-	< 0.0005
				0.400	16W3874q	< 0.0005	0.5008	125	75-125	0.5008	0.4878	122	2.6	20	-	-	
										0.4986	0.5002		0.3	20	-	-	

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Quality Control Report

Lab IDs: 16-W3827 to 16-W3833 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2724

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Dissolved mg/l	0.40	102	80-120	0.600	16-W3827	0.38	0.88	83	75-125	0.88	0.86	80	2.3	20	-	-	< 0.1
	0.40	110	80-120	0.600	16-W3869	0.39	0.96	95	75-125	0.96	0.96	95	0.0	20	-	-	< 0.1
															-	-	< 0.1
															-	-	< 0.1
Boron - Total mg/l	0.40	102	80-120	0.400	16-D3542	1.51	1.92	102	75-125	1.92	1.99	120	3.6	20	-	-	< 0.1
				0.400	16-W3786	0.21	0.58	92	75-125	0.58	0.59	95	1.7	20	-	-	< 0.1
				0.400	16-W3829	0.42	0.78	90	75-125	0.78	0.80	95	2.5	20	-	-	< 0.1
				0.400	16-W3855	0.26	0.66	100	75-125	0.66	0.69	108	4.4	20	-	-	
Cadmium - Dissolved mg/l	0.1000	105	80-120	0.100	16W3830q	< 0.0005	0.0982	98	75-125	0.0982	0.1066	107	8.2	20	-	-	< 0.0005
	0.1000	114	80-120	0.100	16-W3869	< 0.0005	0.1046	105	75-125	0.1046	0.1098	110	4.9	20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000	106	80-120	0.400	16W3829q	< 0.0005	0.4002	100	75-125	0.4002	0.4410	110	9.7	20	-	-	< 0.0005
	0.1000	109	80-120	0.100	16W3786q	< 0.0005	0.1031	103	75-125	0.1031	0.1020	102	1.1	20	-	-	< 0.0005
				0.400	16W3855q	< 0.0005	0.4452	111	75-125	0.4452	0.4246	106	4.7	20	-	-	< 0.0005
				0.400	16W3874q	< 0.0005	0.4612	115	75-125	0.4612	0.4690	117	1.7	20	-	-	
				0.400	16W3898q	< 0.0005	0.4532	113	75-125	0.4532	0.4518	113	0.3	20	-	-	
Calcium - Dissolved mg/l	20.0	108	80-120	500	16-W3827	505	1040	107	75-125	1040	1020	103	1.9	20	-	-	< 1
	20.0	106	80-120	500	16-W3869	445	1020	115	75-125	1020	995	110	2.5	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Calcium - Total mg/l	20.0	107	80-120	100	16W3789q	43.7	143	99	75-125	143	139	95	2.8	20	-	-	< 1
	20.0	102	80-120	500	16W3829q	358	800	88	75-125	800	800	88	0.0	20	-	-	< 1
				100	16W3859q	17.8	121	103	75-125	121	121	103	0.0	20	-	-	< 1
															-	-	< 1
Chloride mg/l	30.0	101	80-120	30.0	16-W3827	84.1	112	93	80-120	112	113	96	0.9	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Chromium - Dissolved mg/l	0.1000	93	80-120	0.100	16W3830q	< 0.002	0.0973	97	75-125	0.0973	0.1060	106	8.6	20	-	-	< 0.002
	0.1000	103	80-120	0.100	16-W3869	< 0.002	0.1106	111	75-125	0.1106	0.1155	116	4.3	20	-	-	< 0.002

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Lab IDs: 16-W3827 to 16-W3833 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2724

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Chromium - Total mg/l	0.1000	92	80-120	0.400	16W3829q	< 0.002	0.3686	92	75-125	0.3686	0.4086	102	10.3	20	-	-	< 0.002
	0.1000	97	80-120	0.100	16W3786q	< 0.002	0.1020	102	75-125	0.1020	0.1018	102	0.2	20	-	-	< 0.002
				0.400	16W3855q	< 0.002	0.4026	101	75-125	0.4026	0.3860	96	4.2	20	-	-	< 0.002
				0.400	16W3874q	< 0.002	0.4136	103	75-125	0.4136	0.4100	102	0.9	20	-	-	
				0.400	16W3898q	< 0.002	0.4216	105	75-125	0.4216	0.4282	107	1.6	20	-	-	
Cobalt - Dissolved mg/l	0.1000	93	80-120	0.100	16W3830q	< 0.002	0.0963	96	75-125	0.0963	0.1025	102	6.2	20	-	-	< 0.002
	0.1000	102	80-120	0.100	16-W3869	< 0.002	0.1080	108	75-125	0.1080	0.1132	113	4.7	20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	93	80-120	0.400	16W3829q	< 0.002	0.3676	92	75-125	0.3676	0.4074	102	10.3	20	-	-	< 0.002
	0.1000	99	80-120	0.100	16W3786q	< 0.002	0.0980	98	75-125	0.0980	0.0993	99	1.3	20	-	-	< 0.002
				0.400	16W3855q	< 0.002	0.4172	104	75-125	0.4172	0.3900	98	6.7	20	-	-	< 0.002
				0.400	16W3874q	< 0.002	0.4188	105	75-125	0.4188	0.4096	102	2.2	20	-	-	
				0.400	16W3898q	< 0.002	0.4166	104	75-125	0.4166	0.4290	107	2.9	20	-	-	
Fluoride mg/l	0.50	100	90-110	0.500	16-D3564	2.46	2.90	88	80-120	2.90	2.93	94	1.0	20	-	-	< 0.1
				0.500	16-W3869	0.25	0.66	82	80-120	0.66	0.67	84	1.5	20	-	-	< 0.1
Lead - Dissolved mg/l	0.1000	99	80-120	0.100	16W3830q	< 0.0005	0.0920	92	75-125	0.0920	0.0940	94	2.2	20	-	-	< 0.0005
	0.1000	105	80-120	0.100	16-W3869	< 0.0005	0.1012	101	75-125	0.1012	0.1014	101	0.2	20	-	-	< 0.0005
Lead - Total mg/l	0.1000	96	80-120	0.400	16W3829q	< 0.0005	0.3788	95	75-125	0.3788	0.3914	98	3.3	20	-	-	< 0.0005
	0.1000	101	80-120	0.100	16W3786q	< 0.0005	0.0882	88	75-125	0.0882	0.0908	91	2.9	20	-	-	< 0.0005
				0.400	16W3855q	0.0006	0.4066	102	75-125	0.4066	0.4006	100	1.5	20	-	-	< 0.0005
				0.400	16W3874q	< 0.0005	0.4256	106	75-125	0.4256	0.4282	107	0.6	20	-	-	
				0.400	16W3898q	0.0010	0.4022	100	75-125	0.4022	0.4134	103	2.7	20	-	-	
Lithium - Dissolved mg/l	0.40	100	80-120	0.800	16-W3827	1.24	1.87	79	75-125	1.87	1.91	84	2.1	20	-	-	< 0.1
				0.800	16-W3869	1.39	2.13	93	75-125	2.13	2.05	82	3.8	20	-	-	< 0.1
															-	-	< 0.1
Lithium - Total mg/l	0.40	92	80-120	0.400	16-W3786	0.81	1.19	95	75-125	1.19	1.18	92	0.8	20	-	-	< 0.1
				0.400	16-W3829	0.44	0.92	120	75-125	0.92	0.93	122	1.1	20	-	-	< 0.1
															-	-	< 0.1

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Lab IDs: 16-W3827 to 16-W3833 **Project:** MDU Heskett CCR GW August 2016 **Work Order:** 201682-2724

Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Magnesium - Dissolved mg/l	20.0	111	80-120	500	16-W3827	720	1260	108	75-125	1260	1240	104	1.6	20	-	-	< 1
	20.0	108	80-120	500	16-W3869	880	1460	116	75-125	1460	1420	108	2.8	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Magnesium - Total mg/l	20.0	111	80-120	100	16W3789q	14.7	119	104	75-125	119	116	101	2.6	20	-	-	< 1
	20.0	106	80-120	500	16W3829q	148	625	95	75-125	625	630	96	0.8	20	-	-	< 1
				100	16W3859q	7.4	113	106	75-125	113	113	106	0.0	20	-	-	< 1
															-	-	< 1
Mercury - Dissolved mg/l	0.0020	90	85-115	0.002	16-W3868	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002
				0.002	16-W3869	< 0.0002	0.0017	85	70-130	0.0017	0.0017	85	0.0	20	-	-	
Mercury - Total mg/l	0.0020	95	85-115	0.002	A43991	< 0.0002	0.0018	90	70-130	0.0018	0.0018	90	0.0	20	-	-	< 0.0002
				0.002	16-W3866	< 0.0002	0.0019	95	70-130	0.0019	0.0019	95	0.0	20	-	-	
				0.002	16-W3896	< 0.0002	0.0019	95	70-130	0.0019	0.0018	90	5.4	20	-	-	
Molybdenum - Dissolved mg/l	0.1000	91	80-120	0.100	16-W3830	0.0021	0.1069	105	75-125	0.1069	0.1137	112	6.2	20	-	-	< 0.002
	0.1000	105	80-120	0.100	16-W3869	< 0.002	0.1140	114	75-125	0.1140	0.1208	121	5.8	20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	96	80-120	0.400	16W3829q	0.0051	0.4414	109	75-125	0.4414	0.4610	114	4.3	20	-	-	< 0.002
	0.1000	102	80-120	0.100	16W3786q	< 0.002	0.1136	114	75-125	0.1136	0.1182	118	4.0	20	-	-	< 0.002
				0.400	16W3855q	0.0074	0.4220	104	75-125	0.4220	0.4098	101	2.9	20	-	-	< 0.002
				0.400	16W3874q	0.0069	0.4358	107	75-125	0.4358	0.4268	105	2.1	20	-	-	
				0.400	16W3898q	0.0024	0.4456	111	75-125	0.4456	0.4594	114	3.0	20	-	-	
pH units	-	-	-	-	-	-	-	-	-	12.2	12.2	-	0.0	20	-	-	-
	-	-	-	-	-	-	-	-	-	7.5	7.5	-	0.0	20	-	-	-
Potassium - Dissolved mg/l	10.0	106	80-120	100	16-W3827	23.4	136	113	75-125	136	134	111	1.5	20	-	-	< 1
	10.0	103	80-120	100	16-W3869	20.5	140	120	75-125	140	137	116	2.2	20	-	-	< 1
															-	-	< 1
															-	-	< 1

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Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0	96	80-120	20.0	16W3789q	8.7	30.2	108	75-125	30.2	29.5	104	2.3	20	-	-	< 1
	10.0	91	80-120	100	16W3829q	10.3	105	95	75-125	105	108	98	2.8	20	-	-	< 1
				20.0	16W3859q	2.8	24.1	106	75-125	24.1	24.1	106	0.0	20	-	-	< 1
															-	-	< 1
Selenium - Dissolved mg/l	0.1000	110	80-120	0.100	16W3830q	< 0.002	0.1160	116	75-125	0.1160	0.1259	126	8.2	20	-	-	< 0.002
	0.1000	118	80-120	0.100	16-W3869	< 0.005	0.1246	125	75-125	0.1246	0.1332	129	6.7	20	-	-	< 0.002
Selenium - Total mg/l	0.1000	115	80-120	0.400	16W3829q	0.0210	0.4736	113	75-125	0.4736	0.5240	126	10.1	20	-	-	< 0.002
	0.1000	115	80-120	0.100	16W3786q	0.0618	0.1796	118	75-125	0.1796	0.1859	124	3.4	20	-	-	< 0.002
				0.400	16W3855q	< 0.002	0.5170	129	75-125	0.5170	0.4934	123	4.7	20	-	-	< 0.002
				0.400	16W3874q	< 0.002	0.5496	137	75-125	0.5496	0.5120	128	7.1	20	-	-	
				0.400	16W3898q	0.0024	0.5150	128	75-125	0.5150	0.5286	132	2.6	20	-	-	
Sodium - Dissolved mg/l	20.0	112	80-120	500	16-W3827	805	1340	107	75-125	1340	1300	99	3.0	20	-	-	< 1
	20.0	110	80-120	500	16-W3869	885	1450	113	75-125	1450	1420	107	2.1	20	-	-	< 1
															-	-	< 1
															-	-	< 1
Sodium - Total mg/l	20.0	102	80-120	100	16W3789q	165	264	99	75-125	264	256	91	3.1	20	-	-	< 1
	20.0	98	80-120	500	16W3829q	493	950	91	75-125	950	940	89	1.1	20	-	-	< 1
				100	16W3859q	222	311	89	75-125	311	313	91	0.6	20	-	-	< 1
															-	-	< 1
Sulfate mg/l	100	97	90-110	100	16-W3828	< 5	95.4	95	80-120	95.4	105	105	9.6	20	-	-	< 5
Thallium - Dissolved mg/l	0.1000	96	80-120	0.100	16W3830q	< 0.0005	0.0902	90	75-125	0.0902	0.0930	93	3.1	20	-	-	< 0.0005
	0.1000	94	80-120	0.100	16-W3869	< 0.0005	0.0876	88	75-125	0.0876	0.0881	88	0.6	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	84	80-120	0.400	16W3829q	< 0.0005	0.3548	89	75-125	0.3548	0.3738	93	5.2	20	-	-	< 0.0005
	0.1000	98	80-120	0.100	16W3786q	< 0.0005	0.0910	91	75-125	0.0910	0.0926	93	1.7	20	-	-	< 0.0005
				0.400	16W3855q	< 0.0005	0.3870	97	75-125	0.3870	0.3766	94	2.7	20	-	-	< 0.0005
				0.400	16W3874q	< 0.0005	0.3982	100	75-125	0.3982	0.4124	103	3.5	20	-	-	
				0.400	16W3898q	< 0.0005	0.3838	96	75-125	0.3838	0.3880	97	1.1	20	-	-	

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Total Alkalinity mg/l CaCO3	410	99	90-110	410 410	16-W3830 16-W3831	459 484	850 871	95 94	80-120 80-120	850 871	847 872	95 95	0.4 0.1	20 20	94	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	4220	4160	-	1.4	20	-	-	< 5
Total Suspended Solids mg/l	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	17 81 86	17 79 83	- - -	0.0 2.5 3.6	20 20 20	- - -	- - -	< 1 < 1

Approved by: C. Carroll
16 Sep 16

MVTL Calibration Worksheet

Site: MDU Heskett

Technician: Darren Neuswaag

Instrument (Circle One): #1 650 MDS 08F100203 | #2 650 MDS 04H14736 | ~~#3~~ 556 MPS 12E102056

Pre Site Calibration

Date: 29 Aug 16 **Time:** 0731

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	22.73	6.92	7.00	6.95-7.05	-39.2	0 +/- 50
Buffer 10	22.75	10.03	10.00	9.95-10.05	-218.0	-180 +/- 50

Conductivity						Check
Buffer 10000 ICCA	22.88	10202	9999	±10%	Buffer 5000 ICCA	4979

ORP				
231 mV @ 25C	5.35	~~10~~ 264	257.6	±10 mV

DO					Barometric Pressure (mm Hg)
	22.18	10.61	8.20	mg/L	721.0

Post Site Check

Time: 1647

pH	Temp °C	Reading
Buffer 7	23.92	7.03

Conductivity		
Buffer 5000	23.04	5079

Pre Site Calibration

Date: 30 Aug 16 **Time:** 0733

pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
Buffer 7	21.91	7.02	7.00	6.95-7.05	-40.4	0 +/- 50
Buffer 10	21.97	10.01	10.00	9.95-10.05	-219.3	-180 +/- 50

Conductivity						Check
Buffer 10000	22.12	10149	10001	±10%	Buffer 5000	4955

ORP				
231 mV @ 25C	4.65	259.4	257.3	±10 mV

DO					Barometric Pressure (mm Hg)
	21.87	8.10	8.34	mg/L	723.0

Post Site Check

Time: 1839

pH	Temp °C	Reading
Buffer 7	23.82	6.99

Conductivity		
Buffer 5000	23.71	5106

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW20

Sampling Personal: Darren Nitschmann

Weather Conditions: Temp: 55 °F Wind: Light Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"	
Water Level Before Purge:	21.34	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	32.75	ft
Water Level After Sample:	22.67	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:		
Pumping Rate:	100	mL/min

Purge Date:	30 Aug 16	Time Purging Began:	0830 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	30 Aug 16	Time of Sampling:	0850 am/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	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	0835	9.52	4171	6.89	1.19	177.8	5.75	22.20	500	clear
2	0840	9.44	4150	6.90	1.21	178.1	4.38	22.34	500	clear
3	0845	9.52	4140	6.90	1.19	176.6	4.58	22.34	500	clear
4	0850	9.54	4136	6.90	1.18	174.9	4.76	22.34	500	clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW101

Sampling Personal: Darren Nissman

Weather Conditions: Temp: 62 °F Wind: N5 Precip: (Sunny) / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	(No)	
Well Labeled?	(Yes)	No	
Casing Straight?	(Yes)	No	
Grout Seal Intact?	(Yes)	No	Not Visible
Repairs Necessary:			

Casing Diameter:	2"	
Water Level Before Purge:	37.18	ft
Total Well Depth:	—	ft
Well Volume:	—	liters
Depth to Top of Pump:	46.90	ft
Water Level After Sample:	41.59	ft
Measurement Method:	Electric Water Level Indicator	

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	(Yes)	No	
Duplicate Sample?:	Yes	(No)	
Duplicate Sample ID:	—		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	8	
Pumping Rate:	100	mL/min

Purge Date:	30 Aug 16	Time Purging Began:	0953 (am)/pm
Well Purged Dry?	Yes (No)	Time Purged Dry:	— am/pm
Sample Date:	30 Aug 16	Time of Sampling:	1143 am/(pm)

Bottle List:	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	0958	12.55	4953	6.64	2.61	40.0	236	38.19	500	~~clear~~ Turbid
1008 2	~~1003~~	12.32	4917	6.65	1.25	11.6	101	38.76	1000	Slightly turbid
1018 3	~~1008~~	12.52	4902	6.65	1.24	2.5	67.9	39.18	1000	ST
1028 4	~~1013~~	12.52	4910	6.65	1.00	4.6	36.1	39.35	1000	clear
5	1038	12.63	4922	6.66	1.18	13.7	17.3	39.66	1000	clear
6	1048	12.88	4930	6.65	1.49	13.1	11.0	39.86	1000	clear
7	1058	13.50	4955	6.66	1.49	12.3	9.16	40.06	1000	clear
8	1108	13.36	4943	6.65	1.42	10.2	7.93	40.22	1000	clear
9	1118	13.22	4948	6.66	1.40	6.2	6.43	40.44	1000	clear
10	~~1128~~	14.21	4961	6.66	1.09	2.6	4.92	40.44	100	clear

Stabilized: (Yes) No

Total Volume Removed: — mL

Comments:

Continued on next page

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

Field Datasheet

Groundwater Assessment

Company: **MDU Heskett**
Event: **August 2016**
Sample ID: MW101
Sampling Personal: Darren Nitsway
Date: 30 Aug 16

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
11	1133	14.39	4965	6.66	1.29	0.8	4.91	40.58	500	clear
12	1138	14.20	4973	6.66	1.22	-0.3	4.75	40.65	500	clear
13	1143	14.11	4968	6.67	1.23	0.5	4.88	40.69	500	clear
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

Stabilized: **Yes** / **No**

Total Volume Removed: 11,000 mL

Comments:

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW33

Sampling Personal: Darrin Nieswand

Weather Conditions: Temp: 79 °F Wind: 55 Precip: ~~Sunny~~ / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	~~No~~	
Well Labeled?	~~Yes~~	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	Yes	No	~~Not Visible~~
Repairs Necessary:	~		
Casing Diameter:	2"		
Water Level Before Purge:	42.08 ft		
Total Well Depth:	— ft		
Well Volume:	— liters		
Depth to Top of Pump:	~~42.03~~ 44.52 ft		
Water Level After Sample:	42.73 ft		
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	—		
Purge Date:	30 Aug 16	Time Purging Began:	1253 am/pm
Well Purged Dry?	Yes	No	Time Purged Dry: — am/pm
Sample Date:	30 Aug 16	Time of Sampling:	1353 am/pm

Control Settings	
Purge:	~~1854~~ sec.
Recover:	56 sec.
PSI:	—
Pumping Rate:	100 mL/min

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	1258	13.24	5762	6.59	1.46	-99.6	69.8	42.29	500	slight turbid
2	1308	13.43	5300	6.51	2.10	-51.5	25.4	42.29	~~500~~ 1000	Clear
3	1318	13.78	5275	6.47	1.95	-32.7	16.0	42.32	1000	Clear
4	1328	14.16	5273	6.48	1.92	-23.7	7.61	42.36	1000	Clear
5	1333	13.99	5279	6.48	1.87	-21.8	3.31	42.38	500	Clear
6	1338	13.73	5290	6.48	1.90	-21.2	2.65	42.43	500	Clear
7	1343	14.00	5278	6.48	1.80	-20.5	1.78	42.43	500	Clear
8	1348	13.83	5281	6.48	1.67	-20.0	1.77	42.50	500	Clear
9	1353	13.67	5298	6.45	1.69	-22.6	1.69	42.50	500	Clear
10										

Stabilized: Yes No

Total Volume Removed: 6000 mL

Comments:

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

Field Datasheet

Groundwater Assessment

Company: MDU Heskett
Event: August 2016
Sample ID: MW 3-90
Sampling Personal: Darren Murray

Weather Conditions: Temp: 80 °F Wind: S-S Precip: Sunny / Partly Cloudy / Cloudy

Well Information

Well Locked?	Yes	~~No~~	
Well Labeled?	~~Yes~~	No	
Casing Straight?	~~Yes~~	No	
Grout Seal Intact?	Yes	No	~~Not Visible~~
Repairs Necessary:	—		
Casing Diameter:	2"		
Water Level Before Purge:	19.03	ft	
Total Well Depth:	—	ft	
Well Volume:	—	liters	
Depth to Top of Pump:	20.17	ft	
Water Level After Sample:	19.12	ft	
Measurement Method:	Electric Water Level Indicator		

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	~~No~~	
Duplicate Sample ID:	—		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	-	
Pumping Rate:	100	mL/min

Purge Date:	30 Aug 16	Time Purging Began:	1455 am/pm
Well Purged Dry?	Yes ~~No~~	Time Purged Dry:	— am/pm
Sample Date:	30 Aug 16	Time of Sampling:	1515 am/pm

Bottle List:			
	500 mL Nitric	1 Liter Raw	
	500 mL Nitric (filtered)	4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive) SEQ #	Time	Temp (°C)	Spec. Cond.	pH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
			±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1500	12.78	5228	6.81	2.22	-195.7	2.80	19.12	500	cl
2	1505	12.70	5228	6.79	2.07	-196.4	1.50	19.12	500	cl
3	1510	14.13	5205	6.84	2.00	-190.7	1.62	19.12	500	cl
4	1515	13.89	5222	6.80	1.96	-186.6	1.61	19.12	500	cl
5										
6										
7										
8										
9										
10										

Stabilized: Yes No Total Volume Removed: 2000 mL

Comments: There are a lot of ants in this well. There is an odor to the water.

MVTL

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company: MDU Heskett

Event: August 2016

Sample ID: MW 2-90

Sampling Personal: Darren Nicsway

Weather Conditions: Temp: 80 °F Wind: S 10 Precip: **Sunny / Partly Cloudy / Cloudy**

Well Information

Well Locked?	Yes	No	
Well Labeled?	Yes	No	
Casing Straight?	Yes	No	
Grout Seal Intact?	Yes	No	Not Visible
Repairs Necessary:	—		

Casing Diameter:	2"
Water Level Before Purge:	21.58 ft
Total Well Depth:	— ft
Well Volume:	— liters
Depth to Top of Pump:	22.60 ft
Water Level After Sample:	ft
Measurement Method:	Electric Water Level Indicator

Sampling Information

Purging Method:	Bladder		
Sampling Method:	Bladder		
Dedicated Equip?:	Yes	No	
Duplicate Sample?:	Yes	No	
Duplicate Sample ID:	Dup-2		

Control Settings		
Purge:	4	sec.
Recover:	56	sec.
PSI:	—	
Pumping Rate:	100	mL/min

Purge Date:	30 Aug 16	Time Purging Began:	1617 am/pm
Well Purged Dry?	Yes No	Time Purged Dry:	— am/pm
Sample Date:	30 Aug 16	Time of Sampling:	1637 am/pm

Bottle List:				
	500 mL Nitric	1 Liter Raw		
	500 mL Nitric (filtered)		4 - 1 Liter Nitric	

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	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	1622	11.95	7734	6.83	4.14	-18.0	0.85	21.90	500	clear
2	1627	11.55	7719	6.87	3.90	-1.9	0.50	21.92	500	clear
3	1632	11.54	7694	6.87	3.68	10.6	0.58	21.92	500	clear
4	1637	11.62	7676	6.86	3.83	16.3	0.53	21.92	500	clear
5										
6										
7										
8										
9										
10										

Stabilized: Yes No

Total Volume Removed: 2000 mL

Comments:

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

Chain of Custody Record

Project Name: MDU Heskett CCR Groundwater August 2016

Name of Sampler(s): Darren Nieswaag

Work Order Number: 82-2724

Report To: MDU
Attn: Samantha Marshall
Address: 400 N. 4th St
Bismarck, ND 58501
Phone: 701-222-7829

Carbon Copy:
Attn:
Address:

Sample Information						Bottle Type							Field Parameters			Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 ml HNO_3	1 liter	500 ml HNO_3 (filtered)					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W3827	Dup 2	30Aug16	NA	W		X	X	X					NA	NA	NA	MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.
W3828	Field Blank (FB)	30Aug16	NA	W		X	X	X					NA	NA	NA	
W3829	MW70	30Aug16	0850	GW		X	X	X					9.54	4136	6.90	
W3830	MW101	30Aug16	1143	GW		X	X	X					14.11	4968	6.67	
W3831	MW33	30Aug16	1353	GW		X	X	X					13.67	5298	6.45	
W3832	MW 3-90	30Aug16	1515	GW		X	X	X					13.89	5222	6.80	
W3833	MW 2-90	30Aug16	1637	GW		X	X	X					11.62	7676	6.86	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	Dan Nies	Walk in 2	30Aug16 1845	C. Jackson		31Aug16 0800	ROI 6.2
2							TM 588
3							30Aug16 1845

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
MEMBER ACIL

October 21, 2016

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

RE: Groundwater Sampling Event- MDU Heskett Ash Site

Dear Ms. Marshall:

It was brought to MVTL's attention by BARR that the field data report for the August sampling event had an error. The error was the amount of volume removed for well 105. The initial report had 8500mL listed for volume removed but after reviewing the field sheet the actual volume removed was 7500mL. The attached field data report has the corrected data.

Thank you for your trust and support of our services. If you have any questions, please call me at (800) 279-6885.

Sincerely,

Jeremy Meyer
MVTL Field Services

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

MVTL Laboratories Inc.
FIELD DATA REPORT

WO# 82-2728 82-2749 82-2696
82-2724 82-2748 82-2694

MDU Heskett
GROUNDWATER SAMPLING - NDDH
Attn: Samantha Marshall
400 N. 4th St
Bismarck, ND 58501
701-222-7829

WELL ID	PURGE DATE	START PURGE TIME	SAMPLE DATE	TIME OF SAMPLE	WELL CASING ELEVATION	STATIC WATER LEVEL (ft)	WATER LEVEL START	TOTAL DEPTH	WATER LEVEL END	VOLUME IN WELL (L)	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	pH	Turbidity NTU	SAMPLE APPEARANCE
2-90	30-Aug-16	16:17	30-Aug-16	16:37	1686.60	1665.02	21.58	24.80	NA	2.0	2000.0	Bladder	11.62	7676	6.86	0.53	clear
3-90	30-Aug-16	14:55	30-Aug-16	15:15	1686.01	1666.98	19.03	21.93	19.12	1.8	2000.0	Bladder	13.89	5222	6.80	1.61	clear
13	29-Aug-16	8:31	29-Aug-16	9:01	1724.98	1694.76	30.22	41.90	30.72	7.2	3000.0	Bladder	12.41	10873	6.81	1.15	clear
33	30-Aug-16	12:53	30-Aug-16	13:52	1717.91	1675.83	42.08	46.55	42.73	2.8	6000.0	Bladder	13.67	5298	6.45	1.69	clear
70	30-Aug-16	8:30	30-Aug-16	8:50	1706.36	1685.02	21.34	43.06	22.67	13.4	2000.0	Bladder	9.54	4136	6.90	4.76	clear
80R	31-Aug-16	10:04	31-Aug-16	10:24	NA	NA	14.80	30.10	15.09	9.4	2000.0	Bladder	12.62	5734	7.01	1.42	clear
44R	29-Aug-16	11:51	29-Aug-16	12:16	NA	NA	28.74	45.88	28.83	10.6	2500.0	Bladder	11.77	9498	6.50	0.73	clear
101	30-Aug-16	9:53	30-Aug-16	11:43	NA	NA	37.18	57.09	41.59	12.3	11000.0	Bladder	14.11	4968	6.67	4.88	clear
102	29-Aug-16	13:17	29-Aug-16	14:07	NA	NA	17.78	33.20	21.88	9.5	5000.0	Bladder	13.76	8160	6.76	2.87	clear
103	29-Aug-16	10:09	29-Aug-16	10:44	NA	NA	33.16	47.10	37.14	8.6	3500.0	Bladder	11.07	5247	6.64	1.63	clear
104	31-Aug-16	8:30	31-Aug-16	9:00	NA	NA	14.41	32.85	14.71	11.4	3000.0	Bladder	12.44	14048	6.88	4.30	clear
105	31-Aug-16	11:29	31-Aug-16	12:44	NA	NA	13.60	32.39	13.90	11.6	7500.0	Bladder	13.06	7590	6.64	4.71	clear
1-90	NA	NA	31-Aug-16	13:52	1675.86	1664.00	11.86	17.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
2	NA	NA	31-Aug-16	13:55	1698.60	1659.92	38.68	63.70	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
4B	NA	NA	31-Aug-16	14:01	1662.80	1645.10	17.70	26.15	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only
8	NA	NA	31-Aug-16	13:59	1664.90	1647.87	17.03	28.02	NA	NA	NA	WL	NA	NA	NA	NA	Water Level Only

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CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2728**
IML Lab Reference No/SDG: **S1609036**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett Ash Site**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3835** through **16-W3841**
IML Laboratory Identifications: **S1609036-001** through **S1609036-007**

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Dup2	16-W3835	S1609036-001
Field Blank (FB)	16-W3836	S1609036-002
MW70	16-W3837	S1609036-003
MW101	16-W3838	S1609036-004
MW33	16-W3839	S1609036-005
MW2-90	16-W3840	S1609036-006
MW3-90	16-W3841	S1609036-007

I. RECEIPT

- All samples were received at the laboratory on 31 Aug 2016 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 6.2°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 2 September 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.

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885
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MEMBER ACIL

CASE NARRATIVE

MVTL Lab Reference No/SDG: **201682-2728**
IML Lab Reference No/SDG: **S1609036**
Client: **Montana Dakota Utilities**
Location: **MDU Heskett Ash Site**
Project Identification: **CCR August 2016**
MVTL Laboratory Identifications: **16-W3835** through **16-W3841**
IML Laboratory Identifications: **S1609036-001** through **S1609036-007**
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:** 7OCT16
Claudette Carroll - MVTL Bismarck Laboratory Manager

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www.mvtl.com

Report Date: 6 Oct 16
Lab Number: 16-W3835
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: Dup 2

Temp at Receipt: 6.2C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			14 Sep 16	OL
Radium 228	See Attached Report			18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 10 CT 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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Report Date: 6 Oct 16
Lab Number: 16-W3836
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: Field Blank (FB)

Temp at Receipt: 6.2C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			14 Sep 16	OL
Radium 228	See Attached Report			18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll cc 10CT16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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Report Date: 6 Oct 16
Lab Number: 16-W3837
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16 8:50
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW70

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.90	units	NA	SM 4500 H+ B	30 Aug 16 8:50	DJN
Temperature - Field	9.54	Degrees C	NA	SM 2550B	30 Aug 16 8:50	DJN
Conductivity - Field	4136	umhos/cm	1	EPA 120.1	30 Aug 16 8:50	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 7OCT16

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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Report Date: 6 Oct 16
Lab Number: 16-W3838
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16 11:43
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW101

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.67	units	NA	SM 4500 H+ B	30 Aug 16 11:43	DJN
Temperature - Field	14.1	Degrees C	NA	SM 2550B	30 Aug 16 11:43	DJN
Conductivity - Field	4968	umhos/cm	1	EPA 120.1	30 Aug 16 11:43	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 7 OCT 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

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Report Date: 6 Oct 16
Lab Number: 16-W3839
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16 13:53
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW33

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.45	units	NA	SM 4500 H+ B	30 Aug 16 13:53	DJN
Temperature - Field	13.7	Degrees C	NA	SM 2550B	30 Aug 16 13:53	DJN
Conductivity - Field	5298	umhos/cm	1	EPA 120.1	30 Aug 16 13:53	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				18 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll CC 7OCT16

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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Report Date: 6 Oct 16
Lab Number: 16-W3840
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16 15:15
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW3-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.80	units	NA	SM 4500 H+ B	30 Aug 16 15:15	DJN
Temperature - Field	13.9	Degrees C	NA	SM 2550B	30 Aug 16 15:15	DJN
Conductivity - Field	5222	umhos/cm	1	EPA 120.1	30 Aug 16 15:15	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				22 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 7OCT16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:
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! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

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Report Date: 6 Oct 16
Lab Number: 16-W3841
Work Order #:82-2728
Account #: 002800
Date Sampled: 30 Aug 16 16:37
Date Received: 31 Aug 16 8:00
Sampled By: MVTL Field Services

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

Project Name: MDU Heskett CCR Radiochem Aug. 2016
Sample Description: MW2-90

Temp at Receipt: 6.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	30 Aug 16 16:37	DJN
Temperature - Field	11.6	Degrees C	NA	SM 2550B	30 Aug 16 16:37	DJN
Conductivity - Field	7676	umhos/cm	1	EPA 120.1	30 Aug 16 16:37	DJN
Radium 226	See Attached Report				14 Sep 16	OL
Radium 228	See Attached Report				19 Sep 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by: Claudette K. Carroll 7OCT16

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

Your Environmental Monitoring Partner

Date: 9/29/2016

CLIENT: MVTL Laboratories, Inc.
Project: 201682-2728
Lab Order: S1609036

CASE NARRATIVE

Report ID: S1609036001

Samples 16-W3835 Dup 2, 16-W3836 Field Blank, 16-W3837 MW70, 16-W3838 MW101, 16-W3839 MW33, 16-W3840 MW3-90, and 16-W3841 MW2-90 were received on September 2, 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

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

Your Environmental Monitoring Partner

Sample Analysis Report

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

Date Reported 9/29/2016
Report ID S1609036001

ProjectName: 201682-2728
Lab ID: S1609036-001
ClientSample ID: 16-W3835 Dup 2
COC: 201682-2728

WorkOrder: S1609036
CollectionDate: 8/30/2016
DateReceived: 9/2/2016 10:58:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-3.4	pCi/L		1	Ga-Tech	09/18/2016 1117	MB
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	09/18/2016 1117	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/29/2016
Report ID S1609036001

ProjectName: 201682-2728
Lab ID: S1609036-002
ClientSample ID: 16-W3836 Field Blank
COC: 201682-2728

WorkOrder: S1609036
CollectionDate: 8/30/2016
DateReceived: 9/2/2016 10:58:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	09/18/2016 1418	MB
Radium 228 Precision (±)	13.6	pCi/L			Ga-Tech	09/18/2016 1418	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager

Sample Analysis Report

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

Date Reported 9/29/2016
Report ID S1609036001

ProjectName: 201682-2728
Lab ID: S1609036-003
ClientSample ID: 16-W3837 MW70
COC: 201682-2728

WorkOrder: S1609036
CollectionDate: 8/30/2016 8:50:00 AM
DateReceived: 9/2/2016 10:58:00 AM
FieldSampler:
Matrix: Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	09/14/2016 951	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	09/14/2016 951	MB
Radium 228	-4.3	pCi/L		1	Ga-Tech	09/18/2016 1719	MB
Radium 228 Precision (±)	3.6	pCi/L			Ga-Tech	09/18/2016 1719	MB

These results apply only to the samples tested.

RL - Reporting Limit

Qualifiers:

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

Reviewed by: _____
Wade Nieuwsma, Assistant Laboratory Manager