

Chain of Custody Record

Project Nam	Project Name:			Event:				Work Order Number:					
	MDU Heskett										82-	1382	λ
Report To: Attn: Address: phone: email:	To:MDU Samantha MarshallCarbon Copy: Attn::400 N. 4th St Bismarck, ND 58501 701-222-7829Address:				Name of Sampler(s):								
	Sam	ple Informatio	on				Bot	tle Ty	ре	Fi	eld Para	ameters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	p.	1 liter	500mL Nitric	on Nitric (filtered)		Temp (°C)	Spec. Cond	Hd	Analysis Required
Wall	104	25then 17	0645	GW		X	XX		+ +	1.62	15000	6.05	
m3013		25 May 1-1	4013	Gu		×	$\Delta \tilde{\lambda}$		++	7,16	6170	6,64	
W2013	Dup	25 May 17		GW			<u>x x</u>						5.e.j.
WZOIY	FB	25May 17	-	w		8	2×	\vdash	++	-	-		
									++				MDU CCR List with TSS
									\downarrow \downarrow				and Dissolved CCR Metals
									++				14 <u>5</u> 2 - 1
								+	++				
				+				+	++				
			1	1	1	1 1		1 1				1	

Comments:

Relinquished By:	Sar	mple Condition:	-	Received by:			
Name	Date/Time	Location:	Temp (°C)		Name:	Date/Time	
1 Jacks	251217	Log la Walk In #2	6,7 Rol TM562/TM588)		Terall_	25/1ay 2017 1340	
2					<u> </u>		





CASE NARRATIVE – AMENDED 31 AUG 17 (Reporting)

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-1383 S1706027 Montana Dakota Utilities MDU Heskett Ash Site CCR May 2017 17-W2015 through 17-W2018 S1706027-001 through S1706027-004

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
104	17-W2015	S1706027-001
105	17-W2016	S1706027-002
Dup 1	17-W2017	S1706027-003
FB	17-W2018	S1706027-004

I. RECEIPT

- All samples were received at the laboratory on 25 May 2017 at 1340.
- 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 16.7°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 1 Jun 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.





CASE NARRATIVE – AMENDED 31 AUG 17 (Reporting)

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-1383 S1706027 Montana Dakota Utilities MDU Heskett Ash Site CCR May 2017 17-W2015 through 17-W2018 S1706027-001 through S1706027-004

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

SIGNED:

- 10 Mar 16: Per email from Barr Engineering, 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.
- 31 Aug 17: Per email dated 24 Aug 17 from Terri Olson with Barr Engineering, the IML reports were amended to correct for erroneous sample collection dates.

All laboratory data has been approved by MVTL Laboratories.

Clauditte

DATE: 3)

Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From: Sent:	Terri A. Olson <tolson@barr.com> Thursday, August 24, 2017 3:18 PM</tolson@barr.com>
To:	Claudette Carroll
Subject:	RE: Emailing - 201782-1383 MDU HESK CCR RADIOCHEM.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Claudette,

The date sampled was incorrect on the COC sent to IML so their report (S1706027) has the incorrect sample dates. Please revise.

Thank-you,

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

resourceful. naturally.

This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering Co. and its clients and related parties in the course of business, and is intended solely for use by the addressees. This transmission contains information which may be confidential and proprietary. If you are not the addressee, note that any disclosure, copying, distribution, or use of the contents of this message (or any attachments, replies, or forwards) is prohibited. If you have received this transmission in error, please destroy it and notify us at 952-832-2600.

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From: Claudette Carroll [mailto:ccarroll@mvtl.com]
Sent: Tuesday, July 25, 2017 3:26 PM
To: Barr Data Management <BarrDM@barr.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Terri A. Olson
<TOlson@barr.com>; Tonia D. O'Brien <tobrien@barr.com>
Subject: Emailing - 201782-1383 MDU HESK CCR RADIOCHEM.pdf

Hello all,

Please find attached the Radiochem results for the May 2017 CCR sampling done at MDU Heskett. Hard copies to follow to Sam.

Have a great afternoon! Claudette



Minnesota Valley Testing Laboratories, Inc. Providing Analytical Excellence Since 1951

EARR



CERTIFICATE of ANALYSIS - CCR

400 N 4th St

Bismarck ND

Project Name: MDU Heskett Sample Description: 104

Samantha Marshall

Montana Dakota Utilities

58501

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



Page: 1 of 1

Report Date: 25 Jul 17 Lab Number: 17-W2015 Work Order #: 82-1383 Account #: 002800 Date Sampled: 25 May 17 8:45 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 16.7C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.83	units	NA	SM 4500 H+ B	25 May 17	8:45	JSM
Temperature - Field	9.82	Degrees C	NA	SM 2550B	25 May 17	8:45	JSM
Conductivity - Field	13896	umhos/cm	1	EPA 120.1	25 May 17	8:45	JSM
Radium 226	See Atta	ched Report			12 Jun 17		OL
Radium 228	See Atta	ched Report			28 Jun 17		OL

Approved by:

TU 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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ACIL

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CERTIFICATE of ANALYSIS - CCR

Project Name: MDU Heskett Sample Description: 105

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 25 Jul 17 Lab Number: 17-W2016 Work Order #: 82-1383 Account #: 002800 Date Sampled: 25 May 17 10:13 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 16.7C

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.62	units	NA	SM 4500 H+ B	25 May 17 10:13	JSM
Temperature - Field	9.16	Degrees C	NA	SM 2550B	25 May 17 10:13	JSM
Conductivity - Field	6998	umhos/cm	1	EPA 120.1	25 May 17 10:13	JSM
Radium 226	See Atta	ached Report			12 Jun 17	OL
Radium 228	See Atta	ached Report			28 Jun 17	OL

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 25 Jul 17 Lab Number: 17-W2017 Work Order #: 82-1383 Account #: 002800 Date Sampled: 25 May 17 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: Dup 1

Temp at Receipt: 16.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			12 Jun 17	OL
Radium 228	See Attached Report			28 Jun 17	OL

Approved by:

Cr Clauditte 2SJVL17 K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 25 Jul 17 Lab Number: 17-W2018 Work Order #: 82-1383 Account #: 002800 Date Sampled: 25 May 17 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB

Temp at Receipt: 16.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			18 Jul 17 28 Jun 17	OL OL
Radium 228	See Actached Report				

Approved by:

Clauditte JSJUD K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Date: 7/19/2017

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project:	201782-1383	Report ID: S1706027002
Lab Order:	S1706027	(Replaces S1706027001)

Samples 17-W2015 104, 17-W2016 105, 17-W2017 Dup 1, and 17-W2018 FB were received on June 1, 2017.

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

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

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

Report S1706027002 replaces report S1706027001. The sample dates were incorrect on the COC.

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Radium 228

Radium 228 Precision (±)

06/28/2017 354

06/28/2017 354

Ga-Tech

Ga-Tech

1

MB

MB

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

Sample Analysis Report

-2.7

2.9

Company:	MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501	C.	Date Report Report ID					8/24/2017 S1706027002 (Replaces S1706027001)		
ProjectName: Lab ID: ClientSample ID: COC:	201782-1383 S1706027-001 17-W2015 104 201782-1383				WorkOrder: CollectionDate: DateReceived: FieldSampler:		S1706027 5/25/2017 8:45:00 AM 6/1/2017 11:05:00 AM			
Comments					Ма	itrix:	Water			
Analyses		Result	Units	Qual	RL	Metho	d Date	Analyzed/Ir	nit	
Radionuclides - To	tal									
Radium 226		0.3	pCi/L		0.2	SM 7500 Ra	-B 06/12/	2017 1555	MB	
Radium 226 Precisio	n (±)	0.1	pCi/L			SM 7500 Ra	-B 06/12/	2017 1555	MB	

pCi/L

pCi/L

These results apply only to the samples tested.

в

Qualifiers:

Е Value above quantitation range

Analyte detected in the associated Method Blank

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

Reviewed by:

RL - Reporting Limit

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

Page 1 of 4

Wade Nieuwsma, Assistant Laboratory Manager



Radium 228

Radium 228 Precision (±)

06/28/2017 657

06/28/2017 657

MB

MB

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

Sample Analysis Report

-1.0

2.9

Company:	MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501	ас. Э.			Da Re	te Reported	8/24/2017 S1706027002 (Replaces S1706027001)		
ProjectName: 201782-1383 WorkOrder: Lab ID: \$1706027-002 CollectionD ClientSample ID: 17-W2016 105 DateReceiv COC: 201782-1383 FieldSample				orkOrder: IlectionDate: teReceived: IdSampler:	S1706027 5/25/2017 10:13:00 AM 6/1/2017 11:05:00 AM				
Comments					Ма	atrix:	Water		
Analyses		Result	Units	Qual	RL	Metho	d Date Analyze	∍d/Init	
Radionuclides - To	otal								
Radium 226		0.1	pCi/L		0.2	SM 7500 Ra	-B 06/12/2017 155	5 MB	
Radium 226 Precisio	ın (±)	0.1	pCi/L			SM 7500 Ra	-B 06/12/2017 155	5 MB	

pCi/L

pCi/L

These results apply only to the samples tested.

В

Qualifiers:

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

Analyte detected in the associated Method Blank

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

Reviewed by:

RL - Reporting Limit

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

1

Ga-Tech

Ga-Tech

- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- X Matrix Effect

Page 2 of 4

Wade Nieuwsma, Assistant Laboratory Manager



Radium 228

Radium 228 Precision (±)

06/28/2017 1000

06/28/2017 1000

MB

MB

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

Sample Analysis Report

-2.2

2.8

Company:	MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501	ю.			Da Re	te Reported port ID	8/24/2017 S1706027002 (Replaces S1706027001)		
ProjectName: Lab ID: ClientSample ID: COC:	201782-1383 S1706027-003 17-W2017 Dup 1 201782-1383				WorkOrder: CollectionDate: DateReceived: FieldSampler:		S1706027 5/25/2017 6/1/2017 11:05:00 AM		
Comments					Ма	atrix:	Water		
Analyses		Result	Units	Qual	RL	Metho	d Date Analyze	d/Init	
Radionuclides - To	tal								
Radium 226		0.3	pCi/L		0.2	SM 7500 Ra	-B 06/12/2017 1555	MB	
Radium 226 Precision	n (±)	0.1	pCi/L			SM 7500 Ra	-B 06/12/2017 1555	MB	

pCi/L

pCi/L

These results apply only to the samples tested.

Qualifiers: В Analyte detected in the associated Method Blank Е

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

Reviewed by:

RL - Reporting Limit С

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

1

Ga-Tech

Ga-Tech

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

Page 3 of 4

Wade Nieuwsma, Assistant Laboratory Manager



Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	S.			Date Repo	Reported ort ID	8/24/2017 S1706027002 (Replaces S1706027001)
ProjectName:	201782-1383				Wor	kOrder:	S1706027
Lab ID:	S1706027-004				Colle	ectionDate:	5/25/2017
ClientSample ID:	17-W2018 FB				Date	Received:	6/1/2017 11:05:00 AM
COC:	201782-1383				Field	Sampler:	
					Matr	ix:	Water
Comments							
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
Radionuclides - To	tal						

Radium 226	0.1	pCi/L	0.2	SM 7500 Ra-B	07/18/2017 1022	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	07/18/2017 1022	MB
Radium 228	0.8	pCi/L	1	Ga-Tech	06/28/2017 1304	MB
Radium 228 Precision (±)	2.8	pCi/L		Ga-Tech	06/28/2017 1304	MB

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by:

RL - Reporting Limit

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

Page 4 of 4

Wade Nieuwsma, Assistant Laboratory Manager

G Analy



ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc. Date: 5/1/2017 Work Order: S1704027 Report ID: S1704027001 201782-0743 Project: Radium 228 by Ga/Tech Sample Type MBLK Units: pCi/L MB-428 (04/17/17 15:54) RunNo: 145016 PrepDate: 04/10/17 12:00 BatchID 13075 Spike Ref Samp %REC % Rec Limits Analyte Result RI Qual Total Radium 228 ND 1 MB-429 (04/21/17 15:43) RunNo: 145273 PrepDate: 04/12/17 12:00 BatchID 13101 Analvte Result RL Spike Ref Samp %REC % Rec Limits Qual ND Total Radium 228 1 Radium 228 by Ga/Tech Sample Type LCS Units: pCi/L LCS-428 (04/17/17 18:57) RunNo: 145016 PrepDate: 04/10/17 12:00 BatchID 13075 Analvte Result RL Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 39 1 40.1 98.0 65.9 - 132 LCS-429 (04/21/17 18:45) RunNo: 145273 PrepDate: 04/12/17 12:00 BatchID 13101 Result RL Spike Ref Samp %REC % Rec Limits Qual Analyte 40.1 Total Radium 228 40 1 99.4 65.9 - 132 Radium 228 by Ga/Tech Sample Type LCSD Units: pCi/L LCSD-428 (04/17/17 22:01) RunNo: 145016 PrepDate: 04/10/17 12:00 BatchID 13075 Analyte Result RL Conc %RPD %REC % RPD Limits Qual Total Radium 228 40 39 1.47 99.5 20 1 Radium 228 by Ga/Tech Sample Type MS Units: pCi/L S1704025-003AMS (04/18/17 22:29) PrepDate: 04/10/17 12:00 RunNo: 145016 BatchID 13075 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual 74 2 80.1 Total Radium 228 ND 92.6 50 - 139 MS-429 (04/22/17 00:54) BatchID 13101 RunNo: 145273 PrepDate: 04/12/17 12:00 Result Spike Ref Samp %REC % Rec Limits Analyte RL Qual 41 Total Radium 228 1 40.1 ND 101 50 - 139 Radium 228 by Ga/Tech Sample Type MSD Units: pCi/L S1704025-003AMSD (04/19/17 01:32) RunNo: 145016 PrepDate: 04/10/17 12:00 BatchID 13075 Analyte Result RL Conc %RPD %REC % RPD Limits Qual 74 Total Radium 228 82 2 9.64 102 20 MSD-429 (04/22/17 03:57) RunNo: 145273 PrepDate: 04/12/17 12:00 BatchID 13101 % RPD Limits Qual Analyte Result RL Conc %RPD %REC Total Radium 228 43 1 41 5.19 107 20

Qualifiers: В Analyte detected in the associated Method Blank Е Value above quantitation range Analyzed at IML Gillette laboratory н Holding times for preparation or analysis exceeded G Analyte detected below quantitation limits L л

ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits R

Matrix Effect Х

Analyzed by another laboratory

0 Outside the Range of Dilutions

Spike Recovery outside accepted recovery limits S



ANALYTICAL QC SUMMARY REPORT

CLIENT:	MVTL Laboratories,	nc.	Date: 5/1/2017
Work Ord	er: S1704027		Report ID: \$1704027001
Project:	201782-0743		
Radiu	m 226 in Water -	Sample Type MBLK	Units: pCi/L
	MB-1738 (04/20/17 14:04)	RunNo: 145012 PrepDate	∋: 04/12/17 0:00 BatchID 13074
	Analyte	Result RL S	Spike Ref Samp %REC % Rec Limits Qual
	Radium 226	ND 0.2	
Radiu	m 226 in Water -	Sample Type LCS	Units: pCi/L
	LCS-1738 (04/20/17 14:04)	RunNo: 145012 PrepDate	e: 04/12/17 0:00 BatchID 13074
	Analyte	Result RL S	Spike Ref Samp %REC % Rec Limits Qual
	Radium 226	6.5 0.2	5.89 110 67.1 - 122
Radiu	m 226 in Water -	Sample Type LCSD	Units: pCi/L
	LCSD-1738 (04/20/17 14:04)	RunNo: 145012 PrepDate	e: 04/12/17 0:00 BatchID 13074
	Analyte	Result RL 0	Conc %RPD %REC % RPD Limits Qual
	Radium 226	6.2 0.2	6.5 4.82 105 20
Radiu	m 226 in Water -	Sample Type MS	Units: pCi/L
	S1704026-003AMS (04/20/17	4:04) RunNo: 145012 PrepDate	e: 04/12/17 0:00 BatchID 13074
	Analyte	Result RL S	Spike Ref Samp %REC % Rec Limits Qual
	Radium 226	11.0 0.4	11.8 ND 93.3 65 - 131

Qualifiers: В G Analyte detected in the associated Method Blank Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

Matrix Effect Х

Е Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

0 Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



LABORATORIES, Inc.

2616 E Broadway Ave Bismarck, ND 58501

Chain of Custody Record

Page 1 of 1 .

Toll Free: (800) 279-6885 Fax: (701) 258-9724								201782-1383						
Company Nam	e and Address:		Account #: Phone #:					Phone #:						
	лл		-	2			-			701-258-9720				
	2616 E		Contact:	Claure	1-66	_				Fax #:				
	Claud	iette	9	-			For faxed report check box							
Billing Address		ampier.						E-mail: <u>ccarroli@mvu.com</u>						
				Quote Nu	mber						Date Submitted:			
	<u>PO E</u>	30x 249									26-May-17			
	New Ulm	<u>, MN 56073</u>		Project Na	me/Numb	er:					Purchase Order #:			
		0									BL5886			
		Sample Information		·			В	ottle	Ту	pe	Analysis			
517060	27						HNO3	s rved						
IML Lab			Sample	Data	T :	ate	ml	Vial	Jai					
Number	MVTL Lab Number	Client Sample ID	Type	Date	Sampled	ntre	000	oc	lass	ther	Anglusia Descrived			
100	17_\N/2015	104	CINC		Sampleu		Ŧ	$>$ \supset	0	0	Analysis Required			
	17-002010	104	GVV	26-Apr-17	* 845		4				Ra226 & Ra228			
	17-002016	105	GW	26-Apr-17	★ 1013		4				Ra226 & Ra228			
	17-W2017	Dup 1	GW	26-Apr-17	*		4				Ra226 & Ra228			
204	17-W2018	FB	GW	26-Apr-17	*		4				Ra226 & Ra228			
Comments: All	results must be rep	orted as a numerical value.		<u> </u>	×	(0	lle	cho	5	cla	te WAS 25 MAY 17 SI AVAIT			

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
T. Olson	26-May-17	1700	Ç	Mino Baralber	6-1-17	11:05	20.100
2.				(quill be cannot be			

MVTL Calibration Worksheet

Site: MDU He	skett	Technician:	Jen phy
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056
Date: 25 Mey pH Buffer 7 Buffer 10 Conductivity Buffer 10000	Pre Site Calit I Time: I I I Time: I I I Temp °C Pre Cal Post Cal I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I I	mv Range +/- Post Cal Range mv 50 $6.95-7.05$ -24.7 0 +/- 50 $9.95-10.05$ -200.8 -180 +/- 50 L $-180 +/- 50$ Check $\pm 10\%$ Buffer 5000 $49 - 54$	Post Site Check Time: /030 pH Temp °C Reading Buffer 7 16.01 7.01 Conductivity Buffer 5000 15.31 5034
ORP 231 mV @ 25C DO.	14.43 i30.1% 99.2%	±10 mV Barometric Pressure (mm Hg) mg/L イミイ.ゥン	
Date: pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO	Temp °C Pre Cal Post Cal	Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 50 Check ±10% Buffer 5000	Time: pH Temp °C Reading Buffer 7 Conductivity Buffer 5000

.



Field Datasheet

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company:	MDU Heskett	
Event:	2017	
Sample ID:	, 104	
Sampling Personal:	Jerry Mene	

Weather Conditions:		Temp:	50	°F	Wind:	505-1	10		Precip	: Sunny / Rartly Cloudy / Cloudy			udy
	Well Info	ormation	~					Sampling Information					
Well Locked?	Yes	10				Purgir	ng Method:	Bla	dder		Control Settings		js
Well Labeled?	Yes	No				Samplin	ng Method:	Bla	dder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicate	ed Equip?:	Aes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not	∕isible		Duplicate	Sample?:	Yes	NO		PSI:	К	
Repairs Necessary:						Duplicate S	Sample ID:	÷	-		Pumping F	Rate: 100	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	3.	54	ft		P	urge Date:	25 ph	17	Time Purg	ing Began:	0820	@m]/pm
Total W	ell Depth:			ft		Well Pu	urged Dry?	Yes ′	(No)	Time F	Purged Dry:		am/pm
We	II Volume:	Stream of the second		liters		Sai	mple Date:	25 phan	17	Time o	f Sampling:	OBUS	am/pm
Depth to Top	of Pump:			ft				,					
Water Level Afte	r Sample:	1 and 1	<u>3,85</u>	ft		Bottle	CC	R: 1L Raw	, 500mL Ni	tirc, 500mL	Nitric (filtere	ed), 4-1L Niti	ric
Measuremen	t Method:	Electric W	later Leve	I Indicator		List:							

Field Measurements

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	OBRS	10,03	13781	6.89	9,04	261.7	3.87	13,85	500,0	Clear
2	0630	9.93	13914	6,84	9.64	284.7	2:15	13,85	500.0	Clin
3	0835	9.85	13918	6,83	9,81	265.7	1.66	13.87	500,0	Clear
4	OBHO	9.78	13928	6.82	10.13	264.4	1.27	13.95	500.0	Clear
5	0845	9,82	13896	6,83	10,26	264.0	1.10	13.8B	500,0	Clear
6										
7										
8										
9										
10						<u> </u>				
Stabilized	: Xes/	No				T	otal Volume	Removed:	2500.0	mL

Comments:



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	los .
Sampling Personal:	Jerry Heyen

sec. sec.

mL/min

am/pm

am/pm am/pm

Phone: (701) 258-9720

Weather Conditions:		Temp:	60 "	F	Wind:	5057	o <u>.</u>	Pre	cip: Su	nny / Partly (loudy / Clo	oudy
	Well Info	rmation						Samplin	g Informat	ion		
Well Locked?	Yes	(No)				Purgir	ig Method:	Bladder		Co	ntrol Setting	 ฮร
Well Labeled?	Yes	No	-			Samplir	g Method:	Bladder		Purge:	S	<u></u>
Casing Straight?	(es	No				Dedicate	ed Equip?:	Yes No		Recover:	55	
Grout Seal Intact?	Yes)	No	Not Vis	sible		Duplicate	Sample?:	Ves No		PSI:	25	
Repairs Necessary:						Duplicate S	Sample ID:	Dup 1		Pumping R	ate: 100	m
Casing	Diameter:		2"					, (<u> </u>	-0.78	
Water Level Bef	ore Purge:	12	2.46	ft		P	urge Date:	25 My 17	Time Pu	ging Began:	Care.	ar
Total V	Vell Depth:	-		ft		Well Pu	arged Dry?	Yes No	Time	Purged Dry:		a
We	eli Volume:			liters	-	Sar	nple Date:	25Mm/7	Time	of Sampling:	1.013	
Depth to Top	o of Pump:			ft							<u> </u>	
Water Level After	er Sample:	ľ	2,72	ft		Bottle	CC	R: 1L Raw, 500mL	Nitirc, 500ml	Nitric (filtere	d) 4-11 Nit	ric
Measuremer	nt Method:	Electric \	Nater Level Ir	ndicator		List:					<u>u), i izitit</u>	
	·							······				

Field Measurements

				1	4					
Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0943	8197	5951	6.65	8.61	231.4	7.79	12.66	న్రోజు, ర	Clear
2	C¶4B	8,BZ	5877	6.64	7.32	228.7	7.84	12.68	502.0	Cles
3	0953	8.64	5977	6:64	5.41	226.7	6.32	12.69	500,D	Ciles-
4	0958	8.76	\$469	6.64	6.28	220.9	4:54	(Z. B3	500,D	Cha
5	1003	8.68	6695	6.62	6.09	218.0	4.80	12.84	5 යට . ට	Cles-
6	1008	8.92	6875	6.62	5.92	216.2	5.08	12.85	Se0,0	Clie
7	(013	9.16	6998	6162	6.11	213,3	4,88	12.83	500,0	Clien
8							× *		· · · · · · · · · · · · · · · · · · ·	
9										
10										
Stabilized:	<u> ('Yes)</u>	No	-			Тс	otal Volume	Removed:	3500,0	mL

1

Comments:

· . .



Chain of Custody Record

Project Name	Project Name: MDU Heskett				Event:				Work Order Number:						
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon C Attn: Address:	ору:			Name of Je				Iame of Sampler(s):				
	Samp	ole Informatio	n		Bottle Type Field Parameters					Analysis					
Lab Number い2015 い2015 い2017	Sample ID 104 105 Dy 1 FB	25 xly 17 25 xly 17 25 xly 17 25 xly 17 25 xly 17	100 J	E E E Sample Type							Temp (°C)	1 Des Spec. Cond.	Ha 33 6.62	Analysis Required Rad 226 & Rad 228	

Comments:

Relinquished By:		Sar	nple Condition:		Received by:				
Namę:	Date/Time	Location:	Temp (°C)	> Name:	Date/Time				
1 - Th	25My17 1340	Log In Walk In #2	16.7 Ambient TM562 (TM588)	Twith	25May2017 1340				





CASE NARRATIVE – AMENDED 29 AUG 2017 (MDU Sample Identification)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-1676 Montana Dakota Utilities MDU Heskett CCR June 2017 17-W2471 through 17-W2477

MDU Sample Identification	MVTL Laboratory #
MW13	17-W2471
MW44R	17-W2472
MW70	17-W2473
MW101	17-W2474
MW102	17-W2475
Dup1	17-W2476
FB1	17-W2477

I. RECEIPT

- All samples were received at the laboratory on 22 Jun17 at 800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.2°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.
 - o Methods 6010D and Method 6020B were used to analyze the metals.

IV. ANALYSIS

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





CASE NARRATIVE – AMENDED 29 AUG 2017 (MDU Sample Identification)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-1676 Montana Dakota Utilities MDU Heskett CCR June 2017 17-W2471 through 17-W2477

- For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
- One sulfate matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.

V. REPORTING

 Per email dated 25 Aug 17 from Terri Olson with Barr Engineering, the sample identifications on the case narrative were corrected to match the sample identifications on the COC and finalized reports. In addition, MW44 sample identification was changed to MW44R.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

DATE: 29 Avg17

Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From:	Terri A. Olson <tolson@barr.com></tolson@barr.com>								
Sent:	Friday, August 25, 2017 11:44 AM								
То:	Claudette Carroll								
Cc:	Barr Data Management								
Subject:	RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf								
Follow Up Flag:	Follow up								
Flag Status:	Flagged								

Hi Claudette,

The well ID for MW44 should also state MW44R.

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

resourceful. naturally.

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If you no longer wish to receive marketing e-mails from Barr, respond to <u>communications@barr.com</u> and we will be happy to honor your request.

From: Claudette Carroll [mailto:ccarroll@mvtl.com]
Sent: Friday, August 25, 2017 9:13 AM
To: Terri A. Olson <TOlson@barr.com>
Subject: RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

=Mala

Hi Terri,

Sorry about that. The case narrative is entered manually and is incorrect. The reports and COC are correct, so the error does not affect the data. I will amend the case narrative and re-send the data package. These types of items are the reason that I am very excited about our new LIMs system. Can't wait until it is implemented and takes care of these issues. Again, sorry for the error. Thank you for having such a great eye!

Have a good Friday and a terrific weekend.



From: Terri A. Olson [mailto:TOlson@barr.com]
Sent: Friday, August 25, 2017 8:20 AM
To: Claudette Carroll <<u>ccarroll@mvtl.com</u>>
Subject: RE: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Hi Claudette,

The case narrative page has sample IDs matched to different lab #s than within the report or on COC. Please check and let us know if this impacts any of the data results.

Thank-you,

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

resourceful, naturally.

This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering Co. and its clients and related parties in the course of business, and is intended solely for use by the addressees. This transmission contains information which may be confidential and proprietary. If you are not the addressee, note that any disclosure, copying, distribution, or use of the contents of this message (or any attachments, replies, or forwards) is prohibited. If you have received this transmission in error, please destroy it and notify us at 952-832-2600.

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From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Monday, July 10, 2017 2:14 PM To: Barr Data Management <<u>BarrDM@barr.com</u>>; Jesse Hedlund <<u>ihedlund@mvtl.com</u>>; Julie Crispin <<u>icrispin@mvtl.com</u>>; Marshall, Samantha <<u>Samantha.Marshall@mdu.com</u>>; Mary Hames <<u>mhames@mvtl.com</u>>; Steve Bowen <<u>sbowen@mvtl.com</u>>; Terri A. Olson <<u>TOlson@barr.com</u>>; Tonia D. O'Brien <<u>tobrien@barr.com</u>> Subject: Emailing - 201782-1676 MDU HESK CCR JUN 17.pdf

Hello all,

Please find attached two data packages for the June 2017 sampling done at the MDU Heskett site. Hard copies to follow to Sam and EDDs will follow from our IT department.

Have a great afternoon! Claudette



Minnesota Valley Testing Laboratories, Inc. Providing Analytical Excellence Since 1951

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

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MEMBER ACIL

Quality Control Report

Lab IDs: 17-W2471 to 17	-W2477	Pr	oject: MI	DU Hesk	ett - CCR	r	Work Or	der: 201	782-1670	6							
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	98	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	<0.001 <0.001 <0.001	0.3906 0.4132 0.4158	98 103 104	75-125 75-125 75-125	0.3906 0.4132 0.4158	0.4090 0.4384 0.4412	102 110 110	4.6 5.9 5.9	20 20 20	-	-	< 0.001
Arsenic - Total mg/l	0.1000	96	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	<0.002 <0.002 <0.002	0.3900 0.4276 0.4178	98 107 104	75-125 75-125 75-125	0.3900 0.4276 0.4178	0.4102 0.4398 0.4384	103 110 110	5.0 2.8 4.8	20 20 20	 -	-	< 0.002
Barium - Total mg/l	0.1000	92	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	0.0374 0.0162 0.0085	0.4064 0.3808 0.3726	92 91 91	75-125 75-125 75-125	0.4064 0.3808 0.3726	0.4048 0.4050 0.4028	92 97 99	0.4 6.2 7.8	20 20 20	-		< 0.002
Beryllium - Total mg/l	0.1000	107	80-120	0.400 0.400 0.400	17-W2438 17-W2476 17-W2497	< 0.0005 < 0.0005 < 0.0005	0.4078 0.4136 0.4284	102 103 107	75-125 75-125 75-125	0.4078 0.4136 0.4284	0.4176 0.4142 0.4384	104 104 110	2.4 0.1 2.3	20 20 20	-	-	< 0.0005
Boron - Total mg/l	0.40 0.40	100 92	80-120 80-120	0.400 0.400	17-W2438 17-W2476	0.39 0.32	0.78 0.64	98 80	75-125 75-125	0.78 0.64	0.78 0.67	98 88	0.0 4.6	20 20			< 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Total mg/l	0.1000	102	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	< 0.0005 < 0.0005 < 0.0005	0.3932 0.4002 0.4108	98 100 103	75-125 75-125 75-125	0.3932 0.4002 0.4108	0.4032 0.4222 0.4280	101 106 107	2.5 5.4 4.1	20 20 20			< 0.0005
Calcium - Total mg/l	20.0	112	80-120	500	17W2473q	419	895	95	75-125	895	910	98	1.7	20	-	-	<1 <1
Chloride mg/l	30.0 30.0	87 86	80-120 80-120	60.0	17 - W2490	33.4	97.2	106	80-120	97.2	97.6	107	0.4	20	-	-	< 1
Chromium - Total mg/l	0.1000	96	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	<0.002 <0.002 <0.002	0.3546 0.3914 0.3774	89 98 94	75-125 75-125 75-125	0.3546 0.3914 0.3774	0.3712 0.3994 0.3978	93 100 99	4.6 2.0 5.3	20 20 20		- - -	< 0.002

Page: 1 of 3

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MEMBER ACIL

Lab IDs: 17-W2471 to 17-	eport W2477	Pr	niect: MI)] Hesk	ett - CCP	T	Vorte	danı 201	790 1 (7)	~							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	/82-16/6 Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Cobalt - Total mg/l	0.1000	95	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	<0.002 <0.002 <0.002	0.3658 0.3864 0.3782	91 97 95	75-125 75-125 75-125	0.3658 0.3864 0.3782	0.3772 0.4010 0.3974	94 100 99	3.1 3.7 5.0	20 20 20	-	-	< 0.002
Fluoride mg/l	0.50	104	90-110	0.500 0.500	17-W2471 17-W2473	0.88 0.33	1.29 0.80	82 94	80-120 80-120	1.29 0.80	1.29 0.82	82 98	0.0	20 20	-	-	< 0.1 < 0.1
Lead - Total mg/l	0.1000	93	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	< 0.0005 < 0.0005 < 0.0005	0.3550 0.3660 0.3664	89 92 92	75-125 75-125 75-125	0.3550 0.3660 0.3664	0.3568 0.3908 0.3912	89 98 98	0.5 6.6 6.5	20 20 20 20		-	< 0.0005
Lithium - Total mg/l	0.40 0.40	105 108	80-120 80-120	0.400 0.400 0.400	17-W2438 17-W2476 17-W2497	0.10 0.73 1.01	0.52 1.10 1.50	105 92 122	75-125 75-125 75-125	0.52 1.10 1.50	0.55 1.10 1.41	112 92 100	5.6 0.0 6.2	20 20 20	- - -	-	< 0.1 < 0.1 < 0.1
Mercury - Total mg/l	0.0020	100	85-115	0.100 0.002 0.002 0.002	17-M1524 17-W2439 17-W2475 17-W2479	< 0.01 < 0.0002 < 0.0002 < 0.0002	0.0991 0.0019 0.0020 0.0019	99 95 100 95	70-130 70-130 70-130 70-130	0.0991 0.0019 0.0020 0.0019	0.1003 0.0019 0.0020 0.0019	100 95 100 95	1.2 0.0 0.0 0.0	20 20 20 20	-	-	< 0.0002
Molybdenum - Total mg/l	0.1000	99	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	< 0.002 < 0.002 < 0.002	0.3682 0.3906 0.3920	92 98 98	75-125 75-125 75-125	0.3682 0.3906 0.3920	0.3964 0.4224 0.4302	99 106 108	7.4 7.8 9.3	20 20 20	-	-	< 0.002
pH units	-	-	-	-	-	-	-	-	-	8.4 8.4	8.4 8.4		0.0	20 20	-	-	-
Selenium - Total mg/l	0.1000	111	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	< 0.005 0.1768 0.1814	0.4222 0.6154 0.6312	106 110 112	75-125 75-125 75-125	0.4222 0.6154 0.6312	0.4440 0.6206 0.6574	111 111 119	5.0 0.8 4.1	20 20 20	- -	-	< 0.002
Sulfate mg/l	100 100 100	94 93 104	80-120 80-120 80-120	1000 200 100	17-W2442 17-M1551 17-W2477	934 36.9 < 5	1750 248 102	82 106 102	80-120 80-120 80-120	1750 248 102	1710 220 102	78 92 102	2.3 12.0 0.0	20 20 20		-	< 5 < 5 < 5

Page: 2 of 3

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MEMBER ACIL

Quality Control Report Lab IDs: 17-W2471 to 17-W2477 Project: MDU Heskett - CCR						Ň	Work Order: 201782-1676										
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Thallium - Total mg/l	0.1000	92	80-120	0.400 0.400 0.400	17W2438q 17W2476q 17W2497q	< 0.0005 < 0.0005 < 0.0005	0.3520 0.3634 0.3616	88 91 90	75-125 75-125 75-125	0.3520 0.3634 0.3616	0.3568 0.3808 0.3858	89 95 96	1.4 4.7 6.5	20 20 20			< 0.0005
Total Dissolved Solids mg/l					-					6440 4510 < 10	6370 4590 < 10		1.1 1.8 0.0	20 20 *	-		< 10 < 10

Page: 3 of 3

Approved by: <u>C. Gantlo</u> 7 JUL 17



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW13

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2471 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 7:41 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			EPA 200.2	22 Jun 17	CS
pH = Field 6.88	units	NA	SM 4500 H+ B	21 Jun 17 7:41	JSM
pH + 7.2	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field 10.1	Degrees C	NA	SM 2550B	21 Jun 17 7:41	JSM
Conductivity - Field 10510	umhos/cm	1	EPA 120.1	21 Jun 17 7:41	JSM
Eluoride 0.88	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate 6160	mg/l	5.00	ASTM D516-07	22 Jun 17 13:45	EMS
Chloride 87.6	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total < 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids 9840	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total 429	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total 0.74	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total $< 0.5 @$	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony = Total < 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arcenic - Total < 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Parium - Total 0.0130	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Berullium - Total < 0.000	5 mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total < 0.000	5 mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total < 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total ≤ 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Load - Total < 0.000	5 mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total ≤ 0.005	^ mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Solenium - Total 0.1560	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total < 0.000	5 mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

6JULI7 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





1 of 1 Page:

Amended 29 Aug 17 (Sample ID) - CCR

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

Project Name: MDU Heskett Sample Description: MW44R

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2472 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 14:35 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.54	units	NA	SM 4500 H+ B	21 Jun 17 14:35	JSM
pH	* 6.9	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	14.2	Degrees C	NA	SM 2550B	21 Jun 17 14:35	JSM
Conductivity - Field	9287	umhos/cm	1	EPA 120.1	21 Jun 17 14:35	JSM
Fluoride	0.68	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	5830	mg/l	5.00	ASTM D516-07	29 Jun 17 10:50	EMS
Chloride	240	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	8970	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	458	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	1.45	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total	0.38	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0085	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molvbdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.2372	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

= Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW70

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2473 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 11:18 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			14	EPA 200.2	22 Jun 17	CS
pH - Field	6.94	units	NA	SM 4500 H+ B	21 Jun 17 11:18	JSM
pH	* 7.4	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	13.7	Degrees C	NA	SM 2550B	21 Jun 17 11:18	JSM
Conductivity - Field	4603	umhos/cm	1	EPA 120.1	21 Jun 17 11:18	JSM
Fluoride	0.33	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	2500	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	30.2	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	3920	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	419	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.37	mg/l	0.10	6010	27 Jun 17 13:17	KMD
Boron - Total	0.51	mg/l	0.10	6010	26 Jun 17 12:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Argenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Parium - Total	0.0088	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Perullium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Codmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lond - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdonum - Total	< 0.005	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Golopium - Total	0 0151	$m\alpha/1$	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

6JVL17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW101

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2474 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 12:56 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

	As Receive	d	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.68	units	NA	SM 4500 H+ B	21 Jun 17 12:56	JSM
H	* 7.2	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Temperature - Field	14.5	Degrees C	NA	SM 2550B	21 Jun 17 12:56	JSM
Conductivity - Field	4854	umhos/cm	1	EPA 120.1	21 Jun 17 12:56	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	2760	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	15.4	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:00	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:19	EV
Total Dissolved Solids	4150	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	366	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.64	mg/l	0.10	6010	27 Jun 17 14:1	KMD
Boron - Total	1.22	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:49	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:4	KMD
Barium - Total	0.0129	mg/l	0.0020	6020	27 Jun 17 16:49	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:49	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:49	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:49	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:4	5 KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:4	5 KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:4	5 KMD
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	27 Jun 17 16:4	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:4	5 KMD

* Holding time exceeded

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

Approved by:

Clauditte 6JU17 K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 3 Jul 17 Lab Number: 17-W2475 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 9:57 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

Project Name: MDU Heskett Sample Description: MW102

Event and Year: June 2017

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
pH - Field	6.73	units	NA	SM 4500 H+ B	21 Jun 17 9:	57 JSM
На	* 7.3	units	0.1	SM4500 H+ B	22 Jun 17 17:	00 CS
Temperature - Field	11.5	Degrees C	NA	SM 2550B	21 Jun 17 9:	57 JSM
Conductivity - Field	7109	umhos/cm	1	EPA 120.1	21 Jun 17 9:	57 JSM
Fluoride	0.24	mg/l	0.10	SM4500-F-C	22 Jun 17 17:	00 CS
Sulfate	4270	mg/l	5.00	ASTM D516-07	29 Jun 17 11:	22 EMS
Chloride	6.6	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:	00 KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:	15 EV
Total Dissolved Solids	6440	mg/l	10	I1750-85	23 Jun 17 14:	28 SVS
Calcium - Total	492	mg/l	1.0	6010	23 Jun 17 13:	53 SZ
Lithium - Total	0.63	mg/l	0.10	6010	27 Jun 17 14:	17 KMD
Boron - Total	1.05	mg/l	0.10	6010	26 Jun 17 13:	13 KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:	45 KMD
Arsenic - Total	0.0022	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Barium - Total	0.0169	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:	45 KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:	45 KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:	45 KMD
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Gelenium - Total	< 0.01	mg/l	0.0020	6020	27 Jun 17 16:	45 KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:	45 KMD

* Holding time exceeded

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

Approved by:

6JUL17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: Dup 1

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2476 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	22 Jun 17	CS
Hq	* 7.4	units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Fluoride	0.87	mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	6960	mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	88.2	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	9950	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	426	mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	0.73	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.5 @	mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0162	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molvbdenum - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1768	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

6JU17 Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: FB1

Event and Year: June 2017

Report Date: 3 Jul 17 Lab Number: 17-W2477 Work Order #: 82-1676 Account #: 002800 Date Sampled: 21 Jun 17 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion	U. C.		EPA 200.2	22 Jun 17	CS
На	* 6.2 units	0.1	SM4500 H+ B	22 Jun 17 17:00	CS
Fluoride	< 0.1 mg/l	0.10	SM4500-F-C	22 Jun 17 17:00	CS
Sulfate	< 5 mg/l	5.00	ASTM D516-07	29 Jun 17 11:22	EMS
Chloride	< 1 mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002 mg/l	0.0002	EPA 245.1	23 Jun 17 11:15	EV
Total Dissolved Solids	< 10 mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calgium - Total	< 1 mg/l	1.0	6010	23 Jun 17 13:53	SZ
Lithium - Total	< 0.1 mg/1	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.1 mg/l	0.10	6010	26 Jun 17 13:13	KMD
Antimony - Total	< 0.001 mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Ancimony - iocar	< 0.002 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Arsenic - Iotar	< 0.002 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Iocar	< 0.002 mg/1	0.0005	6020	28 Jun 17 9:45	KMD
Beryllium - Iotal	< 0.0005 mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Cadmium - iocai	< 0.002 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Chromium - Iotal	< 0.002 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002 mg/1	0.0005	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.005 mg/1	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.01 mg/1	0.0005	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005 mg/1	0.0005	0010		

* Holding time exceeded

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

Approved by:

6JULI7 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

10

CERTIFICATION: ND # ND-00016





Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	MW13
Sampling Personal:	Jen ven-

Weather Conditions:		Temp:	<u> 60 °F</u>		Wind:	NOS-1) @S-10 Precip:			Sunny / Partly Cloudy / Cloudy			udy
	Well Info	rmation			Sampling Information								
Well Locked?	Yes	NO				Purgi	Purging Method: Bladder			Control Settings			ls
Well Labeled?	YB)	No				Sampli	ng Method:	Blad	der]	Purge:	5	sec
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No	1.	Recover:	55	sec
Grout Seal Intact?	Tes	No	Not Visi	ble		Duplicate	Duplicate Sample?:		No	1	PSI:	20	
Repairs Necessary:						Duplicate	Sample ID:	Pupl		7	Pumping R	late: 100	mL/mir
Casing	Diameter:		2"							-			
Water Level Bef	ore Purge:	20	1.33	ft		F	Purge Date:	ZiJuli	7	Time Purg	ing Began:	0701	@m/pm
Total V	Vell Depth:			ft		Well P	Well Purged Dry?		(No)	Time F	Purged Dry:		am/pm
We	ell Volume:	<u>د</u>		liters		Sa	mple Date:	21 June 17	7	Time of	f Sampling:	0741	@n/pm
Depth to To	p of Pump:			ft						•			
Water Level After	er Sample:	29	7.86	ft		Bottle		1L Raw, 50	OmL Nitirc,	500mL Niti	ric (filtered),	4-1L Nitric	
Measuremer	nt Method:	Electric W	/ater Level In	dicator		List:			2:	50 mL Sulfu	ric		

Field Measurements

									and the second sec	
Stabi (3 con:	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	6706	10,31	10597	6.99	6,89	261.3	3.41	29.49	500.0	Clear
2	0711	10.29	10516	\$.96	5.43	259.5	2.66	29,571	500,0	Cles
3	0716	10.26	10492	6.95	4.88	255,2	1.92	29,80	5020	Cler
4	0721	10.07	10489	6.85	4,98	254.6	5,09	29,82	500.0	Cles
5	0726	10.07	10489	6.89	5.11	232.4	12.6	29,03	500.0	Cler
6	0731	10,4	10492	6.88	5,25	215.7	14.8	29.82	500,0	Clear
7	0736	10.05	10503	6,88	5.37	213.6	14.7	29,87	520.0	Clear
8	0741	10,13	10510	6.88	5.41	201.3	13.9	29,89	500.0	Clea
9										
10										
Stabilized	: /(es)	No	,			Te	otal Volume	Removed:	4000.0	mL

Comments:





Groundwater Assessment

Event:	2017			
Sample ID:		,44 R.	LC	29 Ava 17
Sampling Personal:		kon stan		R

Weather Conditions:		Temp:	75 °F		Wind:	N05-	T (0		Precip	: Sunn	y / Partly_C	Loudy / Clo	udy
Well Information							Sampling Information						
Well Locked?	Yes	NO				Purgin	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	Tes	No				Samplin	ng Method:	Blac	lder] [Purge:	5	sec
Casing Straight?	Yes	No				Dedicate	ed Equip?:	Tes	No		Recover:	55	sec
Grout Seal Intact?	(Yes)	No	Not Visi	ble		Duplicate	Sample?:	Yes	(AF)	1	PSI:	20	
Repairs Necessary:						Duplicate S	Sample ID:	<u> </u>] [Pumping Ra	ate: 100	mL/mir
Casing	Diameter:		2"							-			
Water Level Befo	ore Purge:	r	26110	ft		P	urge Date:	21 Ine	17	Time Purgi	ng Began:	1415	am/pm
Total W	ell Depth:	~		ft		Well Pu	urged Dry?	Yes	6	Time Pu	urged Dry:		am/pm
We	Il Volume:			liters		Sar	nple Date:	21 Jul	7	Time of	Sampling:	1735	ampr
Depth to Top	of Pump:			ft									
Water Level Afte	r Sample:	2	6.30	ft		Bottle		1L Raw, 50	0mL Nitirc,	, 500mL Nitri	c (filtered),	4-1L Nitric	
Measurement	t Method:	Electric V	Vater Level In	dicator		List:			25	50 mL Sulfuri	ic		

Field Measurements

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1420	14.61	9291	6.57	7.06	149.0	5.44	26.28	500,0	Clar
2	1425	14,80	9:272	6,55	3.12	149.2	4,88	26,25	500.0	Clean
3	1430	14.62	9293	6.55	3.07	150,1	2.86	26.25	50.0	Clerv
4	1435	14,17	9287	6,54	3,03	151.4	2.01	26.26	500.0	Clea
5										
6										
7										
8										
9										
10										
Stabilized	: Yes	No	-			To	otal Volume	Removed:	2200.0	mL

Comments:




Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	. 70
Sampling Personal:	Jer play

Weather Conditions:		Temp:	70 °F	3	Wind:	NOS	-10		Precip	: Sunr	ny / Partly	Cloudy / Clou	udy
	Well Info	rmation							Sampling	Informatio	on		
Well Locked?	Xes	No				Purgir	ng Method:		Bladder		Co	ntrol Setting	s
Well Labeled?	Tes	No				Samplir	ng Method:		Bladder]	Purge:	5	sec.
Casing Straight?	res	No				Dedicat	ed Equip?:	(Me	s) No		Recover:	SS	sec.
Grout Seal Intact?	(Yeg	No	Not Vis	ible		Duplicate	Sample?:	Ye	es (No)		PSI:	20	
Repairs Necessary:	<u> </u>					Duplicate \$	Sample ID:	~			Pumping R	ate: <i>[DO</i>	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	20	232	ft		P	urge Date:	211	n17	Time Purg	ing Began:	10 tos	?@m/pm
Total W	ell Depth:			ft		Well P	urged Dry?	Ye	es No	Time P	urged Dry:	~	am/pm
Wel	Il Volume:			liters		Sa	mple Date:	21)	wel7	Time of	Sampling:	IUB	(am)pm
Depth to Top	of Pump:	سبين		ft					· · · · · · · · · · · · · · · · ·				1
Water Level Afte	r Sample:	2	Z.00	ft		Bottle 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric				4-1L Nitric			
Measurement	t Method:	Electric V	Vater Level In	dicator		List: 250 mL Sulfuric							
				The second se									

Field Measurements

Stabi	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1058	13.1B	4602	6.98	6.16	53.4	0.37	2 <i>0.</i> 96	500.0	Cles
2	1103	(2.5B	4593	6,94	7.42	63.4	0.33	21.28	500.0	Clesu
3	1108	12.52	4603	6.94	7.79	66.9	0.24	21.46	500.0	cles
4	1113	13.B(4568	6.95	7.85	6B17	0,1B	21.55	500,0	Clear
5	1118	13,73	4503	6.94	7.98	70.9	0.32	21.56	500.0	Clear
6										
7										e
8										
9										
10										
Stabilized	(Tes)	No	-			T	otal Volume	Removed:	2500.0	mL





Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	.101
Sampling Personal:	Jery eleye

Weather Conditions:		Temp:	70°F		Wind:	NO3-1	D		Precip	Sunr	ny / Partly C	Slouely / Clou	udy
	Well Info	rmation						Sa	ampling I	nformatio	on		
Well Locked?	Yes	NO				Purging	g Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	(Yes)	No				Sampling	Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicate	d Equip?:	(Yês)	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visit	le		Duplicate S	Sample?:	Yes	No		PSI:	20	
Repairs Necessary:						Duplicate Sa	ample ID:				Pumping R	ate:/00	mL/min
Casing	Diameter:		. 2"										
Water Level Befo	ore Purge:		36,30	ft		Pu	rge Date:	21 Inc	(7	Time Purg	ing Began:	1226	am/pm
Total V	/ell Depth:			ft		Well Pur	rged Dry?	Yes	No	Time P	ourged Dry:		am/pm
We	Il Volume:			liters		Sam	ple Date:	21 June	FF	Time of	Sampling:	1256	am/pm
Depth to Top	o of Pump:			ft									
Water Level After	er Sample:		39,70	ft		Bottle		1L Raw, 50	0mL Nitirc,	500mL Nitr	ric (filtered),	4-1L Nitric	
Measuremen	t Method:	Electric V	Nater Level Ind	icator		List:			25	50 mL Sulfu	ric		

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	[23/	15.08	4887	6.80	4,40	Bhs	9,44	37.06	500.0	Cles
2	1236	14.32	4879	6.71	3.78	21.0	13.7	37,45	500.0	Clear
3	(241	13,93	4873	6.70	3.90	9.8	16.9	37.79	500,0	cles
4	1246	14,25	4872	6.69	4.13	2.7	(3.D	38,26	500,0	Cles
5	1251	14.30	4854	6.69	4,50	1.1	10.0	38,68	500.0	Clear
6	1256	14,53	4854	6.68	29,52	0.9	2011	38,82	Savo	Class
7										
8										
9										
10										
Stabilized:	(Yes)	No				T	otal Volume	Removed:	30000	mL



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	102
Sampling Personal:	Jerry play_

Weather Conditions:		Temp:	<u>65 °F</u>	Wind:	NOS-10	Precip	: Sunny / Partly C	Cloudy) Clo	udy
Wel	l Inform	nation				Sampling	Information		
Well Locked?	Pes	NO)			Purging Method:	Bladder	Cc	ontrol Setting	IS
Well Labeled?	Kes	No			Sampling Method:	Bladder	Purge:	5	sec
Casing Straight?	Yeş	No			Dedicated Equip?:	Yes No	Recover:	55	sec
Grout Seal Intact?	res	No	Not Visible		Duplicate Sample?:	Yes No	PSI:	15	
Repairs Necessary:	/				Duplicate Sample ID:		Pumping R	ate: 160	mL/mi
Casing Dian	neter:		2"			-			
Water Level Before P	'urge:	16.3	9 ft		Purge Date:	21 Sine 7	Time Purging Began:	ogiz	am/pn
Total Well D	epth:		ft		Well Purged Dry?	Yes (No)	Time Purged Dry:		am/pn
Well Vol	lume:		liters		Sample Date:	21 June 17	Time of Sampling:	0957	anj/pn
Depth to Top of P	ump:	·	 ft						
Water Level After Sa	mple:	19.	(ft		Bottle	1L Raw, 500mL Nitiro	, 500mL Nitric (filtered),	4-1L Nitric	
Measurement Me	thod: E	Electric Wat	er Level Indicator		List: 250 mL Sulfuric				

Field Measurements

Stabi (3 con	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0932	1(.68	8637	6.78	4.45	-13.4	32.5	17.10	5000	Clear
2	0937	11.32	7833	6.73	5.71	-26.1	2.93	17,75	500.0	cles
3	0942	11.43	7645	6.73	6.10	-25.0	1.62	17.81	500.0	Clear
4	0947	11,46	7397	6.73	6.48	-25.9	0.88	18,03	500,0	Clas
5	0952	11.38	7194	6.73	6.33	-27.1	0174	1Biz	500,0	Cles
6	0957	11.4B	7109	6,73	6.50	-28.0	68.0	18,21	500,0	Cbr
7										
8										
9										
10				-						
Stabilized	: Yes	No	-			T	otal Volume	e Removed:	400.0	mL



Chain of Custody Record

Project Name:	nt:		Work Orde	r Number:				
MDU Heskett		June 201	7		00-	1076		
Report To:MDUAttn:Samantha MarshallAddress:400 N. 4th StBismarck, ND 58501phone:701-222-7829email:	Carb Attn: Addr	oon Copy: ress:		Name of Sampler(s):				
San	ple Information		Bot	tle Type	Field Pa	rameters	Analysis	
Lab Number Sample ID W2471 MW13 W2472 MW44R × W2473 MW70 W2473 MW70 W2474 MW101 W2474 MW101 W2475 MW102 W2474 Dup 1 W2477 RB1	21 June 17 074 21 June 17 074 21 June 17 14 21 June 17 14 21 June 17 12 21 June 17 09 21 June 17 NJ 21 June 17 NJ 21 June 17 NJ	A GW A GW A GW A GW A GW A GW A GW A GW	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	() () () () () () () () () ()	- 6,54 6,54 6,73 6,73	Analysis Required	

Comments:

* per email from Terri Olson with Burn (25, 10, 17) 28 Aug 17 rc

Relinguished By:		Sar	nple Condition:	Receive	d by:
Name	Date/Time	Location:	Temp (°C)	Name:	Date/Time
1 1 2	21 June 12 1705	Log In ∛Valk In #2≫	(TM562 / TM588	Unal Smonan	22 June 17 Va
2					

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-1681 S1706486 Montana Dakota Utilities MDU Heskett Ash Site CCR June 2017 17-W2482 through 17-W2488 S1706486-001 through S1706486-007

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
MW13	17-W2482	S1706486-001
MW44	17-W2483	S1706486-002
MW70	17-W2484	S1706486-003
MW101	17-W2485	S1706486-004
MW102	17-W2486	S1706486-005
Dup1	17-W2487	S1706486-006
FB1	17-W2488	S1706486-007

I. RECEIPT

- All samples were received at the laboratory on 22 Jun 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 19.6°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 27 Jun 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.

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.

MIVTL

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-1681 S1706486 Montana Dakota Utilities MDU Heskett Ash Site CCR June 2017 17-W2482 through 17-W2488 S1706486-001 through S1706486-007

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:

landette ant

DATE: 8 Avg)

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 7

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2482 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 7:41 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

Project Name: MDU Heskett Sample Description: MW13

Event and Year: June 2017

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.88	units	NA	SM 4500 H+ B	21 Jun 17	7:41	JSM
Temperature - Field	10.1	Degrees C	NA	SM 2550B	21 Jun 17	7:41	JSM
Conductivity - Field	10510	umhos/cm	1	EPA 120.1	21 Jun 17	7:41	JSM
Radium 226	See Atta	ched Report			1 Aug 17		OL
Radium 228	See Atta	ched Report			22 Jul 17		OL

Approved by:

Clauditte K. Cantop

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 7

CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW44

Event and Year: June 2017

Report Date: 7 Aug 17 Lab Number: 17-W2483 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 14:35 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

	As Received Result	Met RL	hod Me Re	ethod eference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	6.54 units 14.2 Degre 9287 umbos See Attached Rep See Attached Rep	s NA ees C NA s/cm 1 port port	SI SI E	M 4500 H+ B M 2550B PA 120.1	21 Jun 17 14:35 21 Jun 17 14:35 21 Jun 17 14:35 1 Jun 17 14:35 1 Aug 17 22 Jul 17	JSM JSM JSM OL OL

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW70

Event and Year: June 2017

Report Date: 7 Aug 17 Lab Number: 17-W2484 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 11:18 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

	As Recei Result	.ved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	6.94 13.7 4603 See Atta See Atta	units Degrees C umhos/cm ached Report ached Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Jun 17 11:18 21 Jun 17 11:18 21 Jun 17 11:18 21 Jun 17 11:18 1 Aug 17 22 Jul 17	JSM JSM JSM OL OL

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





Page: 4 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17 Lab Number: 17-W2485 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 12:56 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

Project Name: MDU Heskett Sample Description: MW101

Event and Year: June 2017

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	6.68 14.5 4854 See Atta See Atta	units Degrees C umhos/cm ached Report ached Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Jun 17 12:56 21 Jun 17 12:56 21 Jun 17 12:56 1 Aug 17 22 Jul 17	JSM JSM JSM OL OL

Approved by:

Claudite K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2486 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 9:57 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

Project Name: MDU Heskett Sample Description: MW102

Event and Year: June 2017

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	6.73 11.5 7109 See Atta See Atta	units Degrees C umhos/cm ached Report ached Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	21 Jun 17 21 Jun 17 21 Jun 17 2 Aug 17 22 Jul 17	9:57 9:57 9:57	JSM JSM JSM OL OL

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to co ! = Due to sample quantity + = Due to in CERTIFICATION: ND # ND-00016

ution as coded below: # = Due to concentration of other analytes + = Due to internal standard response





Page: 6 of 7

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2487 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

Project Name: MDU Heskett Sample Description: Dup 1

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report		5	2 Aug 17 22 Jul 17	OL OL

Approved by:

1C 8AUA 17 Claudite K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 7 of 7

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2488 Work Order #: 82-1681 Account #: 002800 Date Sampled: 21 Jun 17 Date Received: 22 Jun 17 8:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB 1

Event and Year: June 2017

Temp at Receipt: Ambient

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			28 Jul 17	OL

Approved by:

Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

Inter-Mountain Labs

Your Environmental Monitoring Partner

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

Date: 8/3/2017

CASE NARRATIVE CLIENT: MVTL Laboratories, Inc. 201782-1681 **Project:** Report ID: S1706486002 Lab Order: S1706486 (Replaces S1706486001)

Samples 17-W2482 MW13, 17-W2483 MW44, 17-W2484 MW70, 17-W2485 MW101, 17-W2486 MW102, 17-W2487 Dup1, and 17-W2488 FB1 were received on June 27, 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 indicatec in this case narrative.

The report, S1706486001, was revised and replaced by report S1706486002 to correct the report style to display all values.

Reviewed by: Tom Patte

Tom Patten, Laboratory Manager



Your Environmental Monitoring Partner

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

Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706486002
	Bismarck, ND 58501		(Replaces S1706486001)
ProjectName:	201782-1681	WorkOrder:	S1706486
Lab ID:	S1706486-001	CollectionDate:	6/21/2017 7:41:00 AM
ClientSample ID:	17-W2482 MW13	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1681	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-1.3	pCi/L		1	Ga-Tech	07/22/2017 322	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 322	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

Reviewed by: <u>Town Patte</u>

Tom Patten, Laboratory Manager

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



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-002 17-W2483 MW44 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 2:35:00 PM 6/27/2017 12:40:00 PM Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-0.3	pCi/L		1	Ga-Tech	07/22/2017 626	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/22/2017 626	MB

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers:
- Analyte detected in the associated Method Blank В Value above quantitation range Е
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory 1
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits S

Reviewed by: <u>Tom</u> Patte

Tom Patten, Laboratory Manager

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



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-003 17-W2484 MW70 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 11:18:00 AM 6/27/2017 12:40:00 PM Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.18	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	07/22/2017 929	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 929	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

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

Reviewed by: <u>Tom Patte</u>

Tom Patten, Laboratory Manager

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

 - Х Matrix Effect

Page 3 of 7



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-004 17-W2485 MW101 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 12:56:00 PM 6/27/2017 12:40:00 PM Water

Com	ments
-----	-------

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/01/2017 1833	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/01/2017 1833	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	07/22/2017 1232	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1232	MB

These results apply only to the samples tested.

В

Qualifiers:

- 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

Analyte detected in the associated Method Blank

Reviewed by: <u>Jour</u> Patte

Tom Patten, Laboratory Manager

- RL Reporting Limit C Calculated Value
 - G Analyzed at IML Gillette laboratory
 - J Analyte detected below quantitation limits
 - M Value exceeds Monthly Ave or MCL or is less than LCL
 - Outside the Range of Dilutions
 - O Outside the Rang X Matrix Effect

Page 4 of 7



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-005 17-W2486 MW102 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 9:57:00 AM 6/27/2017 12:40:00 PM Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	nit
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	0.0	pCi/L		1	Ga-Tech	07/22/2017 1535	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1535	MB

These results apply only to the samples tested.

B Analyte detected in the associated Method Blank

Qualifiers:

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

Reviewed by: <u>Jown Patte</u>

Tom Patten, Laboratory Manager

C Calculated Value

RL - Reporting Limit

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

Page 5 of 7



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-006 17-W2487 Dup1 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 6/27/2017 12:40:00 PM Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.5	pCi/L		1	Ga-Tech	07/22/2017 1838	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/22/2017 1838	MB

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by: Town Patte

Tom Patten, Laboratory Manager

- RL Reporting Limit C Calculated
 - C Calculated Value
 - G Analyzed at IML Gillette laboratory
 - J Analyte detected below quantitation limits
 - M Value exceeds Monthly Ave or MCL or is less than LCL
 - O Outside the Range of Dilutions
 - X Matrix Effect

Page 6 of 7



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706486002 (Replaces S1706486001)
ProjectName: Lab ID: ClientSample ID: COC:	201782-1681 S1706486-007 17-W2488 FB1 201782-1681	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1706486 6/21/2017 6/27/2017 12:40:00 PM Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.2	pCi/L		1	Ga-Tech	07/28/2017 731	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 731	MB

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by: <u>Tom Patter</u> Tom Patten, Laboratory Manager

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



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945 ANALYTICAL QC SUMMARY REPORT

CLIENT:	MVTL La	boratories, Inc.			Da	ate: 8	3/3/2017		
Work Orde	er: S170648	6			Report	ID: S	5170648	6002	
Project:	201782-1	1681				(Replace	s S170648600	1)
Radiu	ım 228 by Ga/Tech		Sample Type MBLK		Units: pCi	/L .			
	MB-449 (07/19/17	20:25)	RunNo: 148244	Pren	Date: 07/10/17	14.00	Bato	hID 13469	
		Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qual
	L	Total Radium 228	ND	1					
	MB-450 (07/27/17	16:14)	RunNo: 148477	Pren	Date: 07/12/17	 1∡∙∩∩	Bate	hID 13495	
	WID-430 (01/21/11	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qual
		Tatal Dadium 229	ND					·	
Radiu	m 228 by Ga/Tech		Sample Type LCS	I	Units: pCi	/1			
Ruuru	1 08 440 (07/10/1	7 22.20)	DupNo: 149244	Droni	Date: 07/10/17	14.00	Bate		
	200-449 (07/19/1	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qual
							400	05.0 400	
	I	Total Radium 228	40	1	39.3		102	65.9 - 132	
	LCS-450 (07/27/1	7 19:17)	RunNo: 148477	Prepl	Date: 07/12/17	14:00	Bato	hID 13495	Qual
	L	Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Quai
		Total Radium 228	34	1	39.3		85.5	65.9 - 132	
Radiu	m 228 by Ga/Tech		Sample Type MS		Units: pCi	/L			
	MS-449 (07/20/17	05:34)	RunNo: 148244	Prepl	Date: 07/10/17	14:00	Bato	hID 13469	
		Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qual
		Radium 228 (Dissolved)	42	1	39.3 N	١D	106	50 - 139	
		Total Radium 228	42	1	39.3 N	١D	106	50 - 139	
	MS-450 (07/28/17	01:23)	RunNo: 148477	Prep[Date: 07/12/17	14:00	Bato	hID 13495	
		Analyte	Result	RL	Spike Ref	Samp	%REC	% Rec Limits	Qual
		Total Radium 228	41	1	39.3 N	١D	105	50 - 139	
Radiu	m 228 hy Ga/Tech		Sample Type MSD		Units: pCi	/L			
	In 220 by Guilcon		oumpio Typo mos						
	MSD-449 (07/20/1	7 08:38)	RunNo: 148244	Prep	Date: 07/10/17	14:00	Bato	hID 13469	
	MSD-449 (07/20/1	7 08:38) Analyte	RunNo: 148244 Result	Prep[RL	Date: 07/10/17	14:00 RPD	Bato %REC	hID 13469 % RPD Limits	Qual
	MSD-449 (07/20/1	7 08:38) Analyte Radium 228 (Dissolved)	RunNo: 148244 Result 43	Prep[RL 1	Date: 07/10/17 Conc %F	14:00 RPD .18	Bato %REC 109	hID 13469 % RPD Limits 20	Qual
	MSD-449 (07/20/1	7 08:38) Analyte Radium 228 (Dissolved) Total Radium 228	RunNo: 148244 Result 43 43	Prep RL 1 1	Date: 07/10/17 Conc %F 42 3 42 3	14:00 RPD .18 .18	Batc %REC 109 109	hID 13469 % RPD Limits 20 20	Qual
	MSD-449 (07/20/1	7 08:38) Analyte Radium 228 (Dissolved) Total Radium 228 7 04:27)	RunNo: 148244 Result 43 43 RunNo: 148477	Prep[RL 1 1 Prep[Date: 07/10/17 Conc %F 42 3 42 3 Date: 07/12/17	14:00 RPD .18 .18 14:00	Bato %REC 109 109 Bato	hID 13469 % RPD Limits 20 20 hID 13495	Qual
	MSD-449 (07/20/1 MSD-450 (07/28/1	7 08:38) Analyte Radium 228 (Dissolved) Total Radium 228 7 04:27) Analyte	RunNo: 148244 Result 43 43 RunNo: 148477 Result	Prep[RL 1 Prep[RL	Date: 07/10/17 Conc %f 42 3 42 3 Date: 07/12/17 Conc %f	14:00 RPD .18 .18 14:00 RPD	Bato %REC 109 109 Bato %REC	chID 13469 % RPD Limits 20 20 chID 13495 % RPD Limits	Qual

Qualifiers:	в	Analyte detected in the associated Method Blank	E	Value above quantitation range
	G	Analyzed at IML Gillette laboratory	Н	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	ND	Not Detected at the Reporting Limit	0	Outside the Range of Dilutions
	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits

Spike Recovery outside accepted recovery limit



Your Environmental Monitoring Partner

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945 ANALYTICAL QC SUMMARY REPORT

CLIENT: Work Orde Project:	MVTL Laboratories, Inc. er: S1706486 201782-1681		R	Date: a	8/3/2017 S170648 (Replace	6002 s S170648600	1)
Radiur	m 226 in Water -	Sample Type MBLK	Unit	s: pCi/L			
	MB-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/	24/17 0:00	Bate	chID 13498	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
-	Radium 226	ND	0.2				
	MB-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/2	26/17 0:00	Bato	hID 13492	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
_	Radium 226	ND	0.2				
Radiun	n 226 in Water -	Sample Type LCS	Units	s: pCi/L			
	LCS-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/2	24/17 0:00	Bato	hID 13498	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
-	Radium 226	6.4	0.2 6.41		99.4	67.1 - 122	
	LCS-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/2	26/17 0:00	Bato	hID 13492	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	6.5	0.2 6.41		102	67.1 - 122	
Radiun	n 226 in Water -	Sample Type MS	Units	: pCi/L			
	MS-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/2	4/17 0:00	Bato	hID 13498	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
-	Radium 226	5.9	0.2 6.41	ND	91.5	65 - 131	
	MS-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/2	6/17 0:00	Batc	hID 13492	
	Analyte	Result	RL Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	6.5	0.2 6.41	ND	101	65 - 131	
Radium	n 226 in Water -	Sample Type MSD	Units	: pCi/L			
	MSD-1774 (08/01/17 16:17)	RunNo: 148567	PrepDate: 07/2	4/17 0:00	Batc	hID 13498	
	Analyte	Result	RL Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226	6.1	0.2 5.9	3.71	94.9	20	
	MSD-1775 (08/02/17 16:50)	RunNo: 148576	PrepDate: 07/2	6/17 0:00	Batc	hID 13492	
	Analyte	Result	RL Conc	%RPD	%REC	% RPD Limits	Qual
_	Radium 226	6.7	0.2 6.5	3.74	104	20	J

Qualifiers:	В	Analyte detected in the associated Method Blank	E	Value above quantitation range
	G	Analyzed at IML Gillette laboratory	н	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	ND	Not Detected at the Reporting Limit	0	Outside the Range of Dilutions

R RPD outside accepted recovery limits

Matrix Effect Х

Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



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

Chain of Custody Record

Page <u>1</u> of <u>1</u>.

ال وموجد الأراب المالة المراجع

Toll Free: (800) 279-6885 Fax: (701) 258-9724							201782-1681						
Company Nam	e and Address:			Account #	ŧ:			· · · · · · · · · · · · · · · · · · ·			Phone #:		
	D.A.	እ <i>ፖ</i> ተነ									701-258-9720		
	2616 E	Broadway		Contact:						Fax #:			
	Bismarcl	k, ND 58501		Name of Sampler:							For faxed report check box		
Billing Address	s (indicate if differen	t from above):									For e-mail report check box		
	DO F			Quote Number							Date Submitted:		
	Destantia							23-Jun-17					
	Project Name/Number:								Purchase Order #:				
	Sample Information Bottle						Tv	no					
						Bottle Type			1		Analysis		
5170610	1-						33	а					
0170070	φ					p	HNH	ls erve	1				
IML Lab			Sample	Date	Time	eate	l III	: Via	s Ja	L.			
Number	MVTL Lab Number	Client Sample ID	Туре	Sampled	Sampled	L III	100(Glas	othe	Analysis Required		
	17-W2482	MW13	GW	21-Jun-17	741		4				Ra226 & Ra228		
002	17-W2483	MW44	GW	21-Jun-17	1435	}	4				Ra226 & Ra228		
<u> </u>	17-W2484	MW70	GW	21-Jun-17	1118		4				Ra226 & Ra228		
	17-W2485	MW101	GW	21-Jun-17	1256		4				Ra226 & Ra228		
	17-W2486	MW102	GW	21-Jun-17	957		4				Ra226 & Ra228		
200	17-W2487	Dup1	GW	21-Jun-17			4				Ra226 & Ra228		
	17-W2488	FB1	GW	21-Jun-17			4				Ra226 & Ra228		
· · · · · · · · · · · · · · · · · · ·													
		······											
Comments: All	results must be rep	orted as a numerical value	<u>,</u>								Salar		

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
T. Olson	23-Jun-17	1700	Firtact	Kathy Boys	6.27.17	12:40	22.4
2.							22.0
							21.6



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	MW13	
Sampling Personal:	ky	

Phone: (701) 258-9720

Weather Conditions:

Temp: 60 °F

Wind: NOS-10

Sunny / Partly Cloudy / Cloudy

Well Information										
Well Locked?	Yes	NO								
Well Labeled?	Ves	No								
Casing Straight?	Yes .	No								
Grout Seal Intact?	Tes	No	Not Visi	ble						
Repairs Necessary:										
Casing	Diameter:		2"							
Water Level Bef	ore Purge:	2	ft							
Total V	Vell Depth:	-	<u></u>	ft						
We	ell Volume:	4		liters						
Depth to To		ft								
Water Level Aft	er Sample:		29.86	ft						
Measuremer	nt Method:	Electric Water Level Indicator								

		Sai	npling l	nformatio	on			
Purgir	ng Method:	Blado	der		Co	ontrol Se	ettings	
Samplir	ng Method:	Blado	der		Purge:	5	sec.	
Dedicat	ed Equip?:	TES	No] .	Recover:	55	sec.	
Duplicate	Sample?:	Yes	No]	PSI:	20		
Duplicate \$	Sample ID:	Dupl]	Pumping F	Rate: 7	oO mL/min	
		· ·						
P	urge Date:	ZiJuni7		Time Purg	ing Began:	070	(@in/pm	
Well Pi	urged Dry?	Yes	(No)	Time F	Purged Dry:	ļ	am/pm	
Sa	mple Date:	21 Jun 17		Time o	f Sampling:	074	/ @/pm	
Bottle		1L Raw, 500	mL Nitirc	, 500mL Niti	ric (filtered),	4-1L Ni	itric	
List:		250 mL Sulfuric						

Precip:

Field Measurements

Stabi (3 con:	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	6706	10,31	10597	6.99	6.89	261.3	3.41	29.49	500.0	Clean
2	0711	10.29	10516	\$,96	5.43	259.5	2.66	29,571	500,0	Cles
3	0716	10.26	10492	6.95	4.88	255,2	1.92	29,80	5000	Cler
4	0721	10.07	10489	6.85	4,98	254.6	5.09	29,82	500.0	Cles
5	0726	10.07	10489	6.89	5.11	232.4	12.6	29,03	500.0	Clan
6	0731	10,4	10492	6.88	5,25	215.7	14.8	29.82	500,0	Clear
7	0736	10.05	10503	6,88	5.37	213.6	14.7	29,87	520.0	Clear
8	6741	10,13	10510	6.88	5.41	201.3	13.9	29.89	500.0	Clea
9										
10										
Stabilized	: Yes)	No	,			T	otal Volume	Removed:	4000.0	mL



Weather Conditions:

Field Datasheet

Groundwater Assessment

75 °F

Wind: NO5-10

Company:	MDU Heskett
Event:	2017
Sample ID:	44
Sampling Personal:	Jerg Flage
Precip	: Sunny / Partly Cloudy / Cloudy

	Well Information										
Well Locked?	Yes	(No)									
Well Labeled?	(es	No									
Casing Straight?	Yes	No									
Grout Seal Intact?	(Yes)	No	Not Visible								
Repairs Necessary:											
Casing	Diameter:		2''								
Water Level Bef	ore Purge:	2616									
Total V	Vell Depth:										
We	ell Volume:		liters								
Depth to To	p of Pump:										
Water Level Aft	er Sample:		26.30	ft							
Measuremer	nt Method:	Electric	Water Level Ind	icator							

Temp:

		Sa	mpling l	nformatio	on		
Purgir	ng Method:	Blad	der		Co	ntrol Setting	js
Samplin	ng Method:	Blad	der		Purge:	5	sec.
Dedicat	ed Equip?:	Tes	No		Recover:	55	sec.
Duplicate	Sample?:	Yes	AFO		PSI:	20	
Duplicate \$	Duplicate Sample ID:				Pumping R	ate: 100	mL/min
	······						
P	urge Date:	26 June 17		Time Purg	jing Began:	1415	amlem
Well Pi	urged Dry?	Yes	Ko l	Time F	Purged Dry:		am/pm
Sa	mple Date:	21 July		Time o	f Sampling:	1735	am/pm
······							
Bottle		ric (filtered),	4-1L Nitric				
List:		250 mL Sulfuric					

Field Measurements

(3 consec	cutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1420	14.61	9291	6.57	7.06	149,0	5.44	2628	500,0	Clin
2	1425	14,80	9:272	6,55	3.12	149.2	4,88	26,25	500.0	Clear
3	1430	14.62	9293	6.55	3.07	150,1	2.86	26.25	50,0	Cleri
4	1435	1417	9287	6.54	3,03	151.4	2.01	26.26	500:0	Cles
5	*									
6										
7										
8										
9										
10										





Groundwater Assessment

Company:	MDU Heskett	
Event:	2017	
Sample ID:	. 70	
Sampling Personal:	Jen play -	
	1- 1	

Phone: (701) 258-9720

Weather Conditions:		Temp:	70 "	=	Wind:	NOS-10			Precip	Sun	ny /Partly	Cloudy / Clo	udy
	Well Info	prmation						Sa	ampling l	nformatio	on		
Well Locked?	Yes	(No)				Purging Metho	d:	Blac	ider		Co	ontrol Setting	IS
Well Labeled?	Yes	No				Sampling Metho	d:	Blac	der		Purge:	5	sec.
Casing Straight?	Tres	No				Dedicated Equip	?:	Tes	No]	Recover:	SS	sec.
Grout Seal Intact?	Yea	No	Not Vis	sible		Duplicate Sample):	Yes	₹D		PSI:	20	
Repairs Necessary:						Duplicate Sample I	D:	~			Pumping R	late: <i>[DO</i>	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	20	2,32	ft		Purge Da	e: 21	Jun 1	7	Time Purg	ing Began:	105 105	3@m/pm
Total V	Vell Depth:			ft		Well Purged Dr	/?	Yes	NO	Time F	Purged Dry:	~	am/pm
We	ell Volume:			liters		Sample Da	e: 20	June	17	Time o	f Sampling:	IUB	@m/pm
Depth to To	p of Pump:			ft									
Water Level Aft	er Sample:	2	2.00	ft		Bottle	1L F	Raw, 50	0mL Nitirc	500mL Nit	ric (filtered),	4-1L Nitric	
Measuremer	nt Method:	Electric V	Nater Level Ir	ndicator		List:			2	50 mL Sulfu	ric		
1		1			•	••••							

Field Measurements

Stabil (3 con:	ization secutive)	Temp (°C)	Spec. Cond.	pH +0.1	DO (mg/L) +10%	ORP (mV) +20 mV	Turbidity (NTU) ±10%	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
5EQ#	Line Line	1210	111.02	1 90	1 11	534	0.22	7296	50.0	Clar.
-	1050	15.10	9602	6.10	6.10	7,7	0.31	20110	500	
2	2011	12.50	4593	6.94	4.92	65.4	0.55	21,20	300.0	Clesi
3	1108	12.52	4603	6.94	7.79	66.9	0.24	21.46	500.0	Clear
4	1113	13.81	4568	6.95	7.85	6B17	0,1B	21.55	5.00.2	Clear
5	1118	13,73	4603	6.94	7.98	70,9	0.32	21.56	50.0	Clear
6										
7										
8					1					
9										×
10				1						
Stabilized	(res)	No				T	otal Volume	Removed:	2500.0	mL



Field Datasheet

Groundwater Assessment

Phone: (701) 258-9720

Weather Conditions:		Temp:	70°F		Wind:	NO3-	-10		Precip	: Sun	ny / Partly C	Sloudy / Clo	udy
١	Well Info	rmation						Sa	mpling	Informatio	on		
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	Nes	No				Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	(Yes)	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visit	ole		Duplicate	Sample?:	Yes	No		PSI:	20	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate:/00	mL/min
Casing I	Diameter:		2"										
Water Level Befo	ore Purge:		36,30	ft		F	Purge Date:	21 June	(7	Time Purg	ing Began:	1226	am/pm
Total W	ell Depth:			ft		Well P	urged Dry?	Yes	<u>N</u> 2	Time F	Purged Dry:		am/pm
Wel	l Volume:			liters		Sa	mple Date:	21 June	17	Time o	f Sampling:	1256	am/pm
Depth to Top	of Pump:			ft									
Water Level After	r Sample:		39.70	ft		Bottle		1L Raw, 50	0mL Nitirc	, 500mL Nit	ric (filtered),	4-1L Nitric	
Measurement	t Method:	Electric	Water Level Ind	icator		List:			2	50 mL Sulfu	ric		

Field Measurements

Stabili (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	[23/	15.08	4887	6.80	4,40	BLS	9,44	37.06	500.0	Cles
2	1236	14.32	4879	6.71	3.78	21.0	13.7	37,45	500.0	Cles
3	(241	13,93	4873	6.70	3.90	9.5	16.9	37.79	500,0	cler
4	1246	14,25	4872	6.69	4.13	2.7	G.E)	38.26	500,0	Cles
5	1251	14.30	4854	6.69	4,50	1.1	10.0	38,68	500.0	Clea
6	1256	14,53	4854	6.68	28,52	0.9	20.1	38,82	500,0	Clear
7						1				
8										
9										
10	_									
Stabilized:	(Yes)	No				Т	otal Volume	Removed:	30000	mL



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	102
Sampling Personal:	Jem clar -

Weather Conditions:		Temp:	(2S °F	Wind:	NOS-10		Precip	Suni	ny / Partly C	Cloudy) Clo	udy
	Well Info	rmation					S	ampling I	nformatio	on		
Well Locked?	Pes	(TOM)				Purging Method	Bla	dder		Co	ontrol Setting	S
Well Labeled?	- Yes	No				Sampling Method	Bla	dder]	Purge:	5	sec.
Casing Straight?	Nes	No				Dedicated Equip?	Yes	No		Recover:	55	sec.
Grout Seal Intact?	res	No	N	ot Visible		Duplicate Sample?:	Yes	No		PSI:	15	
Repairs Necessary:	\mathcal{O}					Duplicate Sample ID		_		Pumping R	late: 160	mL/min
Casing	Diameter:		2"									
Water Level Befo	ore Purge:	16	39	ft		Purge Date	21 Jun	cl7	Time Purg	ing Began:	call	am/pm
Total W	ell Depth:	-		ft		Well Purged Dry	Yes	(No)	Time F	Purged Dry:		am/pm
We	II Volume:			liters		Sample Date	: 21 Jun	17	Time of	Sampling:	0957	anj/pm
Depth to Top	of Pump:	~~~~		ft								
Water Level Afte	r Sample:	ľ	1.11	ft		Bottle	1L Raw, 5	00mL Nitirc,	500mL Nitr	ric (filtered),	4-1L Nitric	
Measuremen	t Method:	Electric V	Vater L	evel Indicator		List:		25	50 mL Sulfu	ric		

Field Measurements

Stabi (3 con:	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0932	11.68	8637	6.78	4.45	-13.4	32.5	17.10	ちゅつ・つ	Clear
2	0937	[[.32	FB 33	6.73	5.71	-26.1	2.93	17,75	500.0	cles
3	09.42	11.43	7645	6.73	6.10	-25.0	1.62	1781	500.0	Class
4	0947	11.46	7397	6.73	6.48	-25.9	0.88	18,03	500,0	Clea
5	0952	11.38	7194	6.73	6.33	-27.1	0174	1BIZ	500.0	Clear
6	0957	11.48	7109	6,73	6.50	-28.0	68.04	18,21	500,0	Chr
7							0.68			
8										
9										
10										
Stabilized	: Yes	No				Тс	otal Volume	Removed:	400.0	mL

Comments:

& ZI Jun 17 +

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

Chain of Custody Record

Project Name	:		Event:				Wo	rk Or	der N	lumber:	20	101	
	MDU Heskett			J	une 2017					l	8d-1	681	
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501		Carbon Co Attn: Address:	ору:			Nar	ne of	Sam	pler(s):	en en		
email:	701-222-7829												an a
	Sam	ple Informatio	n			Bot	tle 1	Гуре		Fi	eld Para	meters	Analysis
Lab Number W2482 W3483 W3484 W3484 W3485 W3486 W3486 W3486	Sample ID 11W13 11W13 11W13 11W14 11W102 11W102 1102 1102 1100 11 1102	21 June 17 21 June 17	0741 1435 1118 1256 0957 NA NK	\mathcal{E}						10,17 14,17 14,17 14,53 14,90 1 1,40 1 1 1,40 1 1 1 1,40 1 1 1 1,53 1 1,40 1 1 1 1,40 1 1 1 1,40 1 1 1 1,40 1 1 1,40 1 1 1,40 1 1 1,40 1 1,40 1 1,40 1 1 1,40 1 1 1,40 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	10510 9287 4603 4854 7109 -	E 6.88 6.54 6.94 6.68 6.73 7 2	Analysis Required

Relinquished By:		Sam	ple Condition:
Name:	Date/Time	Location:	Temp (°C)
	21 Juni 7	Log In	Andlent 19.6
	1705	Walk in #2	TM562 / TM588
2			

Received	d by:
A Name:	Date/Time
angel Simonson	Jadinet SCD





June 23, 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:

From June 21-22, 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. Sampling was also collected for the NDDH list of analysis. 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



WO#

MDU Heskett

GROUNDWATER SAMPLING Attn: Samantha Marshall 400 N. 4th St Bismarck, ND 58501

CCRRadChem82-167682-168182-168382-1685

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	WATER LEVEL END	VOLUME REMOVED (mL	SAMPLE METHOD	TEMP (°C)	EC	рН	Turbidity NTU	SAMPLE APPEARANCE OR COMMENT
2-90	22-Jun-17	13:33	22-Jun-17	13:58	1686.60	1665.63	20.97	21.31	2500.0	Bladder	10.50	7504	6.87	0.29	clear
3-90	22-Jun-17	11:40	22-Jun-17	12:00	1686.01	1667.33	18.68	18.78	2000.0	Bladder	9.88	5033	6.75	1.12	clear
13	21-Jun-17	7:01	21-Jun-17	7:41	1724.98	1695.65	29.33	29.86	4000.0	Bladder	10.13	10510	6.88	13.90	clear
33	22-Jun-17	10:20	22-Jun-17	10:45	1717.91	1676.50	41.41	41.60	2500.0	Bladder	11.04	5054	6.49	2.63	clear
70	21-Jun-17	10:53	21-Jun-17	11:18	1706.36	1686.04	20.32	22.00	2500.0	Bladder	13.73	4603	6.94	0.32	clear
80R	22-Jun-17	8:57	22-Jun-17	9:17	NA	NA	14.40	14.65	2000.0	Bladder	10.40	5756	7.05	0.38	clear
44R	21-Jun-17	14:15	21-Jun-17	14:35	NA	NA	26.16	26.30	2000.0	Bladder	14.17	9287	6.54	2.01	clear
101	21-Jun-17	12:26	21-Jun-17	12:56	NA	NA	36.30	39.70	3000.0	Bladder	14.53	4854	6.68	10.10	clear
102	21-Jun-17	9:17	21-Jun-17	9:57	NA	NA	16.39	19.11	4000.0	Bladder	11.48	7109	6.73	0.68	clear
103	22-Jun-17	6:01	22-Jun-17	6:21	NA	NA	30.88	32.87	2000.0	Bladder	9.06	5015	6.59	0.58	clear
104	22-Jun-17	14:55	22-Jun-17	15:15	NA	NA	13.92	14.21	2000.00	Bladder	11.82	14032.00	6.88	1.01	clear
105	22-Jun-17	7:22	22-Jun-17	8:02	NA	NA	12.94	13.18	4000.0	Bladder	9.16	6790	6.65	2.37	clear
1-90	22-Jun-17	16:07	20-Apr-17	16:27	1675.86	1664.62	11.24	11.35	2000.0	Bladder	10.72	9375	6.78	0.45	clear





CASE NARRATIVE - AMENDED 7 AUGUST 2017 (Case Narrative)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-1683 Montana Dakota Utilities MDU Heskett CCR June 2017 17-W2497 through 17-W2505

MDU Sample Identification	MVTL Laboratory #
2-90	17-W2497
3-90	17-W2498
MW33	17-W2499
MW80R	17-W2500
MW103	17-W2501
MW104	17-W2502
MW105	17-W2503
Dup2	17-W2504
FB2	17-W2505

I. RECEIPT

- All samples were received at the laboratory on 23 Jun 2017 at 823.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 1.7°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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





CASE NARRATIVE – AMENDED 7 AUGUST 2017 (Case Narrative)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-1683 Montana Dakota Utilities MDU Heskett CCR June 2017 17-W2497 through 17-W2505

IV. ANALYSIS

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

V. REPORTING

- Per email dated 7 Aug 2017 from Terri Olson with Barr Engineering, the case narrative was amended to remove an erroneous statement regarding 2-90. In addition, the case narrative was corrected to fix an incorrect date/time of receipt as well as an incorrect temperature at receipt.
- Per email dated 7 Aug 2017 from Terri Olson with Barr Engineering, the sample identification listed on the COC and reports for MW80 was changed to MW80R.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

Claudette ante

DATE: 7 Avg17

Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

From:	Terri A. Olson <tolson@barr.com></tolson@barr.com>
Sent:	Monday, August 07, 2017 8:22 AM
То:	Claudette Carroll
Cc:	Barr Data Management; Tonia D. O'Brien
Subject:	RE: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

Another item on this report, the case narrative has a statement about sample 2-90 not being analyzed but it was. I believe this was not overwritten from the April event. This same issue is in the NDDH report.

Thank-you,

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

resourceful, naturally.

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From: Terri A. Olson
Sent: Monday, August 07, 2017 8:19 AM
To: 'Claudette Carroll' <ccarroll@mvtl.com>
Cc: Barr Data Management <BarrDM@barr.com>; Tonia D. O'Brien <tobrien@barr.com>
Subject: RE: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

=7:1=1=

Hi Claudette,

For CCR report 201782-1683, Section I. under the case narrative lists the incorrect date and time received and the incorrect temperature upon receipt. It looks like the April data wasn't overwritten. Also, well MW80 should be listed as MW80R.

I haven't reviewed the NDDH report yet but the receipt information appears to be correct. The MW80 will need to be revised but please hold on this until I have completed my review.

Thank-you,

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

resourceful. naturally.

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From: Claudette Carroll [mailto:ccarroll@mvtl.com]
Sent: Wednesday, July 12, 2017 4:14 PM
To: Barr Data Management <<u>BarrDM@barr.com</u>>; Jesse Hedlund <<u>jhedlund@mvtl.com</u>>; Julie Crispin
<<u>icrispin@mvtl.com</u>>; Marshall, Samantha <<u>Samantha.Marshall@mdu.com</u>>; Mary Hames <<u>mhames@mvtl.com</u>>; Steve
Bowen <<u>sbowen@mvtl.com</u>>; Terri A. Olson <<u>TOlson@barr.com</u>>; Tonia D. O'Brien <<u>tobrien@barr.com</u>>
Subject: Emailing - 201782-1683 MDU HESK CCR JUN 17.pdf

Hello all,

Attached is a data package for the CCR sampling done at MDU Heskett in Jun 2017. Hard copies to follow to Sam and EDDs will follow from our IT department.

Regards, Claudette



Minnesota Valley Testing Laboratories, Inc. Providing Analytical Excellence Since 1951

=/ARIE

ccarroll@mvtl.com 701-258-9720

> Nothing can dim the type Theit Shimes freq within papage
MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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MEMBER ACIL

Quality Control Report

Lab IDs: 17-W2497 to 17-W2	2505	Pr	oject: MI	DU Heske	ett - CCR	,	Work Or	der: 201	782-1683	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Total mg/l	0.1000 0.1000	98 101	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.001 < 0.001 < 0.001 < 0.001	0.3906 0.4132 0.4158 0.4212	98 103 104 105	75-125 75-125 75-125 75-125	0.3906 0.4132 0.4158 0.4212	0.4090 0.4384 0.4412 0.4496	102 110 110 112	4.6 5.9 5.9 6.5	20 20 20 20 20	-	-	< 0.001 < 0.001
Arsenic - Total mg/l	0.1000 0.1000	96 98	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.002 < 0.002 < 0.002 < 0.002	0.3900 0.4276 0.4178 0.4142	98 107 104 104	75-125 75-125 75-125 75-125	0.3900 0.4276 0.4178 0.4142	0.4102 0.4398 0.4384 0.4572	103 110 110 114	5.0 2.8 4.8 9.9	20 20 20 20			< 0.002 < 0.002
Barium - Total mg/l	0.1000 0.1000	92 95	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	0.0374 0.0162 0.0085 0.0111	0.4064 0.3808 0.3726 0.3788	92 91 91 92	75-125 75-125 75-125 75-125 75-125	0.4064 0.3808 0.3726 0.3788	0.4048 0.4050 0.4028 0.4268	92 97 99 104	0.4 6.2 7.8 11.9	20 20 20 20			< 0.002 < 0.002
Beryllium - Total mg/l	0.1000 0.1000	107 113	80-120 80-120	0.400 0.400 0.400 0.400	17-W2438 17-W2476 17-W2497 17-W2504	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.4078 0.4136 0.4284 0.4098	102 103 107 102	75-125 75-125 75-125 75-125	0.4078 0.4136 0.4284 0.4098	0.4176 0.4142 0.4384 0.4274	104 104 110 107	2.4 0.1 2.3 4.2	20 20 20 20 20		-	< 0.0005 < 0.0005
Boron - Total mg/l	0.40	105	80-120	0.400 0.400	17-W2497 17-W2504	0.35 0.10	0.78 0.49	108 98	75-125 75-125	0.78 0.49	0.79 0.52	110 105	1.3 5.9	20 20		- - -	< 0.1 < 0.1 < 0.1
Cadmium - Total mg/l	0.1000 0.1000	102 104	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.3932 0.4002 0.4108 0.4100	98 100 103 102	75-125 75-125 75-125 75-125	0.3932 0.4002 0.4108 0.4100	0.4032 0.4222 0.4280 0.4350	101 106 107 109	2.5 5.4 4.1 5.9	20 20 20 20			< 0.0005 < 0.0005
Calcium - Total mg/l	20.0 20.0	104 108	80-120 80-120	500 500 100	17W2497q 17W2504q 17W2518q	488 530 4.0	960 980 104	94 90 100	75-125 75-125 75-125	960 980 104	945 975 105	91 89 101	1.6 0.5 1.0	20 20 20		-	<1 <1 <1 <1

Page: 1 of 3

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MEMBER ACIL

Quality Control Report

Lab IDs: 17-W2497 to 17-W2	2505	Pro	oject: MI)U Heske	ett - CCR	v	Vork Or	der: 201	782-1683	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Chloride mg/l	30.0 30.0	86 88	80-120 80-120	60.0 60.0 600	17-W2490 17-W2661 17-M1596	33.4 5.3 222	97.2 58.8 758	106 89 89	80-120 80-120 80-120	97.2 58.8 758	97.6 56.8 803	107 86 97	0.4 3.5 5.8	20 20 20		-	< 1 < 1 < 1
Chromium - Total mg/l	0.1000 0.1000	96 97	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.002 < 0.002 < 0.002 < 0.002 < 0.002	0.3546 0.3914 0.3774 0.3702	89 98 94 93	75-125 75-125 75-125 75-125 75-125	0.3546 0.3914 0.3774 0.3702	0.3712 0.3994 0.3978 0.3968	93 100 99 99	4.6 2.0 5.3 6.9	20 20 20 20 20			< 0.002 < 0.002
Cobalt - Total mg/l	0.1000 0.1000	95 95	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.002 < 0.002 < 0.002 < 0.002 < 0.002	0.3658 0.3864 0.3782 0.3740	91 97 95 94	75-125 75-125 75-125 75-125 75-125	0.3658 0.3864 0.3782 0.3740	0.3772 0.4010 0.3974 0.4056	94 100 99 101	3.1 3.7 5.0 8.1	20 20 20 20 20			< 0.002 < 0.002
Fluoride mg/l	0.50 0.50 0.50	104 106 106	90-110 90-110 90-110	0.500 0.500 0.500	17-W2478 17-W2497 17-W2503	0.24 0.97 0.27	0.73 1.37 0.70	98 80 86	80-120 80-120 80-120	0.73 1.37 0.70	0.74 1.38 0.70	100 82 86	1.4 0.7 0.0	20 20 20			<0.1 <0.1 <0.1 <0.1
Lead - Total mg/l	0.1000 0.1000	93 97	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.3550 0.3660 0.3664 0.3736	89 92 92 93	75-125 75-125 75-125 75-125 75-125	0.3550 0.3660 0.3664 0.3736	0.3568 0.3908 0.3912 0.4054	89 98 98 101	0.5 6.6 6.5 8.2	20 20 20 20	-	-	< 0.0005 < 0.0005
Lithium - Total mg/l	0.40 0.40	108 108	80-120 80-120	0.400 0.400 0.400	17-W2476 17-W2497 17-W2504	0.73 1.01 0.23	1.10 1.50 0.67	92 122 110	75-125 75-125 75-125	1.10 1.50 0.67	1.10 1.41 0.63	92 100 100	0.0 6.2 6.2	20 20 20	- - - -		< 0.1 < 0.1 < 0.1 < 0.1 < 0.1

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MEMBER ACIL

Quality Control Report

Lab IDs: 17-W2497 to 17-W	/2505	Pr	oject: MI)U Heske	ett - CCR	V	Work Or	der: 201	782-1683	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Mercury - Total mg/l	0.0020 0.0020	100 100	85-115 85-115	0.002 0.002 0.002	A28572 17-W2499 17-W2505	<0.0002 <0.0002 <0.0002	0.0019 0.0020 0.0020	95 100 100	70-130 70-130 70-130	0.0019 0.0020 0.0020	0.0019 0.0019 0.0020	95 95 100	0.0 5.1 0.0	20 20 20			< 0.0002 < 0.0002
Molybdenum - Total mg/l	0.1000 0.1000	99 96	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	<0.002 <0.002 <0.002 <0.002 <0.002	0.3682 0.3906 0.3920 0.3838	92 98 98 98 96	75-125 75-125 75-125 75-125	0.3682 0.3906 0.3920 0.3838	0.3964 0.4224 0.4302 0.4156	99 106 108 104	7.4 7.8 9.3 8.0	20 20 20 20 20			< 0.002 < 0.002
pH units	-		-						-	7.1 7.0 7.4	7.1 7.1 7.4	-	0.0 1.4 0.0	20 20 20	-		-
Selenium - Total mg/l	0.1000 0.1000	111 112	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	< 0.005 0.1768 0.1814 0.1719	0.4222 0.6154 0.6312 0.6092	106 110 112 109	75-125 75-125 75-125 75-125 75-125	0.4222 0.6154 0.6312 0.6092	0.4440 0.6206 0.6574 0.6808	111 111 119 127	5.0 0.8 4.1 11.1	20 20 20 20 20			< 0.002 < 0.002
Sulfate mg/l	100 100	104 110	80-120 80-120	500 100	17-W2493 17-W2505	615 < 5	1080 99.4	93 99	80-120 80-120	1080 99.4	1060 99.1	89 99	1.9 0.3	20 20			< 5 < 5
Thallium - Total mg/l	0.1000 0.1000	92 97	80-120 80-120	0.400 0.400 0.400 0.400	17W2438q 17W2476q 17W2497q 17W2504q	<0.0005 <0.0005 <0.0005 <0.0005	0.3520 0.3634 0.3616 0.3740	88 91 90 94	75-125 75-125 75-125 75-125	0.3520 0.3634 0.3616 0.3740	0.3568 0.3808 0.3858 0.4000	89 95 96 100	1.4 4.7 6.5 6.7	20 20 20 20 20			< 0.0005 < 0.0005
Total Dissolved Solids mg/l	-	-	-	-						6440 4510 < 10	6370 4590 < 10		1.1 1.8 0.0	20 20 *			< 10 < 10

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

Approved by: ______ C: Gunt CD 12 JVL17

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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 2-90

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2497 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 13:58 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
	Rebuite			Rozozonoo		
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.87	units	NA	SM 4500 H+ B	22 Jun 17 13:58	JSM
рн	* 7.4	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	10.5	Degrees C	NA	SM 2550B	22 Jun 17 13:58	JSM
Conductivity - Field	7504	umhos/cm	1	EPA 120.1	22 Jun 17 13:58	JSM
Fluoride	0.97	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	5020	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	74.9	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 12:19	EV
Total Dissolved Solids	7360	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	488	mg/l	1.0	6010	30 Jun 17 10:04	SZ
Lithium - Total	1.01	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.35	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0085	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1814	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

10 Clauditte K. Canres Approved by: 125017

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 3-90

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2498 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 12:00 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.75	units	NA	SM 4500 H+ B	22 Jun 17 12:00	JSM
pH	* 7.3	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	9.88	Degrees C	NA	SM 2550B	22 Jun 17 12:00	JSM
Conductivity - Field	5033	umhos/cm	1	EPA 120.1	22 Jun 17 12:00	JSM
Fluoride	0.13	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	2870	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	36.8	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 12:19	EV
Total Dissolved Solids	4590	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	535	mg/l	1.0	6010	30 Jun 17 10:04	SZ
Lithium - Total	0.22	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0107	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molvbdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.1697	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

Clauditte 12 JULIT Approved by: K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW33

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2499 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 10:45 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.49	units	NA	SM 4500 H+ B	22 Jun 17 10:45	JSM
рН	* 7.0	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	11.0	Degrees C	NA	SM 2550B	22 Jun 17 10:45	JSM
Conductivity - Field	5054	umhos/cm	1	EPA 120.1	22 Jun 17 10:45	JSM
Fluoride	0.24	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	3120	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	10.7	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 12:19	EV
Total Dissolved Solids	4760	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	452	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.71	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.34	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0110	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

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

Approved by:

CL Clauditte K. Canto 12 JULIT

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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Amended 7 Aug 17 (Sample ID) - CCR

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

Project Name: MDU Heskett Sample Description: MW80R

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2500 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 9:17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	7.05	units	NA	SM 4500 H+ B	22 Jun 17 9:17	JSM
рН	* 7.6	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	10.4	Degrees C	NA	SM 2550B	22 Jun 17 9:17	JSM
Conductivity - Field	5756	umhos/cm	1	EPA 120.1	22 Jun 17 9:17	JSM
Fluoride	0.31	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	3140	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	155	mg/l	1.0	SM4500-C1-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	5100	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	290	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.77	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.30	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 16:45	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Barium - Total	0.0095	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 9:45	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD
Molybdenum - Total	0.0033	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Selenium - Total	0.0660	mg/l	0.0020	6020	27 Jun 17 16:45	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 16:45	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW103

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2501 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 6:21 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.59	units	NA	SM 4500 H+ B	22 Jun 17 6:21	JSM
μ	* 7.2	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	9.06	Degrees C	NA	SM 2550B	22 Jun 17 6:21	JSM
Conductivity - Field	5015	umhos/cm	1	EPA 120.1	22 Jun 17 6:21	JSM
Fluoride	0.14	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	2910	mg/l	5.00	ASTM D516-07	29 Jun 17 11:41	EMS
Chloride	142	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	4870	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	555	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.59	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0070	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	0.0030	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	$m\sigma/1$	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.2696	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

Approved by:

JULI Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW104

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2502 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 15:15 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6,88	units	NA	SM 4500 H+ B	22 Jun 17 15:15	JSM
pH	* 7.5	units	0.1	SM4500 H+ B	23 Jun 17 17:00	CS
Temperature - Field	11.8	Degrees C	NA	SM 2550B	22 Jun 17 15:15	JSM
Conductivity - Field	14032	umhos/cm	1	EPA 120.1	22 Jun 17 15:15	JSM
Fluoride	0.53	mg/l	0.10	SM4500-F-C	23 Jun 17 17:00	CS
Sulfate	11100	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	98.4	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	16600	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	439	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	2.20	mg/l	0.10	6010	27 Jun 17 14:17	KMD
Boron - Total	0.84	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0067	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	0.0023	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.1432	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

60 Claudite K. Canto 12 JULIT Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW105

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2503 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 8:02 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
pH - Field	6.65	units	NA	SM 4500 H+ B	22 Jun 17 8:02	JSM
Hq	* 7.3	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Temperature - Field	9.16	Degrees C	NA	SM 2550B	22 Jun 17 8:02	JSM
Conductivity - Field	6790	umhos/cm	1	EPA 120.1	22 Jun 17 8:02	JSM
Fluoride	0.27	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	4160	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	348	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	6280	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	392	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	1.06	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	0.36	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0176	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molvbdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

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

Approved by:

C 1251217 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: DUP 2

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2504 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
На	* 7.4	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Fluoride	0.13	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	2930	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	36.9	mg/l	1.0	SM4500-Cl-E	3 Jul 17 16:27	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	4510	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	530	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	0.23	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	0.0111	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mq/1	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	0.1719	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

12 JUN Approved by: Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: FB2

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2505 Work Order #: 82-1683 Account #: 002800 Date Sampled: 22 Jun 17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Received Result	1	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	23 Jun 17	CS
На	* 6.2	units	0.1	SM4500 H+ B	23 Jun 17 18:00	CS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	23 Jun 17 18:00	CS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	29 Jun 17 13:07	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	7 Jul 17 9:23	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	29 Jun 17 13:15	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	23 Jun 17 14:28	SVS
Calcium - Total	< 1	mg/l	1.0	6010	30 Jun 17 11:04	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	27 Jun 17 15:17	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	26 Jun 17 14:13	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	27 Jun 17 18:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Jun 17 10:32	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	27 Jun 17 18:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	27 Jun 17 18:00	KMD

* Holding time exceeded

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

Approved by:

10 12JULN Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016

				MVTL	Calibratio	n Work	sheet						
	Site: MDU Hes	skett				· :	Technician:	Jen 16	~		_		
	Instrument (Circle One):	#16	50 MDS 08F10	00203	#2 65	60 MDS 04H14	736		#3 556 MPS 12E102056				
			Pro	e Site Calibr	ation				Post Site Check				
* .	Date: 21 June	17	Time: 0654	7				Time	:: 1700	>			
. * 	pH	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		pH	Temp °C	Reading		
19 19 19	Buffer 10	17.60	10.01	10.00	6.95-7.05 9.95-10.05	-198.0	0 +/- 50 -180 +/- 50		Buffer 7	10101	The J		
а Х.,	Conductivity				5.00-10.00		Check	Co	nductivity				
· \	Buffer 10000	18.08	10098	1000 (±10%	Buffer 5000	5002	В	uffer 5000	18.13	4989		
**	ORP												
	231 mV @ 25C	18,41	235,3	235.7	±10 mV								
	DO	17.27	78.C. replaced	93.4 membrone	Barometr . mg/L	ic Pressure (n 755	nm Hg)						
	Date: 22 June 1	7-	Time: 06	00				Time					
	pH Buffer 7 Buffer 10	Temp °C 19,45 19,04	Pre Cai 7, 02 9, 98	Post Cal 7, 00 10,00	Post Cal Range 6.95-7.05 9.95-10.05	mv -22.2 - 198.5	mv Range +/- 50 0 +/- 50 -180 +/- 50		pH Buffer 7	Temp ℃ 18, \$5	Reading 7.02		
	Conductivity Buffer 10000	17,45	10049	10000	±10%	Buffer 5000	Check	Со В	nductivity	18,13	4985		
	ORP 231 mV @ 25C	17.68	235.B	235,7	±10 mV								
	DO	16.49	101.4%	99.2%	Barometi mg/L	ric Pressure (n	nm Hg)						

ration Worksheet

 $\mathbf{v}_{\mathbf{v}}^{\mathbf{f}_{\mathbf{v}}^{(i)}}$



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	.2-90 ,
Sampling Personal:	Jenny Manyer

Weather Conditions:		Temp:	65 °F		Wind:	N @ (c	1-15		Precip	: Suni	ny /Partly C	loudy / Clou	ıdy
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(Ng)	l			Purgir	ng Method:	Blad	der		Co	ntrol Settings	3
Well Labeled?	Yes	No				Samplir	ng Method:	Blad	der]	Purge:	5	sec.
Casing Straight?	(es)	No				Dedicat	ed Equip?:	Yes	No]	Recover:	55	sec.
Grout Seal Intact? Yes		No	No Not Visible			Duplicate	Sample?:	Yes	No		PSI:	20	
Repairs Necessary:			\sim			Duplicate	Sample ID:]	Pumping R	ate: 100	mL/min
Casing	Diameter:		2"							-			
Water Level Bef	ore Purge:	20,97		ft		Purge Date:		22 Ju	r (7	Time Purg	ing Began:	1333	am/pīn
Total W	Vell Depth:			ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:		am/pm
We	ell Volume:			liters		Sample Date:		22 Jim	17	Time of	f Sampling:	1358	am/pm
Depth to Top	o of Pump:			ft									
Water Level Afte	er Sample:		21,31	ft		Bottle	•	1L Raw, 50	0mL Nitirc	500mL Niti	ric (filtered),	4-1L Nitric	
Measurement Method:		Electric Water Level Indicator				List:	List: 250 mL Sulfuric						

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1338	10.67	7858	6.90	8,27	120.0	0.52	21.35	500.0	Cles
2	(343	11.03	7569	6.88	7.33	125,1	0.29	21.31	5000	Clas
3	134B	10.91	7477	6.87	6.57	128.9	0,26	21.32	500.0	Clear
4	1353	10.80	7509	6.87	6,68	130,7	0.27	21,33	500.0	Cless
5	1358	10,50	7504	6.87	6,62	132.3	0.29	21.35	500.0	Clim
6										
7										
8								1		
9										
10							1			
Stabilized	: (Yes	No				Т	otal Volume	Removed:	2500.0	mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	3-90
Sampling Personal:	Jer Honjer

Phone: (701) 258-9720

Weather Conditions:		Temp: 60 °F Wir		Wind:	NOIO	-15		Precip	Sun	Sunny / Partly Cloudy / Cloudy			
	Well Info	ormation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blad	Bladder		Co	ntrol Setting	IS
Well Labeled?	Yês⁄	No				Samplir	ng Method:	Blad	der]	Purge:	5	sec.
Casing Straight?	(Tes	No				Dedicat	ed Equip?:	(Tes)	No		Recover:	55	sec.
Grout Seal Intact? Yes		No	Not Vis	NotVisible		Duplicate	Sample?:	Tes	No		PSI:		
Repairs Necessary:			\sim			Duplicate \$	Sample ID:	Dy2_			Pumping R	ate: 100	mL/min
Casing	Diameter:		2"					ı					
Water Level Bef	ore Purge:		18.68	ft		P	urge Date:	22 Ju	n17	Time Purg	ing Began:	1140	am/pm
Total V	Vell Depth:		~~~~~	ft		Well Purged Dry?		Yes	No	Time Purged Dry:			am/pm
We	ell Volume:			liters		Sample Date:		22 Jun	17	Time o	f Sampling:	1200	am/pm
Depth to Top	p of Pump:			ft		:							
Water Level Aft	er Sample:	1	B. 7B	ft		Bottle	-	1L Raw, 500	DmL Nitirc,	500mL Nit	ric (filtered),	4-1L Nitric	
Measurement Method:		Electric	Water Level In	dicator		List: 250 mL Sulfuric							

Field Measurements

		1								
Stabi	lization	Temp	Spec.	рН	DO (mg/l.)	ORP	Turbidity	Water	mL	Discription: Clarity Color Odor Ect
0.500	Time	(0)	+5%	+0.1	+10%	+20 mV	+10%	0.25 ft	Removed	clear slightly turbid, turbid
SEQ#	Time		1070			120 1110	21070	0.20 10		
1	1145	10.04	5033	6.80	5.22	34.6	2.40	18.75	500,00	Clien
2	1150	9.85	5057	6,74	4.99	20.6	1,38	18.83	500,0	Class
3	1155	10,13	5039	6.74	5,23	16.9	0.61	18,80	Saul0	Cles
4	1200	9.88	5633	6.75	5,16	21.1	1.12	18,78	500,0	Chen
5										
6										
7										
8										
9										
10									,	
Stabilized	: Tes	No				Т	otal Volume	Removed:	2000,0	mL

Comments:

Ants were crawling all over well casing



Groundwater Assessment

Company:	MDU Heskett	_
Event:	2017	
Sample ID:	33	
Sampling Personal:	Jany Hay e	_

Weather Conditions:		Temp:	<u>60 °F</u>	-	Wind:	NO10-15			Precip:		Sunny / Partly Cloudy / Clou		oudy
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(NO)				Purgir	ng Method:	Blac	Bladder		Co	ntrol Setting	js
Well Labeled?	Yes	No				Samplir	ng Method:	Blac	lder		Purge:	5	sec
Casing Straight?	(es	No				Dedicate	ed Equip?:	Yes	No		Recover:	55	sec
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	Sample?:	Yes	No		PSI:	30	
Repairs Necessary:						Duplicate S	Sample ID:				Pumping R	ate: /00	mL/mir
Casing Diameter			2"										
Water Level Bef	fore Purge:	<u>니(.니)</u> ft			P	urge Date:	22 June 1	Ĵ	Time Purg	ing Began:	1020	@m/pm	
Total V	Vell Depth:	•		ft		Well Pu	urged Dry?	Yes	NO	Time P	urged Dry:	·	am/pm
Well Volume			liters			Sample Date:		22 Jun (7	Time of	Sampling:	1045	am/pm
Depth to To	p of Pump:	د		ft					,				
Water Level Aft	er Sample:		41.60	ft		Bottle		1L Raw, 50	0mL Nitirc	500mL Nitr	ic (filtered),	4-1L Nitric	
Measurement Method:		Electric Water Level Indicator			List:		250 mL Sulfuric						

Field Measurements

Stabili (3 cons	zation ecutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1025	11.29	5581	6.65	5,80	-34,1	2629	41.65	50.0	Clear
2	1030	11.31	5311	6,52	5.30	-10.9	7.78	41.62	500.0	Clean
3	1035	11,27	5170	6.52	5,90	4.1	4.51	41.60	500,0	Clear
4	1040	10.95	5084	6,50	5.86	13.6	2.58	41,58	502,0	Close
5	1045	11.04	5054	6.49	5,73	19.6	2.63	41.60	500.0	clean
6										
7							:			
8										
9										
10			1				1			
Stabilized:	Yes	No				Т	otal Volume	Removed:	25000	mL



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	60
Sampling Personal:	Jerry Hoge

Weather Conditions:		Temp: 60 °F		Wind:	<u>N@S</u>	<u>~ (0</u>	D Precip:		Sunny / Partly Cloudy / Cloudy				
	Well Info	ormation						Sa	ampling l	nformatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blac	lder		Control Settings		
Well Labeled?	Yes	No				Samplin	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	(Yes)	No				Dedicat	ed Equip?:	(Tes)	No		Recover:	55	sec.
Grout Seal Intact?		No	Not Visible			Duplicate	Sample?:	Sample?: Yes 🕅o]	PSI:		
Repairs Necessary:						Duplicate Sample ID:		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			Pumping R	ate: 700	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	14.40 1		ft		Purge Date:		22.Jun	17	Time Purg	ing Began:	0857-	۵ħ/pm
Total W	Vell Depth:			ft		Well P	urged Dry?	Yes	NO	Time F	Purged Dry:	c	am/pm
We	Il Volume:		and a second	liters		Sa	Sample Date: 22 June 17		17	Time of	f Sampling:	0917-	۲) am/pm
Depth to Top of Pump:			ft		······································								
Water Level After Sample: 14,65 ft				Bottle		1L Raw, 50	0mL Nitirc	500mL Niti	ric (filtered),	4-1L Nitric			
Measurement Method: Electric Water Level I			dicator		List:	it: 250 mL Sulfuric							

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0902	10.10	5791	7.07	4.96	186.8	0.41	14,58	500.0	clear
2	0907	9,75	5761	7.06	4,57	190.4	0.35	14.63	500,0	Clean
3	0912	10.55	5769	7.05	4,50	190,6	0.36	14,65	500,0	Clim
4	0917	10,40	5756	7.05	4.56	191.1	0.38	14.62	5000	Cles
5										
6			ļ							
7										
8										
9										
10	La							:		
Stabilized:	: (Yes)	No	Total Volume Removed: 2000 mL							



Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	.103.
Sampling Personal:	Jan eley

sec.

sec.

mL/min

@m/pm

am/pm

@m/pm

NOS-10 Sunny / Partly Cloudy / Cloudy Precip: 60 °F Wind: Weather Conditions: Temp: Sampling Information Well Information **Control Settings** No Purging Method: Bladder Well Locked? Yes Purge: 5 Yes Well Labeled? Sampling Method: Bladder No Recover: 55 Yes Dedicated Equip?: Yes No Casing Straight? No 25 (No PSI: Duplicate Sample?: Grout Seal Intact? Yes No Not Visible Yes Pumping Rate: 100 Repairs Necessary: Duplicate Sample ID: Casing Diameter: 2" 22 June 17 30,80 Purge Date: Time Purging Began: 0601 Water Level Before Purge: ft Time Purged Dry: ft Total Well Depth: Well Purged Dry? Yes No/ 0621 Time of Sampling: Sample Date: 22 June (7 Well Volume: liters Depth to Top of Pump: ft 32.87 Water Level After Sample: ft 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric Bottle List: 250 mL Sulfuric Measurement Method: **Electric Water Level Indicator**

Field Measurements

by Wotor ml Discription:	
Level (ft) Removed Clarity, Color, Odor	r, Ect.
0.25 ft clear, slightly turbid, t	urbid
31.75 500,0 Cler	
32.25 500.0 Clear	
32,31 Sov.0 Cha	
32,36 500.0 Cles-	
me Rei	moved: 2060.0 mL





Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	104.
Sampling Personal:	Jen Mener

Weather Conditions:		Temp:	65 °F	=	Wind:	Nola	2-15		Precip	Sunr	ny / Partly C	Cloudy / Clo	udy
Well Information						1	Sampling Information						
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder		Co	ontrol Setting	ļs
Well Labeled?	(es)	No				Samplii	ng Method:	Blac	lder		Purge:	2	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes)	No	Not Vis	ible		Duplicate	Sample?:	Yes	(No		PSI:	10	
Repairs Necessary:			<u></u>			Duplicate	Sample ID:				Pumping R	late: <i>(0</i> 0	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	13	5,92	ft		F	Purge Date:	22 Jun	-17	Time Purg	ing Began:	1455	am/ <u>om</u>
Total W	Vell Depth:			ft		Well P	urged Dry?	Yes	No	Time F	ourged Dry:		am/pm
We	Il Volume:	<u>د</u>		liters		Sa	mple Date:	22 Jun	.17	Time of	f Sampling:	1515	am/pm
Depth to Top	o of Pump:			ft									
Water Level After	er Sample:		14,21	ft		Bottle		1L Raw, 50	0mL Nitirc,	500mL Niti	ric (filtered),	4-1L Nitric	
Measuremen	nt Method:	Electric	Water Level Ir	ndicator		List:			25	50 mL Sulfu	ric		

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time	<u>, </u>	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1500	12,17	13976	6,92	4,53	157.3	5,40	14.28	500,0	Clas
2	1505	12.39	14000	6.90	3.22	150.9	2.17	14.18	500,0	Clea
3	1510	11.81	14045	6,88	3,62	146.0	1.31	14,35	500,0	Clean
4	ISIS	11.82	14032	6.68	3,66	143.7	1.01	14.30	500.0	Cles
5					:		i			
6						 				
7				:						
8										
9			1							
10										<u> </u>
Stabilized	: Nes	No	•			T	otal Volume	Removed:	2000,0	mL





Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	105
Sampling Personal:	Jerry play

Phone: (701) 258-9720

Weather Conditions:		Temp:	60	°F	Wind:	NOS	-10		Precip	Sun	ny / Partly C	cloudy / Clo	oudy
Well Information								Sampling Information					
Well Locked?	Yes	(No)				Purging Method:		Blad	Bladder		Control Settings		js
Well Labeled?	Yes	No				Samplir	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Ves	No				Dedicat	ed Equip?:	(Yês)	No		Recover:	55	sec.
Grout Seal Intact?	(Yes)	No	Not	∕isible		Duplicate	Sample?:	Yes	No		PSI:	10	
Repairs Necessary:						Duplicate \$	Sample ID:				Pumping R	ate: /00	mL/min
Casing	Diameter:		2"										
Water Level Bef	fore Purge:	12.	94	ft		Purge Date:		ZZ Jine 1	7-	Time Purg	ing Began:	0722	@m/pm
Total V	Vell Depth:	* *********	ft			Well Pi	urged Dry?	Yes	NO	Time F	Purged Dry:		am/pm
We	Well Volume:			liters		Sample Date:		22 Jone	17	Time of Sampling:		0802	(am)pm
Depth to To	p of Pump:			ft									
Water Level After Sample: 316 ft			Bottle		1L Raw, 50	0mL Nitirc,	500mL Nit	ric (filtered),	4-1L Nitric				
Measuremer	nt Method:	Electric W	ater Leve	l Indicator		List:		25	50 mL Sulfu	ric			

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0727	9,12	5850	6,70	3.14	Zoloi7	6.02	13,20	500.0	Clés
2	0732	8.96	5578	6.73	3,33	205.9	3,18	13.21	500.0	Clea
3	0737	8,95	5668	6,72	3.63	203.3	2.69	13,22	5000	Clesd
4	0742	8.94	6113	6:70	3.55	201.4	1,73	13.25	500,0	Cla
_ 5	0747	9,25	6290	6.68	3,55	199.2	1.74	13.21	500.0	Clem
6	0752	9,08	6534	6.67	3,78	1.97,3	1.49	13.24	500.0	cles
7	0757	9.09	6682	6.66	3,64	195.5	1.84	13.24	500 00	Clen
8	0802	9.16	6790	6.65	3.77	193.6	2.37	13.26	500.0	Clear
9										
10										<u> </u>
Stabilized	Stabilized: (Yes) No Total Volume Removed: 4000r0 mL									_mL



Chain of Custody Record

Project Name	:		Event:		Work Order Number:					
	MDU Heskett			June 2017	00-1683					
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Carbon Copy: Attn: Address:			Name of Sampler(s):					
	Sam	ole Informatio	n		Bot	tle Type	Fi	eld Para	ameters	Analysis
Lab Number W2497 W2497 W2499 W2499 W2499 W2499 W2400 W2503 W2503	Sample ID 2-90 3-90 MW33 MW30 R[X] MW103 MW104 HW105	22. june 17 22. june 17	1358 1200 1045 0917 0621 1515 0802	R R R S Sample Type	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\times \times $	() () () () () () () () () () () () () (060 0 30 30 30 50 33 50 50 50 50 50 50 50 50 50 50 50 50 50	Ha 7 7 9 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Analysis Required
W2504	Dup Z	12 June 17		(ou)				~		
W2505	TDZ -	IL Jul P								

Comments: & Z2 June (7

El-changed to MW80R per email from T. Olson w/Barr 7Aug 17 cc

Relinquished By:	Sample Condition:				
Name:	Date/Time	Location:	Temp (°C)		
	23.Jul7	Logt	ROI I.T		
E My	0823	Walk In #2	TM562 /7M588>		
2 [7					

Received	by:
∧ Name:	Date/Time 2304
May Simonson	23 June 17 Arr P
<u> </u>	

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-1685 S1706487 Montana Dakota Utilities MDU Heskett Ash Site CCR June 2017 17-W2507 through 17-W2515 S1706487-001 through S1706487-009

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
2-90	17-W2507	S1706487-001
3-90	17-W2508	S1706487-002
MW33	17-W2509	S1706487-003
MW80R	17-W2510	S1706487-004
MW103	17-W2511	S1706487-005
MW104	17-W2512	S1706487-006
MW105	17-W2513	S1706487-007
Dup2	17-W2514	S1706487-008
FB2	17-W2515	S1706487-009

I. RECEIPT

- All samples were received at the laboratory on 23 Jun 2017 at 0823.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 1.7°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 27 Jun 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.

MIVTL

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-1685 S1706487 Montana Dakota Utilities MDU Heskett Ash Site CCR June 2017 17-W2507 through 17-W2515 S1706487-001 through S1706487-009

III. METHODS

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

IV. ANALYSIS

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

V. REPORTING

- Per email 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:

DATE:

Claudette Carroll - MVTL Bismarck Laboratory Manager



www.mvtl.com

ACIL

Page: 1 of 9

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2507 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 13:58 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

Project Name: MDU Heskett Sample Description: 2-90

Event and Year: June 2017

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	6.87 10.5 7504 See Attache See Attache	units Degrees C umhos/cm d Report d Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	22 Jun 17 13:58 22 Jun 17 13:58 22 Jun 17 13:58 22 Jun 17 13:58 2 Aug 17 28 Jul 17	JSM JSM JSM OL OL

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





Page: 2 of 9

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2508 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 12:00 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

Project Name: MDU Heskett Sample Description: 3-90

Event and Year: June 2017

As Received Method Method Date Reference Analyzed Analyst Result RL JSM SM 4500 H+ B 22 Jun 17 12:00 NA pH - Field 6.75 units 22 Jun 17 12:00 JSM 9.88 Degrees C NA SM 2550B Temperature - Field 22 Jun 17 12:00 JSM Conductivity - Field umhos/cm EPA 120.1 5033 1 See Attached Report 2 Aug 17 OL Radium 226 28 Jul 17 OL See Attached Report Radium 228

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW33

Event and Year: June 2017

Report Date: 7 Aug 17 Lab Number: 17-W2509 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 10:45 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.49	units	NA	SM 4500 H+ B	22 Jun 17 10:45	JSM
Temperature - Field	11.0	Degrees C	NA	SM 2550B	22 Jun 17 10:45	JSM
Conductivity - Field	5054	umhos/cm	1	EPA 120.1	22 Jun 17 10:45	JSM
Radium 226	See Atta	ached Report			2 Aug 17	OL
Radium 228	See Atta	ached Report			28 Jul 17	OL

Approved by:

Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: MW80R

Event and Year: June 2017

Report Date: 7 Aug 17 Lab Number: 17-W2510 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 9:17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

)

Temp at Receipt: 1.7C ROI

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228	7.05 10.4 5756 See Atta See Atta	units Degrees C umhos/cm ached Report ached Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	22 Jun 17 22 Jun 17 22 Jun 17 22 Aug 17 28 Jul 17	9:17 9:17 9:17	JSM JSM JSM OL OL

Approved by:

11 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2511 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 6:21 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

Project Name: MDU Heskett Sample Description: MW103

Event and Year: June 2017

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226 Padium 228	6.59 9.06 5015 See Atta See Atta	units Degrees C umhos/cm ched Report ched Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	22 Jun 17 22 Jun 17 22 Jun 17 22 Jun 17 2 Aug 17 28 Jul 17	6:21 6:21 6:21	JSM JSM JSM OL OL

(C

Clauditte Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

K. Canto

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2512 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 15:15 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

Project Name: MDU Heskett Sample Description: MW104

Event and Year: June 2017

	As Received Result	1	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.88	units	NA	SM 4500 H+ B	22 Jun 17 15:15	JSM
Temperature - Field	11.8	Degrees C	NA	SM 2550B	22 Jun 17 15:15	JSM
Conductivity - Field	14032	umhos/cm	1	EPA 120.1	22 Jun 17 15:15	JSM
Radium 226 Radium 228	See Attache See Attache	ed Report ed Report			2 Aug 17 29 Jul 17	OL OL

Approved by:

Claudite K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Report Date: 7 Aug 17 Lab Number: 17-W2513 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 8:02 Date Received: 23 Jun 17 8:23

Project Name: MDU Heskett Sample Description: MW105

Event and Year: June 2017

Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.65	units	NA	SM 4500 H+ B	22 Jun 17	8:02	JSM
Temperature - Field	9.16	Degrees C	NA	SM 2550B	22 Jun 17	8:02	JSM
Conductivity - Field	6790	umhos/cm	1	EPA 120.1	22 Jun 17	8:02	JSM
Radium 226	See Atta	ached Report			2 Aug 17		OL
Radium 228	See Atta	ached Report			29 Jul 17		OL

Approved by:

Clauditte K. Cantle 9 Avri 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2514 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Temp at Receipt: 1.7C ROI

Project Name: MDU Heskett Sample Description: DUP 2

Event and Year: June 2017

Method Date As Received Method Analyst RL Reference Analyzed Result 2 Aug 17 OL See Attached Report Radium 226 29 Jul 17 OL See Attached Report Radium 228

Approved by:

Clauditte K. Canilo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 7 Aug 17 Lab Number: 17-W2515 Work Order #: 82-1685 Account #: 002800 Date Sampled: 22 Jun 17 Date Received: 23 Jun 17 8:23 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB2

Temp at Receipt: 1.7C ROI

Event and Year: June 2017

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			2 Aug 17	OL
Radium 228	See Attached Report			29 Jul 17	OL

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Your Environmental Monitoring Partner

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

Date: 8/3/2017

CLIENT:MVTL Laboratories, Inc.Project:201782-1685Lab Order:S1706487

CASE NARRATIVE

Report ID: S1706487002 (Replaces S1706487001)

Samples 17-W2507 2-90, 17-W2508 3-90, 17-W2509 MW33, 17-W2510 MW80, 17-W2511 MW103, 17-W2512 MW104, 17-W2513 MW105, 17-W2514 Dup2, and 17-W2515 FB2 were received on June 27, 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 indicatec in this case narrative.

The report, S1706487001, was revised and replaced by report S1706487002 to correct the report style to display all values.

Reviewed by:

Tom Patte

Tom Patten, Laboratory Manager

Page 1 of 1



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-001	CollectionDate:	6/22/2017 1:58:00 PM
ClientSample ID:	17-W2507 2-90	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.18	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-1.2	pCi/L		2	Ga-Tech	07/28/2017 1034	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1034	MB

These results apply only to the samples tested.

- Qualifiers: B
 - 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

Analyte detected in the associated Method Blank

Patte Reviewed by: _____

Tom Patten, Laboratory Manager

RL - Reporting Limit

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



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-002	CollectionDate:	6/22/2017 12:00:00 PM
ClientSample ID:	17-W2508 3-90	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water
0			

Comments	5
----------	---

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.4	pCi/L		2	Ga-Tech	07/28/2017 1337	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1337	MB

These results apply only to the samples tested.

Qualifiers:

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

Patte Reviewed by: _____

Tom Patten, Laboratory Manager

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

Inter-Mountain Labs

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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave.	Date Reported Report ID	8/9/2017 S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-003	CollectionDate:	6/22/2017 10:45:00 AM
ClientSample ID:	17-W2509 MW33	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water
~ ·			

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	-0.4	pCi/L		2	Ga-Tech	07/28/2017 1640	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1640	MB

These results apply only to the samples tested.

Qualifiers: В Analyte detected in the associated Method Blank

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

Reviewed by: <u>Tom Patter</u> Tom Patten, Laboratory Manager

RL - Reporting Limit

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


Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706487002 (Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-004	CollectionDate:	6/22/2017 9:17:00 AM
ClientSample ID:	17-W2510 MW80R * CL 9 AVG 17	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 1650	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/02/2017 1650	MB
Radium 228	0.0	pCi/L		2	Ga-Tech	07/28/2017 1943	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 1943	MB

These results apply only to the samples tested.

В

Qualifiers:

- Analyte detected in the associated Method Blank Е Value above quantitation range
- Н Holding times for preparation or analysis exceeded
- Analyzed by another laboratory 1
- ND Not Detected at the Reporting Limit
- s Spike Recovery outside accepted recovery limits

Reviewed by: <u>Torren</u> Katter Tom Patten, Laboratory Manager Patte

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



Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-005	CollectionDate:	6/22/2017 6:21:00 AM
ClientSample ID:	17-W2511 MW103	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.16	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	-1.5	pCi/L		2	Ga-Tech	07/28/2017 2246	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/28/2017 2246	MB

These results apply only to the samples tested.

В Qualifiers:

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

Analyte detected in the associated Method Blank

Reviewed by: <u>Torm Katte</u> Tom Patten, Laboratory Manager Patte

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



Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/9/2017 S1706487002 (Replaces S1706487001)
ProjectName: Lab ID: ClientSample ID:	201782-1685 S1706487-006 17-W2512 MW104	WorkOrder: CollectionDate: DateReceived:	S1706487 6/22/2017 3:15:00 PM 6/27/2017 12:40:00 PM
COC: Comments	201782-1685	FieldSampler: Matrix:	Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total						· · ·	
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	0.8	pCi/L		2	Ga-Tech	07/29/2017 149	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	07/29/2017 149	MB

These results apply only to the samples tested.

Qualifiers:

В

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

Reviewed by: <u>Tom Patter</u> Tom Patten, Laboratory Manager

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



Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-007	CollectionDate:	6/22/2017 8:02:00 AM
ClientSample ID:	17-W2513 MW105	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	-1.1	pCi/L		2	Ga-Tech	07/29/2017 452	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/29/2017 452	MB

These results apply only to the samples tested.

Qualifiers:

в

- 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

Analyte detected in the associated Method Blank

Patte Reviewed by: 70000

Tom Patten, Laboratory Manager

RL - Reporting Limit C Calculated

- 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



Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-008	CollectionDate:	6/22/2017
ClientSample ID:	17-W2514 Dup2	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total						······································	
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	0.2	pCi/L		2	Ga-Tech	07/29/2017 755	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/29/2017 755	MB

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by: <u>Torn Katte</u> Tom Patten, Laboratory Manager

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



Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	8/9/2017
	2616 E Broadway Ave.	Report ID	S1706487002
	Bismarck, ND 58501		(Replaces S1706487001)
ProjectName:	201782-1685	WorkOrder:	S1706487
Lab ID:	S1706487-009	CollectionDate:	6/22/2017
ClientSample ID:	17-W2515 FB2	DateReceived:	6/27/2017 12:40:00 PM
COC:	201782-1685	FieldSampler:	
		Matrix:	Water
Commence			

Co	mm	ents
	_	

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		1	SM 7500 Ra-B	08/02/2017 2103	MB
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	08/02/2017 2103	MB
Radium 228	-0.6	pCi/L		2	Ga-Tech	07/29/2017 1058	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/29/2017 1058	MB

These results apply only to the samples tested.

Qualifiers: в

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

Patte Reviewed by: _____

Tom Patten, Laboratory Manager

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

Inter-Mountain Labs

Matrix Effect

Х

Your Environmental Monitoring Partner

ANALYTICAL QC SUMMARY REPORT CLIENT: MVTL Laboratories, Inc. Date: 8/3/2017 Work Order: S1706487 Report ID: \$1706487002 Project: 201782-1685 (Replaces S1706487001) Radium 228 by Ga/Tech Sample Type MBLK Units: pCi/L MB-450 (07/27/17 16:14) RunNo: 148477 PrepDate: 07/12/17 14:00 BatchID 13495 Analyte RL Result Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 ND 1 Radium 228 by Ga/Tech Sample Type LCS Units: pCi/L LCS-450 (07/27/17 19:17) PrepDate: 07/12/17 14:00 RunNo: 148477 BatchID 13495 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 34 1 39.3 85.5 65.9 - 132 Radium 228 by Ga/Tech Sample Type MS Units: pCi/L MS-450 (07/28/17 01:23) RunNo: 148477 PrepDate: 07/12/17 14:00 BatchID 13495 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 41 1 39.3 ND 105 50 - 139 Radium 228 by Ga/Tech Sample Type MSD Units: pCi/L MSD-450 (07/28/17 04:27) RunNo: 148477 PrepDate: 07/12/17 14:00 BatchID 13495 Analyte Result %RPD % RPD Limits RI Conc %REC Qual Total Radium 228 36 1 41 13.8 91.7 20 Radium 226 in Water -Sample Type MBLK Units: pCi/L MB-1775 (08/02/17 16:50) RunNo: 148576 PrepDate: 07/26/17 0:00 BatchID 13492 Analyte Result Spike Ref Samp %REC RL % Rec Limits Qual Radium 226 ND 0.2 Radium 226 in Water -Sample Type LCS Units: pCi/L LCS-1775 (08/02/17 16:50) RunNo: 148576 PrepDate: 07/26/17 0:00 BatchID 13492 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 67.1 - 122 6.5 0.2 6.41 102 Radium 226 in Water -Sample Type MS Units: pCi/L MS-1775 (08/02/17 16:50) RunNo: 148576 PrepDate: 07/26/17 0:00 BatchID 13492 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 6.5 0.2 6.41 ND 65 - 131 101 Radium 226 in Water -Sample Type MSD Units: pCi/L MSD-1775 (08/02/17 16:50) RunNo: 148576 PrepDate: 07/26/17 0:00 BatchID 13492 Analyte Result RL %RPD % RPD Limits Conc %REC Qual Radium 226 6.7 0.2 6.5 3.74 104 20

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

Qualifiers:	В	Analyte detected in the associated Method Blank	E	Value above quantitation range	
	G	Analyzed at IML Gillette laboratory	Н	Holding times for preparation or analysis exceeded	
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory	
	ND	Not Detected at the Reporting Limit	0	Outside the Range of Dilutions	
	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits	



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

Chain of Custody Record

Page 1 of 1 .

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Toll Free: (8	Toll Free: (800) 279-6885 Fax: (701) 258-9724											2	01782-16	85			
Company Nam	e and Address:				Account #	!:						Pho	one #:				
		1 <i>1-</i>												701-258-9	720		
		VIL			Contact:	~	• • • •					Fax	;#:			t	
	Bismarck	ND 58501	· ·		Claudette For faxed report check box												
Billing Address	s (indicate if differen	t from above	ve):		INAME OF 2	sampler:							man: For e-mai	CCarrol I report che	ck box	u.com	
	50 5				Quote Nu	Quote Number Date Submitted:											
								<u> </u>		23-Jun-	17						
New Ulm, MN 56073 Project Name/Number:											Pur	Purchase Order #: BL5915					
Sample Information Bottle Type										Analy	/sis						
Alteria					-						Ī	T					
51+064	87							3 G	eq								
				ed	N H	erve	ar										
IML Lab				Date	Time	reat	E O	C Via	l SS	La la							
Number	MVTL Lab Number	Client	: Sample ID	Туре	Sampled	Sampled	Unt	100		Glas	oth		A	Analysis F	lequir	ed	
	17-W2507	2-90 GW			22-Jun-17	1358		4						Ra226 &	Ra22	8	
	17-W2508		3-90	GW	22-Jun-17	1200		4					Ra226 & Ra228				
03	17-W2509		MW33	GW	22-Jun-17	1045		4						Ra226 &	Ra22	8	
204	17-W2510		MVV80 r ×	GW	22-Jun-17	917		4						Ra226 &	Ra22	8	
205	17-W2511	Ν	/W103	GW	22-Jun-17	621		4		-				Ra226 &	Ra22	8	
006	17-W2512	N	/W104	GW	22-Jun-17	1515		4						Ra226 &	Ra22	8	
007	17-W2513	N	/W105	GW	22-Jun-17	802		4						Ra226 &	Ra22	8	
008	17-W2514		Dup2	GW	22-Jun-17			4						Ra226 &	Ra228	8	
209	17-W2515		FB2	GW	22-Jun-17			4						Ra226 &	Ra22	8	
			. <u> </u>														
Comments: All	results must be rep	orted as a	numerical value	e. 4	ec e	Augin									2	cool	95
Trans	Transferred by: Date: Time: Sample Condition: Received by: Date: Temp:																

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
T. Olson	23-Jun-17	1700	Intart	Kathy Pagip	6.27.17	12:40	21.6
2.				BOXD			a1.4





Company:	MDU Heskett
Event:	2017
Sample ID:	2-90
Sampling Personal:	Jerry Meyer

sec.

sec.

mL/min

am/pm

am/pm

am/pm

Weather Conditions:		Temp	<u>: 65 °</u>	°F	Wind:	<u>NØ (c</u>) - (5)		Precip	: Sun	ny /Partly C	Cloudy / Clou	ypr	
	Well Info	ormation	1					Sa	mpling I	nformati	on			
Well Locked?	Yes	(No)				Purgi	ng Method:	Blac	der		Co	ontrol Setting	s	
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	der	1	Purge:	5		
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55		
Grout Seal Intact?	Yes	No	Not-Vi	sible		Duplicate	Sample?:	Yes	No		PSI:	20		
Repairs Necessary:			\square	\sim		Duplicate	Sample ID:				Pumping R	late: 100	m	
Casing I	Diameter:		2"							4	·¥			
Water Level Befo	re Purge:	4	20,97	ft		F	urge Date:	22 Ju	4 (J	Time Purg	jing Began:	1333	ar	
Total W	ell Depth:			ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:	ç 	ar	
Wel	l Volume:			liters		Sa	mple Date:	22)in	.17	Time o	f Sampling:	1358	ar	
Depth to Top	of Pump:			ft									******	
Water Level After	r Sample:		Z1.31	ft		Bottle		1L Raw, 50	0mL Nitirc,	500mL Nit	ric (filtered),	4-1L Nitric		
Measurement	Method:	Electric	Water Level I	ndicator		List:			25	250 mL Sulfuric				

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1338	10.67	7858	6.90	8,27	120,0	0.52	21.35	500.0	Clean
2	1343	11.03	7569	6.88	7.33	125,1	0,27	21.31	5000	Cha
3	134B	10.91	7477	6.87	6.57	128.9	0,26	21.32	500,7	Clar
4	1353	10.80	7509	6,87	6,68	130,7	0.27	21,33	500.0	Clear
5	1358	10,50	7504	6.87	6,62	132.3	0.29	21.35	50000	Clim
6										
7										
8										
9										
10										
Stabilized:	Yes	No	-	·		Τc	otal Volume	Removed:	2500.0	mL

Comments:

1





Company:	MDU Heskett
Event:	2017
Sample ID:	3-90
Sampling Personal:	Jam Hayer

				······································									
Weather Conditions:		Temp:	60	°F	Wind:	<u>N@ (c</u>	7-15		Precip	: Sun	ny / Partly C	Toudy / Clo	udy
	Well Info	ormation						Sa	mpling	Informatio	on		
Well Locked?	Yes	No				Purgi	ng Method:	Blad	der		Co	ntrol Setting	S
Well Labeled?	Yês⁄	No				Sampli	ng Method:	Blad	der		Purge:	5	sec
Casing Straight?	Yêş	No				Dedica	ted Equip?:	Nes	No	1	Recover:	55	sec
Grout Seal Intact?	Yes	No	Notv	isible		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:			\sim			Duplicate	Sample ID:	Dura	2	1	Pumping R	ate: 100	mL/mir
Casing	Diameter:		2"					l.		-			
Water Level Befo	ore Purge:		18.68	ft		F	Purge Date:	22 Ju	r17	Time Purg	ing Began:	1140	am/pm
Total W	Vell Depth:		<i>,</i> ~~	ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:		am/pm
We	ell Volume:			liters		Sa	mple Date:	22.Jul	17	Time of	f Sampling:	1200	am/pm
Depth to Top	o of Pump:			ft									
Water Level After	er Sample:		18,78	ft		Bottle 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-7				4-1L Nitric			
Measuremen	t Method:	Electric	Water Level	Indicator		List: 250 mL Sulfuric							

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1145	10.04	5033	6.80	5.22	34.6	2.40	18:75	500,00	Clear
2	1150	9.85	5057	6,74	4.99	20.6	1.38	18.83	500,0	Class
3	1155	10,13	5039	6.74	5.23	16.9	0.6(18,80	Soul	Cles
4	1200	9.88	5633	6.75	5,16	21.1	1:12	18,78	500,0	Chur
5										an the second second of the second
6										
7										
8										
9										
								Ļ		

Total Volume Removed: ZCOD, C mL

Stabilized: (Yes) No Comments: Arrfs were crowling all over well costing



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2017
Sample ID:	33
Sampling Personal:	Jen Heye

250 mL Sulfuric

Phone: (701) 258-9720

Measurement Method:

NO10-15 60 °F Wind: Sunny / Partly Cloudy / Cloudy Weather Conditions: Temp: Precip: Well Information **Sampling Information** Well Locked? Purging Method: Bladder **Control Settings** Yes NO> Bladder 5 Well Labeled? Yes No Sampling Method: Purge: sec. Yes 55 Dedicated Equip?: Casing Straight? Yes No Recover: sec. No Not Visible No 30 Grout Seal Intact? No Duplicate Sample?: Yes PSI: Yes Repairs Necessary: Duplicate Sample ID: Pumping Rate: 100 mL/min 2" Casing Diameter: 41.41 Time Purging Began: 22 June 17 ft Purge Date: 1020 @m/pm Water Level Before Purge: Time Purged Dry: ft Well Purged Dry? Yes No am/pm Total Well Depth: _____ Time of Sampling: 22)m17 1045 Sample Date: Well Volume: liters am/pm ft Depth to Top of Pump: 41.60 ft 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric Water Level After Sample: Bottle

List:

Field Measurements

Electric Water Level Indicator

Stabil	ization	Temp	Spec.	- 11	DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рн	(mg/L)	(mv)		Level (n)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1025	11.29	5581	6.65	5,80	-34.1	26-9	41.65	500.0	Clear
2	1030	11.31	5311	6,52	5.30	- 10.9	7.78	41.62	500.0	Clezn
3	1035	11.27	5170	6.52	5,98	4.1	4,51	41.60	500,0	Clear
4	1040	10.95	5084	6.50	5.86	13.6	2.58	41,58	502,0	Cliber
5	1045	11.04	5054	6,49	5,73	19.6	2.63	41.60	500.0	Clean
6										
7										
8										
9										
10										L
Stabilized:	Yes /	No				T	otal Volume	Removed:	$7 \leq \alpha O_i O$	mL





Wind:

NOS-10

Company:	MDU Heskett
Event:	2017
Sample ID:	Ð
Sampling Personal:	Jeven ilogu

Sunny / Partly Cloudy / Cloudy

60 °F Temp: Weather Conditions: Well Information No Well Locked? Yes Yes No Well Labeled? res Casing Straight? No Ves Grout Seal Intact? Not Visible No Repairs Necessary: Casing Diameter: 2" 14.40 Water Level Before Purge: ft Total Well Depth: ft Well Volume: liters Depth to Top of Pump: ft 14.65 Water Level After Sample: ft Measurement Method: **Electric Water Level Indicator**

		Sa	ampling l	nformatio	on		
Purgir	ng Method:	Blac	lder		Co	ontrol Setting	gs
Samplir	ng Method:	Blac	lder		Purge:	5	sec.
Dedicat	ed Equip?:	Tes	No		Recover:	55	sec.
Duplicate	Sample?:	Yes	No		PSI:	15	
Duplicate \$	Sample ID:]	Pumping F	Rate: 100	mL/min
P	urge Date:	22 Jun	17	Time Purg	jing Began:	0857	@ŋ/pm
Well P	urged Dry?	Yes	NO	Time F	Purged Dry:	g	am/pm
Sa	mple Date:	22 Jene	17	Time o	f Sampling:	0917-	۲) m/pm
Bottle		1L Raw, 50	0mL Nitirc,	500mL Nit	ric (filtered),	4-1L Nitric	
List:			25	50 mL Sulfu	ric		

Precip:

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0902	10.10	5791	7.07	4,96	186.8	0.41	HISE	500.0	Clear
2	0907	9.75	5761	7.06	4.57	190,4	0.35	14.63	500,0	cles
3	0912	10.55	5769	7.05	4.50	190.6	0.36	14,65	5000	Clear
4	0917	10,40	5756	7.05	4.56	191.1	0.38	14.62	5000	Cles
5										
6										
7										
8										
9										
10										1
Stabilized	· (Yes)	No				Т	otal Volume	Removed:	2000	mL





Company:	MDU Heskett
Event:	2017
Sample ID:	.103
Sampling Personal:	Jan ilen
Sample ID: Sampling Personal:	103 Jenzeley

Weather Conditions:	·····	Temp:	60 °F	:	Wind:	Nos-1	5		Precip	: Sun	ny / Partly C	Joudy / Clc	oudy
۱ ۱	Well Info	ormation					Sampling Information						
Well Locked?	Yes	NO				Purging	g Method: Bladder			Control Setting		js	
Well Labeled?	Yes	No				Sampling	y Method:	Bla	dder	1	Purge:	5	sec.
Casing Straight?	Yes	No				Dedicate	ed Equip?: Xes No		1	Recover:	55	sec.	
Grout Seal Intact?	Yêş	No	Not Vis	ible		Duplicate S	ample?:	Yes	(No]	PSI:	25	
Repairs Necessary:	epairs Necessary:					Duplicate S	ample ID:				Pumping R	ate: ノロン	mL/min
Casing	Diameter:		2"				_			-			
Water Level Befo	ore Purge:	<u>、ろの, そら</u> ft			Purge Date:		22 June 17		Time Purg	ing Began:	0601	₫īī/pm	
Total W	ell Depth:	-		ft		Well Pu	ged Dry?	Yes	No/	Time F	urged Dry:	C	am/pm
We	ll Volume:	•		liters		Sam	ple Date:	22 June	7	Time of	Sampling:	0621	@m/pm
Depth to Top of Pump:				ft									
Water Level Afte	r Sample:	^	2.87	ft		Bottle		1L Raw, 50	00mL Nitirc,	500mL Niti	ic (filtered),	4-1L Nitric	
Measurement	t Method:	Electric Water Level Indicator			List:	List:			250 mL Sulfuric				

Field Measurements

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0606	9.31	5025	6.68	8.64	253,6	0.99	31.75	500.0	Clès
2	0611	9.26	5019	6.64	'4. 72	253.0	0.92	32.25	500,0	Class
3	0616	9,13	5017	6.60	4.47	252.5	0.60	32,31	500.0	Cla
4	0621	9,06	5015	6,59	4.43	249.9	0.50	32,36	500.0	Cles
5										
6										
7										
8										
9										
10										
Stabilized	: <u>Yes</u>	No				To	otal Volume	Removed:	2000.0	mL



Field Datasheet

Groundwater Assessment

Event:	2017
Sample ID:	104.
Sampling Personal:	Jen Manan

Weather Conditions:		Temp:	<u> 65 </u>	F	Wind:	Nola	2-15		Precip	: Sun	Sunny / Partly Cloudy / Cloudy			
	Well Info	ormation						Sa	ampling	Informati	on			
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	js	
Well Labeled?	Yes-	No				Sampli	ng Method:	Blac	der		Purge:	2	sec.	
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.	
Grout Seal Intact?	Tes	No	Not Vis	sible		Duplicate	Sample?:	Yes	€N ∂		PSI:	10		
Repairs Necessary:						Duplicate Sample ID:					Pumping R	ate: (00	mL/min	
Casing Diameter		2"												
Water Level Befo	ore Purge:	13,92 ft			Purge Date:		22 June	-17	Time Purg	ing Began:	1455	am/om		
Total W	/ell Depth:	_		ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:		am/pm	
We	Il Volume:	•••		liters		Sa	mple Date:	22 Jun	.17	Time o	f Sampling;	1515	am/pm	
Depth to Top	o of Pump:	•		ft										
Water Level After Sample			14,21	ft		Bottle		1L Raw, 50	0mL Nitirc	, 500mL Nit	ric (filtered),	4-1L Nitric		
Measurement Method		Electric \	Electric Water Level Indicator			List:		250 mL Sulfuric						

Field Measurements

$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Stabi (3 con:	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1	1500	12,17	13978	6,92	4,53	157.3	\$,40	14.28	500.0	Clez
3 1510 11.81 14045 6.88 3.62 146.0 1.31 14.35 500.0 Clean 4 1515 11.82 14032 6.88 3.66 143.7 1.01 14.30 500.0 Clean 5	2	1505	12.39	14000	6.90	3.22	150.9	2.17	14.18	500,0	Clear
4 1515 11.82 14032 6.88 3.66 143.7 1.01 14.30 500.0 Cles 5 6 6 6	3	1510	11.81	14045	6,88	3.62	146.0	1.31	14.35	500,0	Clea
5 6	4	1515	11.82	14032	6.68	3.66	143.7	1.01	14.30	500.0	Clas
6	5										
	6										
7	7										
8	8										
9	9										
10	10										





Company:	MDU Heskett
Event:	2017
Sample ID:	105
Sampling Personal:	Joren play

Weather Conditions:	1 10 10 10	Temp:	in	•F	Wind:	1 1.602			Des alter				•
Meather Conditions.		remp.	60	1	vvinu.		,		Precip	5. Sunny / Party Cloudy / Cloudy			
P*****	Well Info	ormation					Sampling Information						
Well Locked?	Yes	(No)				Purgir	ng Method:	Blad	der		Cc	ontrol Setting	s
Well Labeled?	Yes	No				Samplir	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	(Yes)	No				Dedicat	ed Equip?:	(Yês)	No		Recover:	55	sec.
Grout Seal Intact?	(Yes)	No	Not Vi	sible		Duplicate	Sample?:	Yes	No		PSI:	10	
Repairs Necessary:						Duplicate \$	Sample ID:				Pumping R	ate: 100	mL/min
Casing	Diameter:		2"					·····		-			<u></u>
Water Level Befo	ore Purge:	12.	94	ft		P	'urge Date:	22 June 1	7_	Time Purg	ing Began:	0722	am/pm
Total W	Vell Depth:	*		ft		Well Pi	urged Dry?	Yes	No	Time F	urged Dry:	7	am/pm
We	ell Volume:			liters		Sa	mple Date:	22 Jone	17	Time of	Sampling:	0802	(am)pm
Depth to Top	o of Pump:			ft									
Water Level After	er Sample:	3,16 ft			Bottle		1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric						
Measuremen	t Method:	Electric Water Level Indicator			List:			25	0 mL Sulfu	ric			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0727	9,12	5850	676	3,14	Zolai 7	6.02	13,20	500.0	Clés
2	0732	8.96	5578	6.73	3,33	205.9	3,18	13.21	500.0	Chia
3	0737	8.95	5668	6.72	3.63	203.3	2.69	13,22	5000	Clezd
4	0742	8.94	6113	6:70	3.55	201,4	1.73	13.25	500,0	Cliar
_ 5	0747	9,25	6290	6.68	3.55	199,2	1.74	13.21	500.0	Clèn
6	0752	9,08	6534	6.67	3,78	1.97.3	1.49	13.24	500.0	cles
7	0757	9,09	6682	6.66	3,64	195.5	1.84	13.24	500.0	Clean
8	0802	9,16	6790	6.65	3,77	193.6	2.37	13.26	500.0	Clear
9										
10										
Stabilized:	(Yes)	No	-			To	otal Volume	Removed:	4000,0	mL

and the second s				
2 - 4 . 	n n n n n n n n n n n n n n n n n n n			
1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1 1 1	MVTL	Calibration Worksheet	
	Site: MDU He	skett	Technician:	Jen May-
	Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	, #3 556 MPS 12E102056
		Pre Site Calibr	ration	Post Site Check
· -	Date: 21 June	17 <u>Time: 0659</u>		Time: 1700
	рН	Temp °C Pre Cal Post Cal	mv Range +/- Post Cal Range 50	pH Temp °C Reading
	Buffer 7	17,79 6,97 7.00	6.95-7.05 <u>~2/. (</u> 0 +/- 50	Buffer 7 16,01 7.8
	Buffer 10	17.60 10.01 10.00	9.95-10.05 -19C,D -180 +/- 50	
59 - 2 2 - 1	Conductivity		Check	Conductivity
- -	Buffer 10000	18:08 10093 1000 (±10% Buffer 5000 <i>らつ</i> 2	Buffer 5000 <i>18.13</i> 4987
	ORP			
	231 mV @ 25C	18.41 235,3 235,7	±10 mV	
	DO		Barometric Pressure (mm Hg)	
		17.27 78.8 93.4	mg/L 755	
	22)	replaced membrane		
	Date: CC Suc 1	<u>Time: 0600</u>	mv Range +/-	<u>Time: + (O</u>
	рН	Temp °C Pre Cal Post Cal	Post Cal Range mv 50	pH Temp °C Reading
	Buffer 7	19.45 7.62 7.00	6.95-7.05 -22.2 0 +/- 50	Buffer 7 $18,33$ $7,02$
	Buffer 10	19.04 9.78 10.00	9.95-10.05 -198.5 -180 +/- 50	
	Conductivity	17.15 1.00010	Check	Conductivity
	Buffer 10000	17.93 10001 10000	±10% Buffer 5000 5064	Buffer 5000 [78, 13]
	ORP			
	231 mV @ 25C	14.00 235,8 235,7	±10 mV	
	DO		Barometric Pressure (mm Hg)	
		16.49 101.4% 99.2%	mg/L 754	



Laboratories, Inc.

Bismarck, ND 58501 Phone (701) 258-9720

Chain of Custody Record

Project Name:			Event:			Work Order Number:							
MDU Heskett			June 2017			82-1685							
Report To:MDUAttn:Samantha MarshallAddress:400 N. 4th St Bismarck, ND 58501phone:701-222-7829email:Email (Complexity)			Carbon Copy: Attn: Address:			Name of Sampler(s):							
Sample Information			on Bott			le Type Field Parameters Analysis				Analysis			
Lab Number NASO7 NASO8 WASIO WASIO WASIO WASIO WASIA WASIA WASIA WASIA WASIA WASIA	Sample ID 2-90 93-90 141033 141080 R× MW103 MW104 MW105 Dy2 FB2	122 Jun 17 222 Jun 17 222 Jun 17 222 Jun 17 222 June 17 222 June 17 222 June 17 222 June 17 222 June 17 222 June 17	0002 0002 0002 0002 0002 0002	Σ 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅 𝔅		L L L L L L L L + 1 lier Nitric				10,50 9,88 11,04 10,40 9,16 1,92 1,10 1,10 1,10 1,10 1,10 1,10 1,10 1,1	5033 5033 5054 5756 5015 14032 6790	E 6.87 6.75 6.49 7.05 6.59 6.88 6.65 6.65 7	Analysis Required Rad 226 & Rad 228

Comments: # 22 Juli + d

3300

* per T.Olsm W/Barr CC 9Avg17

Relinquished By: Sample Condition: Received by: Date/Time Date/Time Location: Temp (°C) Name: Name: n 23 Jul 17 0823 log lp RO1 1.7 23 pupe 17 Xar imonar Walk In #2 TM562 (TM588)



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MVTL Lab Reference No/SDG:

CASE NARRATIVE 201682-1918

Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 Montana Dakota Utilities MDU Heskett CCR June Event 2016 16-W2419 through 16-W2424

MDU Sample Identification	MVTL Laboratory #				
Dup1	16-W2419				
Field Blank (FB)	16-W2420				
MW13	16-W2421				
MW44R	16-W2422				
MW103	16-W2423				
MW102	16-W2424				

I. RECEIPT

- All samples were received at the laboratory on 30 Jun 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 7.0°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

• All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.



Page 2 of 2

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MVTL Lab Reference No/SDG:

CASE NARRATIVE 201682-1918

Client: Location: Project Identification: MVTL Laboratory Identifications:

Montana Dakota Utilities MDU Heskett CCR June Event 2016 16-W2419 through 16-W2424

MDU Sample Identification	MVTL Laboratory #				
Dup1	16-W2419				
Field Blank (FB)	16-W2420				
MW13	16-W2421				
MW44R	16-W2422				
MW103	16-W2423				
MW102	16-W2424				

- For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
- Dissolved selenium results are higher than total selenium results (>20%RPD) for samples 16-W2419 and 16-W2423. Both samples were reanalyzed to recheck the results prior to reporting.
- One selenium (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.
- The recoveries for one selenium (total) 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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

rudette anto

DATE: ZIJULIG

Claudette Carroll - MVTL Bismarck Laboratory Manager



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Page: 1 of 2

Report Date: 21 Jul 16 Lab Number: 16-W2419 Work Order #:82-1918 Account #: 002800 Date Sampled: 29 Jun 16 Date Received: 30 Jun 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR June Event 2016 Sample Description: Dup 1

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 7.0C ROI

	As Received		Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	30 Jun 16	KMD
рН	* 6.7	units	N/A	SM4500 H+ B	30 Jun 16 18:00	KMD
Total Suspended Solids	< 1	mg/l	1	I3765-85	1 Jul 16 11:19	ML
Total Alkalinity	449	mg/l CaCO3	20	SM2320-B	30 Jun 16 18:00	KMD
Fluoride	0.29	mg/l	0.10	SM4500-F-C	30 Jun 16 18:00	KMD
Sulfate	2690	mg/l	5.00	ASTM D516-07	14 Jul 16 11:17	EMS
Chloride	106	mg/l	1.0	SM4500-Cl-E	7 Jul 16 13:37	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 16 11:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 16 12:32	EV
Total Dissolved Solids	4510	mg/l	5	I1750-85	1 Jul 16 17:11	ML
Calcium - Total	540	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Magnesium - Total	490	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Sodium - Total	262	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Potassium - Total	20.8	mg/l	1.0	6010	6 Jul 16 10:56	SZ
Lithium - Total	0.57	mg/l	0.10	6010	7 Jul 16 14:08	KMD
Boron - Total	0.17	mg/l	0.10	6010	5 Jul 16 18:03	KMD
Calcium - Dissolved	535	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Magnesium - Dissolved	488	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Sodium - Dissolved	276	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Potassium - Dissolved	20.6	mg/l	1.0	6010	6 Jul 16 14:43	SZ
Lithium - Dissolved	0.54	mg/l	0.10	6010	7 Jul 16 16:08	KMD
Boron - Dissolved	0.17	mg/l	0.10	6010	5 Jul 16 20:03	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	6 Jul 16 13:30	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Barium - Total	0.0097	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Selenium - Total	0.0645	mg/l	0.0020	6020	6 Jul 16 13:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	6 Jul 16 13:30	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	6 Jul 16 19:08	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Barium - Dissolved	0.0108	mg/l	0.0020	6020	6 Jul 16 19:08	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	7 Jul 16 9:39	CC
Cadmium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	6 Jul 16 19:08	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: Dup 1

Montana Dakota Utilities

Project Name: MDU Heskett CCR June Event 2016

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Page: 2 of 2

Report Date: 21 Jul 16 Lab Number: 16-W2419 Work Order #:82-1918 Account #: 002800 Date Sampled: 29 Jun 16 Date Received: 30 Jun 16 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.0C ROI

Method As Received Method Date Result RL Reference Analyzed Analyst Chromium - Dissolved < 0.002 0.0020 mg/l 6020 6 Jul 16 19:08 CC Cobalt - Dissolved < 0.002 mg/l 0.0020 6020 6 Jul 16 19:08 CC Lead - Dissolved < 0.0005 mg/l 0.0005 6020 6 Jul 16 19:08 CC Molybdenum - Dissolved < 0.002 mg/l 0.0020 6020 7 Jul 16 9:39 CC Selenium - Dissolved mg/l 18 Jul 16 13:59 0.0960 0.0020 6020 CC Thallium - Dissolved < 0.0005 mg/l 0.0005 6020 6 Jul 16 19:08 CC

* Holding time exceeded

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

Approved by:

JUL 16 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Samantha Marshall

Bismarck ND 58501

Sample Description: Field Blank (FB)

400 N. 4th

Montana Dakota Utilities

Project Name: MDU Heskett CCR June Event 2016

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Page: 1 of 2

Report Date: 21 Jul 16 Lab Number: 16-W2420 Work Order #:82-1918 Account #: 002800 Date Sampled: 29 Jun 16 Date Received: 30 Jun 16 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 7.0C ROI

As Received Method Method Date Result RL Reference Analyzed Analyst Metal Digestion EPA 200.2 KMD 30 Jun 16 рН * 6.1 units N/A SM4500 H+ B 30 Jun 16 18:00 KMD Total Suspended Solids < 1 mg/l 1 I3765-85 1 Jul 16 11:19 ML 20 Total Alkalinity < 20 mg/l CaCO3 SM2320-B 30 Jun 16 18:00 KMD < 0.1 mg/l SM4500-F-C Fluoride 0.10 30 Jun 16 18:00 KMD 5.00 Sulfate < 5 mg/l ASTM D516-07 14 Jul 16 11:17 EMS < 1 mg/l Chloride 1.0 SM4500-C1-E 7 Jul 16 13:37 EMS 0.0002 Mercury - Total < 0.0002 7 Jul 16 11:33 mg/l EPA 245.1 EV Mercury - Dissolved < 0.0002 mg/l 0.0002 EPA 245.1 7 Jul 16 12:32 ΕV Total Dissolved Solids mg/l < 5 5 I1750-85 1 Jul 16 17:11 ML Calcium - Total < 1 mg/l 1.0 6010 6 Jul 16 10:56 SZ < 1 Magnesium - Total mg/l 1.0 6010 6 Jul 16 10:56 SZ Sodium - Total < 1 mg/l 1.0 6010 6 Jul 16 10:56 SZ Potassium - Total < 1 mg/l 1.0 6010 6 Jul 16 10:56 SZ Lithium - Total 7 Jul 16 14:08 < 0.10.10 6010 KMD mg/l Boron - Total < 0.1 mg/l 0.10 6010 5 Jul 16 18:03 KMD Calcium - Dissolved < 1 1.0 6010 6 Jul 16 14:43 mg/l SZ Magnesium - Dissolved < 1 mg/l 1.0 6010 6 Jul 16 14:43 SZ 6 Jul 16 14:43 Sodium - Dissolved 1.0 6010 SZ < 1 mg/l Potassium - Dissolved < 1 mg/l 1.0 6010 6 Jul 16 14:43 SZ Lithium - Dissolved < 0.1 mg/l 0.10 6010 7 Jul 16 16:08 KMD Boron - Dissolved < 0.1 mg/l 0.10 6010 5 Jul 16 20:03 KMD Antimony - Total < 0.001 mg/l 0.0010 6020 6 Jul 16 13:30 CC Arsenic - Total Barium - Total < 0.002 0.0020 6 Jul 16 13:30 6020 CC mg/l < 0.002 mg/l 0.0020 6020 6 Jul 16 13:30 CC Beryllium - Total < 0.0005 0.0005 6020 6 Jul 16 13:30 CC mg/l mg/l Cadmium - Total < 0.0005 0.0005 6020 6 Jul 16 13:30 CC Chromium - Total < 0.002 mg/l 6 Jul 16 13:30 0.0020 6020 CC Cobalt - Total < 0.002 0.0020 6020 6 Jul 16 13:30 CC mg/l Lead - Total < 0.0005 mg/l 0.0005 6020 6 Jul 16 13:30 CC < 0.002 < 0.01 Molybdenum - Total 0.0020 6020 6 Jul 16 13:30 mg/l CC Selenium - Total Thallium - Total 0.0020 6020 6 Jul 16 13:30 CC mq/l< 0.0005mg/l 0.0005 6020 6 Jul 16 13:30 CC Antimony - Dissolved 6 Jul 16 19:08 CC < 0.001 mg/l 0.0010 6020 Arsenic - Dissolved < 0.002 mg/l 0.0020 6020 6 Jul 16 19:08 CC Barium - Dissolved 0.0020 6020 6 Jul 16 19:08 CC < 0.002 mg/l Beryllium - Dissolved < 0.0005 mg/l 0.0005 6020 7 Jul 16 9:39 CC Cadmium - Dissolved 6 Jul 16 19:08 CC 0.0005 6020 < 0.001 mg/l

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



Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Project Name: MDU Heskett CCR June Event 2016

MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Report Date: 21 Jul 16 Lab Number: 16-W2420 Work Order #:82-1918 Account #: 002800 Date Sampled: 29 Jun 16 Date Received: 30 Jun 16 8:00 Sampled By: MVTL Field Services

Sample Description: Field Blank (FB) Temp at Receipt: 7.0C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	6 Jul 16 19:08	CC
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	6 Jul 16 19:08	CC
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Jul 16 19:08	CC
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	7 Jul 16 9:39	CC
Selenium - Dissolved	< 0.01 ^ mg/l	0.0020	6020	6 Jul 16 19:08	CC
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	6 Jul 16 19:08	CC

* Holding time exceeded

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

Approved by:

1C 21 JUL 16 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016