

Bismarck ND 58501

400 N. 4th

Sample Description: Dup 1 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

\* Holding time exceeded

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

Approved by:

1C 2 May 16 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

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

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	7 Apr 16	KMD
На	* 5.6	units	N/A	SM4500 H+ B	7 Apr 16 17:00	CC
Total Suspended Solids	5	mg/l	1	I3765-85	7 Apr 16 15:24	MF
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	7 Apr 16 17:00	CC
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	7 Apr 16 11:08	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 11:28	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	< 1	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Magnesium - Total	< 1	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Sodium - Total	< 1	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Potassium - Total	< 1	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	12 Apr 16 13:04	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	< 1	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	7 Apr 16 11:20	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 20:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Apr 16 13:00	KMD
Arsenic - Dissolved	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	9 Apr 16 13:00	KMD
Beryllium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 10:22	CC

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



Bismarck ND 58501

Sample Description: Field Blank (FB)

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

\* Holding time exceeded

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

Approved by:

1C 2 May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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



Bismarck ND 58501

400 N. 4th

Sample Description: MW13 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

PO #: 160249 OP

#### Temp at Receipt: 6.4C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			EPA 200.2	7 Apr 16	KMD
pH	* 6.6 uni	ts N/A	SM4500 H+ B	7  Apr  16 17:00	CC
Total Suspended Solids	17 mg/		I3765-85	7 Apr $16 15:24$	MF
pH - Field	6.91 uni		SM 4500 H+ B	6 Apr 16 10:18	DJN
Temperature - Field		rees C NA	SM 4500 H+ B SM 2550B	6 Apr 16 10:18	DJN
Total Alkalinity		1 CaCO3 20	SM2320-B	7 Apr 16 17:00	CC
Conductivity - Field		los/cm 1	EPA 120.1	6 Apr 16 10:18	DJN
Fluoride	0.92 mg/		SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	6720 mg/		ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	73.4 mg/		SM4500-Cl-E	7 Apr 16 11:08	EMS
Mercury - Total	< 0.0002 mg/		EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002 mg/		EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	9520 mg/		11750-85	12 Apr 16 11:10	ML
Calcium - Total	349 mg/		6010	8 Apr 16 14:05	KMD
Magnesium - Total	584 mg/		6010	8 Apr 16 14:05	KMD
Sodium - Total	1780 mg/		6010	8 Apr 16 14:05	KMD
Potassium - Total	23.3 mg/		6010	8 Apr 16 14:05	KMD
Lithium - Total	0.68 mg/		6010	15 Apr 16 10:00	KMD
Boron - Total	0.56 mg/		6010	12 Apr 16 13:04	KMD
Calcium - Dissolved	363 mg/		6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	592 mg/		6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	1760 mg/		6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	24.0 mg/		6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.69 mg/		6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.57 mg/		6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001 mg/		6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.001 mg/		6020	9 Apr 16 11:15	KMD
Barium - Total	0.0075 mg/		6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^ mg/		6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005 mg/		6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 mg/		6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002 mg/		6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005 mg/		6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002 mg/		6020	9 Apr 16 11:15	KMD
Selenium - Total	0.0538 mg/		6020	9 Apr 16 20:30	CC
Thallium - Total	< 0.0005 mg/		6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001 mg/		6020	9 Apr 16 13:00	KMD
Intermony Dibbolved	\$ 0.001 mg/	_ 0.0010		5 <u>F</u> = 10 10100	

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW13 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

\* Holding time exceeded

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

Approved by:

2 May 16 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW103 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

#### PO #: 160249 OP

#### Temp at Receipt: 6.4C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	7 Apr 16	KMD
рН	* 6.5	units	N/A	SM4500 H+ B	7 Apr 16 17:00	
Total Suspended Solids	10	mg/l	1	13765-85	7 Apr 16 15:24	
pH - Field	6.62	units	NA	SM 4500 H+ B	6 Apr 16 12:30	
Temperature - Field	7.32	Degrees C	NA	SM 2550B	6 Apr 16 12:30	
Total Alkalinity	397	mg/l CaCO3	20	SM2320-B	7 Apr 16 17:00	
Conductivity - Field	4953	umhos/cm	1	EPA 120.1	6 Apr 16 12:30	
Fluoride	0.24	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	
Sulfate	2880	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	
Chloride	100	mg/l	1.0	SM4500-Cl-E	7 Apr 16 11:08	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	4500	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	482	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Magnesium - Total	438	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Sodium - Total	232	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Potassium - Total	18.4	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Lithium - Total	0.63	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.14	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	479	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	435	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	258	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	18.8	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.64	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.12	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Barium - Total	0.0092	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Selenium - Total	0.1316	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Apr 16 13:00	KMD
					-	

#### RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW103 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

\* Holding time exceeded

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

Approved by:

CC 2 May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW44R Sample Site: MDU Heskett

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	7 Apr 16	KMD
Hq	* 6.5	units	N/A	SM4500 H+ B	7 Apr 16 17:00	CC
Total Suspended Solids	18	mg/l	1	I3765-85	7 Apr 16 15:24	MF
pH - Field	6.56	units	NA	SM 4500 H+ B	6 Apr 16 14:50	DJN
Temperature - Field	7.93	Degrees C	NA	SM 2550B	6 Apr 16 14:50	DJN
Total Alkalinity	412	mg/l CaCO3	20	SM2320-B	7 Apr 16 17:00	CC
Conductivity - Field	9259	umhos/cm	1	EPA 120.1	6 Apr 16 14:50	DJN
Fluoride	0.68	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	6160	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	237	mg/l	1.0	SM4500-Cl-E	7 Apr 16 11:08	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	7750	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	374	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Magnesium - Total	940	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Sodium - Total	980	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Potassium - Total	31.6	mg/l	1.0	6010	8 Apr 16 14:05	KMD
Lithium - Total	1.44	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.42	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	365	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	925	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	990	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	31.8	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	1.42	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.41	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	9 Apr 16 11:15	KMD
Arsenic - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Barium - Total	0.0080	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Beryllium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Apr 16 9:10	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	9 Apr 16 11:15	KMD
Selenium - Total	0.0775	mg/l	0.0020	6020	9 Apr 16 20:30	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	9 Apr 16 11:15	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Apr 16 13:00	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW44R Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

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

PO #: 160249 OP

#### Temp at Receipt: 6.4C ROI

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

\* Holding time exceeded

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

Approved by:

1c 2 May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



**Groundwater Assessment** 

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	nw 13	c 4
Sampling Personal:	Darren Nieswaag	

Phone: (701) 258-9720

### Field Measurements

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water		Discription:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	mL Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1003	6.78	10381	6.91	2.75	126.8	1.93	31,30	500	cbea.c
12	1008	6.49	10377	6.91	2:76	118,Z		31.30	500	clear clear clear clear
13	1013	6,39	10363	6091	2.85	111.9	1.78	31,30	500	cle_
14	1018	6.54	10379	6.91	2,76	109.6	1.76	31.30	500	Clear
15				i						
16										
17										
18										
19										
20					×					
21										
22										
23										
24										
25										
26										
27						•				
28										
29										
30		,								
tabilized:	Yes	No				Тс	tal Volume	Removed:	7000	mL

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND		Field Groun		atas Assess			Company: Event: Sample ID: Sampling P	······································	MDU Hesk 2nd Qtr 20	016 MV	V13	
Weather Conditions:		Temp:	35 °F		Wind:	NW,	7	<u></u>	Precip:	Sunr	ny / Partly C	Cloudy / Cl	<u> </u>
، بېرىنىيىتىنىتىتىنىتىنىتىنىتىنى	Well Info	ormation						Sa	mpling			<u> </u>	
Well Locked?	Yes	NO				Purging	Method:	Blad				ontrol Settin	ns .
Well Labeled?	Yes	No				Sampling	Method:				Purge:		sec.
Casing Straight?	Yes	No				Dedicated			NO		Recover:		sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate S		Yes	No		PSI:	2-0	360.
Repairs Necessary:	_					Duplicate Sa		<u> </u>			Pumping R		mL/min
Casing	Diameter:		2"							I	r unping r	ale. 700	
Water Level Befo	ore Purge:	30	0.55	ft		Pur	ae Date:	GAPTI	6	Time Purg	ing Began:	09.08	(am/pm
Total W	ell Depth:	41	.90	ft		Well Purg		Yes	No)	-	urged Dry:		
We	ll Volume:		7.0	liters			ole Date:	2 4	19-1		Sampling:	1018	am/pm
Depth to Top	of Pump:	3	5.23	ft		]		support of	11		g.	1010	(am)pm
Water Level Afte	r Sample:	/	31.39	ft		Bottle	500 m	L Nitric	1 Liter	Raw			
Measurement	t Method:	Electric V	Vater Level Ind	licator		1 1 3 - 4		ric (filtered)	4 - 1 Lite	·····			·

## Field Measurements

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	0913	5.78	10382	6.89	2,94	174.9	6,51	3098	500	Clear
2	0918	6.67	10405	6,90	3.12	167.2	17.1	31.08	500	Clea
3	A923	6.59	10484	6,92	3.38	11.3.1	22,6	81.11	502	1 les
4	0 928	6,63	10433	6:42	3,72	163,6	18.0	31.25	500	cler
5	0977	6.73	10394	6.92	3.11	163.6		3125	500	Clen-
6	0928	6.47	10381	6.91	3.01	162,4	9,12	31,25	500	cles
7	0943	6155	10380	6.91	2179	160,9	6.40	31.30	500	the
	6948	6.62	10357	6.91	2178	156.9	5.43	31.30	500	Clean
	0953	6.63	10351	6.91	2.74	148.5	4.31	31,30	500	Clear
10	0958	6,79	10 340	6.91	2,75	137.4	3,21	31,30	500	clear
Stabilized:	Yes-	No-					tal Volume	Removed:		mL

Continued on next page



**Groundwater Assessment** 

Company:	MDU He	skett	
Event:	2nd Qtr	2016	
Sample ID:	mx103		
Sampling Pers		Nieswaas	

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

### **Field Measurements**

r		· · · · · · · · · · · · · · · · · · ·		r	Tora mica	Suremen	13			
	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1215	7,08	4958	6.65	3,63	139.7	0.80	36.76	500	Clean
12	1220	7,31	4945	6.63	3.76	138.3	0,76	37,09	500	alex-
13	1225	7,32	4945	6.62	3,78	138.7	0.73	37,12	500	ilean
14	1230	7,32	4953	6.62	3,76	139,6	0.70	37,18	500	Clean Clean Clean Clean
15					•					
16										
17										
18	•									
19										
20										
21										
22										
23										
24										······
25										······
26										· · · · · · · · · · · · · · · · · · ·
27										
28										
29										
30										
Stabilized:	Yes )	No				Tc	tal Volume	Removed:	7000	] mL
Comments								-	/ -	



Groundwater Assessment

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	MW103	<u> </u>
Sampling Personal:	Darren Niesanag	

616	E.	Broadway	Ave,	Bismarck,	ND
-----	----	----------	------	-----------	----

Phone: (701) 258-9720

Weather Conditions:		Temp:	36 °F	Wind:	NW	9		Precip	·			<u> </u>
	Well Info	ormation					S		nformatio		Cloudy (I Clo	udy_
Well Locked?	Yes	(No)		7	Pure	jing Method:			Tionnau	1		
Well Labeled?	(Yes)	No		-				dder	4	Cc	ontrol Setting	S
Casing Straight?	Yes	No		-		ling Method:		dder	1	Purge:	5	sec.
Grout Seal Intact?	A STREET,			4	Dedica	ated Equip?:	Yes	No-		Recover:	55	sec.
	(es)	No	Not Visible		Duplicate	e Sample?:	Yes	NO	]	PSI:	2.5-30	
Repairs Necessary:					Duplicate	Sample ID:	~		1			
Casing	Diameter:		2"	7					]	Pumping R	ate: 100	mL/min
Water Level Befo	ore Purge:	3	3.87	ť		Purge Date:	1° A	1/	Time Dun		:1.6	
Total W	ell Depth:	11	7.10.0 6.4.1.1L	+			6Apr 1			ing Began:	1120	aଙ୍ଗ/pm
	Il Volume:	7	(B)	4		Purged Dry?		No		ourged Dry:		am/pm
			$\frac{8,2}{1000}$ liter	5		ample Date:	GAPTI	<u></u>	Time of	Sampling:	1230	am/pm
Depth to Top		7	0.10 1	t			/					
Water Level Afte	r Sample:	<u>ز</u>	1.54 f	t	Bottle	500 m	L Nitric	1 Lite	r Raw	·····		
Measurement	Method:	Electric V	Nater Level Indicator	7	List:	500 mL Nit			er Nitric			

**Field Measurements** 

r	· · · ·				i iciu	measure	ments			
1	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		Ciunty, Color, Odor, Ect.
1	1125	7.77	5098	6,70	4.77	132.9	3.12		200	
2	1130	7.28	5063	6,70		1410		34,12	500	Chear
3	1130-	7,29		4			1,26	24.68	500	Class
4	1.22		5063	6170	4.41	145.4	1.47	34.92	500	Clean
	1140	7.20	5058	6.70	4.42	148.5	2,68	35.37	500	Cleck
5		7,17	5052	6.71	4,52	151.9	2.64	35.55	500	1.00
6	1150	-7.16	5059	6.71	4.40	154.0	2,28	25-25	500	Clear
7	1155	7,29	5040	6-71	4.37	1540	1.74	37.10	127	11200
8	1200	7.17	5036	1-11	4.13	137.8	1.19	26,01	500	_ Clear
9	1205	7.09	5011	61 1	ti and	153,9	1041	36.17	500	Cleim
10	1210			6.70	3,96	149,3	1.18	36.36	500	Clear
		7.20	4977	6.67	3,73	143.4	1.12	36.52	500	Clear
Stabilized:	Yes	No			-	To	tal Volume			
Commonto								i tomoveu.		mL

Comments:

Continued on next page.



**Groundwater Assessment** 

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	MNYYR	
Sampling Per	sonal: Darren Nicsonaag	
		e ,

### Field Measurements

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1430	7.95	9241	6.56	0.5(	153,9	6.2)	29,13	580	clear
12	1435	7.86	9244	6.56	0,50	155.3	5.25	29,13	500	clear-
13	1440	7,81	9252	6.56	0.45	156.Z	4.26	29,13	580	cles-
14	1445	7,84	9252	6.56	0,42	157.0	4.33	29,13	500	clear
15	1450	7,93	9259	6.56	0,41	158.3	4,42	29,13	500	clean clean clean clean clean
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										Υ.
28										
29										
30										
Stabilized:	Yes	No	······			Тс	otal Volume	Removed:	7500	mL



**Groundwater Assessment** 

Company:	MDU Heskett
Event:	2nd Qtr 2016
Sample ID:	MW44R
Sampling Personal:	Parray Niesmaan
	- Just with a restory

Weather Conditions:		Temp:	44 .	F ·	Wind:	NW5	· · · · · · · · · · · · · · · · · · ·		Precip	Sun	ny / Partly C		oudy >
	Well Info	ormation	ι			, ,		Sa	<u> </u>				
Well Locked? Yes No						Purgi	ing Method:	Blac		Control Settings			15
Well Labeled?	Yes	No			Sampli	ing Method:	Blac	lder		Purge:		sec.	
Casing Straight?	<u>(Les</u>	No			Dedica	ted Equip?:	Yes	No		Recover:	55-	sec.	
Grout Seal Intact?	<u>(es</u>	No	Not Vis	sible		Duplicate	e Sample?:	Xes)	No		PSI:	22	
Repairs Necessary:		ورالالامع				Duplicate	Sample ID:	Dup	ł		Pumping R		mL/min
Casing	Diameter:		2"							1	<u>i unping r</u>	410.700	
Water Level Befo	ore Purge:	20	Ĩ.1/	ft		F	Purge Date:	bAar.	Th	Time Purg	ing Began.	1335	am/pm
Total W	/ell Depth:	45	.88	ft			urged Dry?	Yes	(No)		Purged Dry:	$\frac{1}{2}$	am/pm
		10.4	liters			ample Date:				Sampling:	1450	~	
Depth to Top of Pump: 38,54		ft				<u> </u>			oumphing.	100	am/pm		
Water Level After Sample: ft			Bottle	500 m	L Nitric	1 Lite	r Raw			$\sim$			
Measuremen	t Method:	Electric V	Vater Level In	dicator		List:		ric (filtered)		er Nitric			

**Field Measurements** 

	Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
	(3 cons	ecutive)	(°C)	Cond.	рΗ	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
	SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
	1	1340	8.41	9265	6.56	1019	173.3	288	29,13	500	clear
	2	1345	7.85	9235	6.56		149,8	5.60	29,13	500	Clean
	3	1350	7.71	9241	6,56	8,51	145.8	4.51	29,13	500	clear
	4	1355	7,60	9242	6,56	0.45	145.5	7.37	29,13	500	- clear
6.Aprilo	5	FO PONO	7.7.9	9236	6.56	0,45	146.5	5.61	29.13	-500	Cer
- on	6	1905	7.89	9243	6.56	0.45	147.7_	7,76	79,13	500	clear
	7	1410	7.91	9240	656	0.48	148,0	6.84	29,13	500	C Leg
	8	1415	7.90	9241	6.56	0.52	149,4	7.70	29,13	500	clei
	9	1420	7,93	9236	6156	6.54	151.3	8.03	29,13	500	ches
	10	1425	7.92	9238	6.56	0.54	152,7 -	297.78	29.13	500	Clear
-	Stabilized:	-Yes	No				To	tal Volume	Removed:	<u>لــــــــــــــــــــــــــــــــــــ</u>	mL

\*6.Ayr14

Continued on next page



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

Phone (701) 258-9720

# **Chain of Custody Record**

Projec	t Name:							Name	e of Sa	mpler(s):			
MDU	Heskett	CCR Grou	Indwater	2	nd Qtr 2016	Darren Nieswarg							
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Carbon Copy: Attn: Address:					Work Order Number: 82-0831						31
	Sample Information								ре	Fi	eld Para	ameters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 mi HNO	1 liter 3 500 mili	In PNO <sub>3</sub> (filtered)		Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W648	Dup 1	GADT16	NA	W	Up	1 1	хx			NA	NA	NA	
W649	Field Blank (FB)	6April6	NĄ	W	Up	X	хx			NA	NA	NA	
W650	mw13	6April6	1018	60		X.	$\times \times$			6.54	10379	6.91	
W651	nw103	6Apr16	1230	6 m		X	X   X			7,32	4953	6.62	
W652	MW 44R	6/Apr 1/6	1450	60		X	Y X			7.93	9259	6.56	MDU CCR List with TSS and Dissolved CCR Metals. No
													RadChem.
													· .

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C	1 and
1	Jannin	Walkin 2	6Apr 16	C. Jackson		7 Apr 16 0800	ROI 614-2	APT 40
2						······	TM 588	
3				-			-	





### CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: 201682-0832 S1604161

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

Project Identification:

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 16-W653 through 16-W657 S1604161-001 through S1604161-005

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Dup1	16-W653	S1604161-001
Field Blank (FB)	16-W654	S1604161-002
MW13	16-W655	S1604161-003
MW103	16-W656	S1604161-004
MW44R	16-W657	S1604161-005

### I. RECEIPT

- All samples were received at the laboratory on 7 April 2016 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 6.4°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 12 April 2016.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

### II. HOLDING TIMES

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

### III. METHODS

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





#### CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: 201682-0832 S1604161

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

**Project Identification:** 

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 16-W653 through 16-W657 S1604161-001 through S1604161-005

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Dup1	16-W653	S1604161-001
Field Blank (FB)	16-W654	S1604161-002
MW13	16-W655	S1604161-003
MW103	16-W656	S1604161-004
MW44R	16-W657	S1604161-005

#### IV. ANALYSIS

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

### V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

Clautette Grit

\_\_ DATE: ZMOY 16

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: Dup 1 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

2May16 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

10

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

400 N. 4tl	h		
Bismarck	ND	58501	

Project Name: CCR Radiochem/2nd Qtr 2016

Montana Dakota Utilities

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

Samantha Marshall

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

OL = Analysis performed by an Outside Laboratory.

Approved by:

(C 2. May 16 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: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW13 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

CC 2 May 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 6.4C ROI

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

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: MW103 Sample Site: MDU Heskett

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

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC 2 May 16 Clauditte K. Canrelo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

22 Apr 16

OL

PO #: 160249 OP

Temp at Receipt: 6.4C ROT

Sample Site: MDU He	skett			Temp at Red	ceipt: 6.4C ROI	
	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.56	units	NA	SM 4500 H+ B	6 Apr 16 14:50	DJN
Temperature - Field	7.93	Degrees C	NA	SM 2550B	6 Apr 16 14:50	DJN
Conductivity - Field	9259	umhos/cm	1	EPA 120.1	6 Apr 16 14:50	DJN
Radium 226	See Atta	ached Report			19 Apr 16	OL

See Attached Report

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW44R

Radium 228

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

(C 2 May 16 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



Your Environmental Monitoring Partner

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

Date: 4/29/2016

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project: Lab Order:	201682-0832 S1604161	Report ID: S1604161001

Samples 16-W653 Dup 1, 16-W654 Field Blank, 16-W655 MW13, 16-W656 MW103, and 16-W657 MW44R were received on April 12, 2016.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1





#### Sample Analysis Report

	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604161001
ProjectName:	201682-0832	WorkOrder:	S1604161
Lab ID:	S1604161-001	CollectionDate:	4/6/2016
ClientSample ID:	16-W653 Dup 1	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0832	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	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	04/22/2016 722	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/22/2016 722	MB

These results apply only to the samples tested.

#### **RL - Reporting Limit** С

Н

L

ND

S

Calculated Value

Analyzed by another laboratory

Not Detected at the Reporting Limit

Holding times for preparation or analysis exceeded

Spike Recovery outside accepted recovery limits

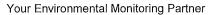
- в Analyte detected in the associated Method Blank
  - Е Value above quantitation range
- Analyte detected below quantitation limits J
- M O X Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions
- Matrix Effect

Qualifiers:

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 5





#### Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604161001
ProjectName:	201682-0832	WorkOrder:	S1604161
Lab ID:	S1604161-002	CollectionDate:	4/6/2016
ClientSample ID:	16-W654 Field Blank	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0832	FieldSampler:	
		Matrix:	Water
Comments			

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

These results apply only to the samples tested.

#### **RL - Reporting Limit**

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

Qualifiers:

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 2 of 5



#### Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604161001
ProjectName:	201682-0832	WorkOrder:	S1604161
Lab ID:	S1604161-003	CollectionDate:	4/6/2016 10:18:00 AM
<b>ClientSample ID:</b>	16-W655 MW13	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0832	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB	
Radium 228	0.0	pCi/L		1	Ga-Tech	04/22/2016 1324	MB	
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/22/2016 1324	MB	

These results apply only to the samples tested.

#### Qualifiers: в Analyte detected in the associated Method Blank

#### Е Value above quantitation range

- Analyte detected below quantitation limits J
- M O X Value exceeds Monthly Ave or MCL or is less than LCL.
- Outside the Range of Dilutions
- Matrix Effect

**RL - Reporting Limit** 

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

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 5



Sample Analysis Report

Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
Comments							
					Matr	ix:	Water
COC:	201682-0832				Field	Sampler:	
ClientSample ID:	16-W656 MW103				Date	Received:	4/12/2016 11:00:00 AM
Lab ID:	S1604161-004				Colle	ectionDate:	4/6/2016 12:30:00 PM
ProjectName:	201682-0832				Worl	(Order:	S1604161
	Bismarck, ND 58501				Керс	ort ID	31004101001
	MVTL Laboratories, In 2616 E Broadway Ave					Reported	4/29/2016 S1604161001

Radionuclides - Total						
Radium 226	0.5	pCi/L	0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-1.0	pCi/L	1	Ga-Tech	04/22/2016 1624	MB
Radium 228 Precision (±)	1.0	pCi/L		Ga-Tech	04/22/2016 1624	MB

These results apply only to the samples tested.

**RL - Reporting Limit** 

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

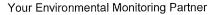
в

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 5





Sample Analysis Report

Company:MVTL Laboratories, Inc.Date Reported4/29/20162616 E Broadway Ave.Report ID\$1604161001Bismarck, ND 58501WorkOrder:\$1604161ProjectName:201682-0832WorkOrder:\$1604161Lab ID:\$1604161-005CollectionDate:4/6/2016 2:50:00 PMClientSample ID:16-W657 MW44RDateReceived:4/12/2016 11:00:00 AMCOC:201682-0832FieldSampler: Matrix:Water	Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
Company ProjectName:         201682-0832         Report ID         S1604161001           ProjectName:         201682-0832         WorkOrder:         S1604161           Lab ID:         S1604161-005         CollectionDate:         4/6/2016 2:50:00 PM           ClientSample ID:         16-W657 MW44R         DateReceived:         4/12/2016 11:00:00 AM           COC:         201682-0832         FieldSampler:         FieldSampler:	Comments							
Company         Interference         Report ID         S1604161001           2616 E Broadway Ave.         Bismarck, ND 58501         WorkOrder:         S1604161           ProjectName:         201682-0832         WorkOrder:         S1604161           Lab ID:         S1604161-005         CollectionDate:         4/6/2016 2:50:00 PM           ClientSample ID:         16-W657 MW44R         DateReceived:         4/12/2016 11:00:00 AM						Matrix	:	Water
Company:         Interference         State Report ID         State Report ID           2616 E Broadway Ave.         Bismarck, ND 58501         Report ID         State Report ID           ProjectName:         201682-0832         WorkOrder:         State Report ID           Lab ID:         State Report ID         State Report ID         State Report ID	COC:	201682-0832				FieldS	ampler:	
2616 E Broadway Ave.         Report ID         S1604161001           Bismarck, ND 58501         WorkOrder:         S1604161	ClientSample ID:	16-W657 MW44R				DateR	eceived:	4/12/2016 11:00:00 AM
2616 E Broadway Ave. Bismarck, ND 58501	Lab ID:	S1604161-005				Collec	tionDate:	4/6/2016 2:50:00 PM
2616 E Broadway Ave. <b>Report ID</b> S1604161001	ProjectName:	201682-0832				WorkC	Order:	S1604161
		*	•			Kepon		01004101001
	Company:							

-						
Radionuclides - Total						
Radium 226	0.3	pCi/L	0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-2.3	pCi/L	1	Ga-Tech	04/22/2016 1925	MB
Radium 228 Precision (±)	1.2	pCi/L		Ga-Tech	04/22/2016 1925	MB

These results apply only to the samples tested.

#### **RL - Reporting Limit**

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 5 of 5



Your Environmental Monitoring Partner

	ANA	LYTICAL QC SUMMARY F	REPO	RT			
ENT:	MVTL Laboratories, Inc.				4/29/201	6	
rk Order:	S1604161			Report ID:	S160416	\$1001	
ject:	201682-0832			Report ID.	0100410	51001	
Radium 22	8 by Ga/Tech	Sample Type MBLK		Units: pCi/L			
MB-	-336 (04/21/16 10:15)	RunNo: 133408	Prepl	Date: 04/14/16 14:00	Bat	chID: 11674	
	Analyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Qı
	Total Radium 228	ND	1				
	8 by Ga/Tech	Sample Type LCS		Units: pCi/L			
LCS	5-336 (04/21/16 13:16)	RunNo: 133408		Date: 04/14/16 14:00		chID: 11674	~
	Analyte	Result	RL	Spike Ref Samp	• %REC	% Rec Limits	Qu
	Total Radium 228	34	1	39.5	86.0	61.3 - 120	
	8 by Ga/Tech	Sample Type MS		Units: pCi/L			
MS-	-336 (04/21/16 19:18)	RunNo: 133408	PrepE	Date: 04/14/16 14:00	Bate	chID: 11674	
	Analyte	Result	RL.	Spike Ref Samp	%REC	% Rec Limits	Q
	Total Radium 228	29	1	39.5 ND	73.9	64.3 - 120	
Radium 22	8 by Ga/Tech	Sample Type MSD		Units: pCi/L			
MSI	D-336 (04/21/16 22:19)	RunNo: 133408	-	Date: 04/14/16 14:00		chID: 11674	
	Analyte	Result	RL	Conc %RPD	%REC	% RPD Limits	Q
	Total Radium 228	32	1	29 10.1	81.7	20	
Radium 22	6 in Water - Total	Sample Type MBLK		Units: pCi/L			
MB-	1597 (04/19/16 15:04)	RunNo: 133143	PrepD	Date: 04/14/16 0:00	Bate	chID: 11640	
	Analyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Q
	Radium 226	ND	0.2				
Radium 22	6 in Water - Total	Sample Type LCS		Units: pCi/L			
LCS	5-1597 (04/19/16 15:04)	RunNo: 133143		Date: 04/14/16 0:00		chID: 11640	
	Analyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Q
	Radium 226	4.9	0.2	5.54	88.3	67.1 - 122	
Radium 22	6 in Water - Total	Sample Type LCSD		Units: pCi/L			
LCS	D-1597 (04/19/16 15:04)	RunNo: 133143	PrepD	Date: 04/14/16 0:00	Bate	hlD: 11640	
	Analyte	Result	RL	Conc %RPD	%REC	% RPD Limits	Q
	Radium 226	5.7	0.2	4.9 15.9	104	20	
Radium 22	6 in Water - Total	Sample Type MS		Units: pCi/L			
S16	04125-002B MS (04/19/16 15:04)	RunNo: 133143	PrepD	Date: 04/14/16 0:00	Bate	chID: 11640	
	Analyte	Result	RL	Spike Ref Samp	%REC	% Rec Limits	Q

Qualifiers:	в	Analyte detected in the associated Method Blank	E	Value above quantitation range
	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

·

X Matrix Effect



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

# Chain of Custody Record

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

	Phone: (701) 2	258-9720									
	00) 279-6885	Fax: (701) 258-9724									201682-0832
Company Nam	e and Address:			Account #	ŧ;			•			Phone #:
											701-258-9720
		VTL		Contact:		_					Fax #:
		<u>Broadway</u> 3, ND 58501			Claud	lette	9				For faxed report check box
Billing Address	s (indicate if different		Name of S	sampler:						E-mail: <u>ccarroll@mvtl.com</u>	
Dining Address	s (mulcale il unieren	t from above):		Quote Nur							For e-mail report check box
	PO B	ox 249			niber						Date Submitted: 4/7/2016
		, MN 56073		Project Na	ame/Numbe	- 72		<u></u>			Purchase Order #:
	<u></u>					ж ж ж					BL5549
		Sample Information		••••••••••••••••••••••••••••••••••••••			В	ottle	Ту	pe	Analysis
5160416	1										
	L						3	g			
						p	Ň	erve	1		
IML Lab			Sample	Date	Time	eate	Ξ	Via	s Je	<u> </u>	
Number	MVTL Lab Number	Client Sample ID	Type	Sampled	1	Untreated	1000	VOC Vials Umpreserved	Glass Jar	Other	Analysis Required
-001	16-W653	Dup 1		4/6/2016							Radium226 & Radium228 on all
002	16-W654	Field Blank		4/6/2016					[		
003	<sup>-</sup> 16-W655	MW13		4/6/2016	1018						
204	<sup>-</sup> 16-W656	MW103		4/6/2016	1230						
5	. 16-W657	MW44R		4/6/2016	1450						
Comments: All	results must be rep	orted as a numerical value		1	<b></b>	L	.i	L	J	L	

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
C. Jackson	4/7/2016	1700		hothy Bris M	41216	1.1.Am	13.65
2.							



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

# **Chain of Custody Record**

Project	t Name:							Na	me o	of San	npler(s):			
MDU	Heskett	CCR Rad	iochem	2	nd Qtr 2016				Da	VIE	n N	iesw	dag	
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		<u>Carbon C</u> <u>Attn</u> : <u>Address</u> :	<u>ору</u> :				Wo	ork O	order I	Number:	81	2-0	832
	Samp	le Informat	ion				Bo	ottle <sup>-</sup>	Гуре	)	Fi	eld Para	ameters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HM	Som.				Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W653	Dup 1	6Apr16	NA	W		4					NA	NA	NA	
w654	Field Blank (FB)	6Apr16	NA	W		4					NA	NA	NA	
6655	MW13	6.April	1018	Gw		4					6.54	10379	6.91	
w654	nwi03	6Apr16	1230	GN		4					7.32	4953	6.62	
w657	MWYYR	6April6	1450	GN		4					7.93	9259	6.56	MDU CCR combined
-	,	,						_						RadChem
								-						
									$\square$					

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	Dann	walkinz	6Apr/6 1736	C. Jackson		7Apr 16 0800	ROJ 7. 26.9 01
2							Tm588
3				-			





### CASE NARRATIVE – AMENDED 26 MAY 2016 MVTL Lab Reference No/SDG: 201682-0855

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

MVTL Laboratory Identifications: Page 1 of 2 16-W680 through 16-W684

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

### I. RECEIPT

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

### II. HOLDING TIMES

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

### III. METHODS

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

### IV. ANALYSIS

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





#### CASE NARRATIVE – AMENDED 26 MAY 2016 G: 201682-0855

MVTL Lab Reference No/SDG:

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

MVTL Laboratory Identifications: Page 2 of 2 16-W680 through 16-W684

- For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
- For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
- One dissolved selenium matrix spike duplicate recovery within the batch was outside of the acceptable limits. Matrix spike recovery was within range and % RPD between matrix spike recovery and matrix spike duplicate recovery was within acceptable limits. High spike recovery was determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.
- Recoveries for one dissolved selenium matrix spike/matrix spike duplicate within the batch were outside of the acceptable limits. High spike recoveries were determined to be due to matrix. Data was accepted based on the acceptable recovery of the LCS. No further action was taken.
- REPORTING
  - Report for 16-W681 was amended on 25 May 2016 to add a qualifier on the total chromium result.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

landite Canrep

\_ DATE: 26 Mayle

Claudette Carroll - MVTL Bismarck Laboratory Manager

**MVTL** 

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER ACIL

#### Page: 1 of 5

Lab IDs: 16-W680 to 16-W	Work Order: 201682-0855																
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	RPD	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.001 < 0.001	0.1107 0.1092	111 109	75-125 75-125	0.1107 0.1092	0.1124 0.1080	112 108	1.5 1.1	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000	106	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	< 0.001 < 0.001 < 0.001	0.4036 0.4444 0.1066	101 111 107	75-125 75-125 75-125	0.4036 0.4444 0.1066	0.4256 0.4300 0.1077	106 108 108	5.3 3.3 1.0	20 20 20			< 0.001
Arsenic - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0030 0.0025	0.1124 0.1148	109 112	75-125 75-125	0.1124 0.1148	0.1164 0.1120	113 110	3.5 2.5	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	106	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0050 0.0021 < 0.002	0.4274 0.4266 0.1126	106 106 113	75-125 75-125 75-125	0.4274 0.4266 0.1126	0.4300 0.4150 0.1084	106 103 108	0.6 2.8 3.8	20 20 20			< 0.002
Barium - Dissolved mg/l	0.1000	103	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0070 0.0103	0.1062 0.1120	99 102	75-125 75-125	0.1062 0.1120	0.1078 0.1152	101 105	1.5 2.8	20 20	-		< 0.002
Barium - Total mg/l	0.1000	102	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0737 0.0119 0.0312	0.5010 0.4274 0.1278	107 104 97	75-125 75-125 75-125	0.5010 0.4274 0.1278	0.4866 0.4092 0.1342	103 99 103	2.9 4.4 4.9	20 20 20	-		< 0.002
Beryllium - Dissolved mg/l	0.1000	111	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005	0.1080 0.1060	108 106	75-125 75-125	0.1080 0.1060	0.1115 0.1052	112 105	3.2 0.8	20 20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000	103	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	< 0.0005 < 0.0005 < 0.0005		107 111 110	75-125 75-125 75-125	0.4272 0.4442 0.1105	0.4292 0.4302 0.1066	107 108 107	0.5 3.2 3.6	20 20 20			< 0.0005
Boron - Dissolved mg/l	0.40 0.40	100 100	85-115 85-115	0.300 0.300	16-W639 16-W684	1.76 1.03	1.99 1.28	77 83	75-125 75-125	1.99 1.28	2.00 1.31	80 93	0.5 2.3	20 20			<0.1 <0.1 <0.1 <0.1
Boron - Total mg/l	0.40	100	80-120	0.600	16-W680	0.39	0.96	95	75-125	0.96	0.97	97	1.0	20	-	-	< 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005	0.1028 0.1045	103 104	75-125 75-125	0.1028 0.1045	0.1046 0.1014	105 101	1.7 3.0	20 20	-	-	< 0.0005

# Quality Control Report

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Lab IDs: 16-W680 to 16-W											1 Martin State Sta	Work Order: 201682-0855						
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank	
Cadmium - Total mg/l	0.1000	102	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	< 0.0005 < 0.0005 < 0.0005	0.3976 0.4316 0.1041	99 108 104	75-125 75-125 75-125	0.3976 0.4316 0.1041	0.4128 0.4228 0.1042	103 106 104	3.8 2.1 0.1	20 20 20			< 0.0005	
Calcium - Dissolved mg/l	20.0	93	85-115	500	16-W651	479	895	83	75-125	895	900	84	0.6	20	-	-	<1 <1	
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	2000 500 500 100	16-M895 16-W683 16-W692 16-W707	2640 434 515 58.1	4420 910 995 152	89 95 96 94	75-125 75-125 75-125 75-125	910 995 152	965 995 154	106 96 96	5.9 0.0 1.3	20 20 20	-		<1 <1 <1 <1 <1	
Chloride mg/l	30.0	99	80-120	30.0	16-D1417	23.6	52.7	97	80-120	52.7	51.3	92	2.7	20	-	-	<1	
Chromium - Dissolved mg/l	0.1000	102	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0025 0.0053	0.1072 0.1080	105 103	75-125 75-125	0.1072 0.1080	0.1098 0.1095	107 104	2.4	20 20	-	-	< 0.002	
Chromium - Total mg/l	0.1000	100	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0087 < 0.002 0.0024	0.3984 0.3980 0.1042	97 100 102	75-125 75-125 75-125	0.3984 0.3980 0.1042	0.4090 0.3882 0.1030	100 97 101	2.6 2.5 1.2	20 20 20	-		< 0.002	
Cobalt - Dissolved mg/l	0.1000	99	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0025 < 0.002	0.1024 0.0987	100 99	75-125 75-125	0.1024 0.0987	0.1073 0.0980	105 98	4.7 0.7	20 20	-		< 0.002	
Cobalt - Total mg/l	0.1000	99	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0045 < 0.002 < 0.002	0.3924 0.4068 0.1021	97 102 102	75-125 75-125 75-125	0.3924 0.4068 0.1021	0.3966 0.3950 0.0983	98 99 98	1.1 2.9 3.8	20 20 20	-	-	< 0.002	
Fluoride mg/l	0.50 0.50	104 104	90-110 90-110	0.500 0.500	16-W681 16-W692	0.30 0.12	0.77 0.62	94 100	80-120 80-120	0.77 0.62	0.79 0.62	98 100	2.6 0.0	20 20	-		<0.1 <0.1 <0.1	
Lead - Dissolved mg/l	0.1000	100	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005	0.1015 0.1042	102 104	75-125 75-125	0.1015 0.1042	0.1042 0.1070	104 107	2.6	20 20		-	< 0.0005	

## **Quality Control Report**

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Lab IDs: 16-W680 to 16-W6	84	<u>P</u> 1	<u>oject:</u> CC	CR Grour	idwater/2nd Qt			1 Sc. 707 Selberrerore - Horong				Wo	rk Ord	er: 201682	2-0855		·····
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Lead - Total mg/l	0.1000	104	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0019 < 0.0005 < 0.0005	0.4072 0.4032 0.0960	101 101 96	75-125 75-125 75-125	0.4072 0.4032 0.0960	0.4008 0.3936 0.0988	100 98 99	1.6 2.4 2.9	20 20 20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.40 0.40	110 108	85-115 85-115	0.400 2.00	16-W683 16-W695	0.33 1.10	0.77 3.36	110 113	75-125 75-125	0.77 3.36	0.77 3.28	110 109	0.0 2.4	20 20	-		< 0.1 < 0.1 < 0.1 < 0.1
Lithium - Total mg/l	0.40 0.40	115 110	85-115 85-115	0.400 2.00 2.00 0.400	16-W639 16-W648 16-W680 16-W692	0.10 1.44 1.02 0.22	0.56 3.58 3.34 0.65	115 107 116 108	75-125 75-125 75-125 75-125 75-125	0.56 3.58 3.34 0.65	0.54 3.56 3.25 0.64	110 106 112 105	3.6 0.6 2.7 1.6	20 20 20 20 20		-	< 0.1 < 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	102	80-120	500	16-W651	435	880	89	75-125	880	885	90	0.6	20		-	<1 <1
Magnesium - Total mg/l	20.0 20.0	112 112	80-120 80-120	2000 500 500 100	16-M895 16-W683 16-W692 16-W707	< 20 164 230 80.8	1970 655 725 174	98 98 99 93	75-125 75-125 75-125 75-125	655 725 174	690 725 176	105 99 95	5.2 0.0 1.1	20 20 20			<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1<1
Mercury - Dissolved mg/l	0.0020 0.0020	90 105	85-115 85-115	0.002 0.002	16-W683 16-W702	<0.0002 <0.0002	0.0018 0.0019	90 95	70-130 70-130	0.0018 0.0019	0.0018 0.0020	90 100	0.0	20 20	-	-	< 0.0002 < 0.0002
Mercury - Total mg/l	0.0020	95	85-115	0.002	16-W690	< 0.0002	0.0018	90	70-130	0.0018	0.0017	85	5.7	20	-		< 0.0002
Molybdenum - Dissolved mg/l	0.1000	89	80-120	0.100 0.100	16-W694QC 16-W695QC	<0.002 <0.002	0.0948 0.0942	95 94	75-125 75-125	0.0948 0.0942	0.1016 0.0996	102 100	6.9 5.6	20 20	-		< 0.002
Molybdenum - Total mg/l	0.1000	89	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0067 < 0.002 0.0037	0.3236 0.3480 0.1004	79 87 97	75-125 75-125 75-125	0.3236 0.3480 0.1004	0.3486 0.3454 0.1060	85 86 102	7.4 0.7 5.4	20 20 20		-	< 0.002
pH units	-	-	-	-		-	-	-	-	6.8	6.9	-	1.5	20	-	-	-
Potassium - Dissolved mg/1	10.0	89	85-115	100	16-W651	18.8	113	94	75-125	113	114	95	0.9	20	-		<1 <1

# Quality Control Report

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				a substantia and	idwater/2nd Qt	Matrix		Matrix	Matrix	MSD/		a anterolean ana		er: 201682				
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Spike Orig Result	Matrix Spike Result	Spike Rec %	Spike % Rec Limits	Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank	
Potassium - Total mg/l	10.0 10.0	105 105	80-120 80-120	400 100 100	16-M895 16-W683 16-W692	736 11.8 12.0	1140 110 112	101 98 100	75-125 75-125 75-125	110 112 39.6	116 113 40.1	104 101	5.3 0.9 1.3	20 20 20	-		<1 <1 <1 <1 <1	
Selenium - Dissolved mg/l	0.1000	114	80-120	0.100 0.100	16-W694 16-W695	0.1584 0.1737	0.2800 0.3032	122 130	75-125 75-125	0.2800 0.3032	0.2861 0.3022	128 128	2.2 0.3	20 20	-	-	< 0.002	
Selenium - Total mg/l	0.1000	119	80-120	0.400 0.400 0.100	16-W680 16-W692 16-W704	0.0066 0.1326 < 0.002	0.4782 0.6122 0.1198	118 120 120	75-125 75-125 75-125	0.4782 0.6122 0.1198	0.4790 0.6064 0.1186	118 118 119	0.2 1.0 1.0	20 20 20			< 0.002	
Sodium - Dissolved mg/l	20.0	106	85-115	500	16-W651	258	705	89	75-125	705	705	89	0.0	20		-	<1 <1	
Sodium - Total mg/l	20.0 20.0	110 109	80-120 80-120	2000 500 500 500	16-M895 16-W683 16-W692 16-W707	4560 555 550 695	6360 1030 1040 1110	90 95 98 83	75-125 75-125 75-125 75-125	1030 1040 1110	1060 1020 1140	101 94 89	2.9 1.9 2.7	20 20 20			<1 <1 <1 <1 <1	
Sulfate mg/l	100	103	90-110	100	16-W649	< 5	100	100	80-120	100	99.9	100	0.1	20	-	-	< 5	
Thallium - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005		105 106	75-125 75-125	0.1048 0.1056	0.1073 0.1067	107 107	2.4 1.0	20 20	-	-	< 0.0005	
Thallium - Total mg/l	0.1000	101	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	< 0.0005 < 0.0005 < 0.0005	0.3724 0.3782 0.0968	93 95 97	75-125 75-125 75-125	0.3724 0.3782 0.0968	0.3758 0.3814 0.0980	94 95 98	0.9 0.8 1.2	20 20 20			< 0.0005	
Total Alkalinity mg/l CaCO3	410 410 410 410	100 97 91 97	90-110 90-110 90-110 90-110	410 410	16-W690 16-W682	< 20 529	396 918	97 95	80-120 80-120	396 918	393 912	96 93	0.8 0.7	20 20	97 102	80-120 80-120	<20 <20 <20 <20 <20 <20	
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	-	7750	7640	-	1.4	20	-	-	< 5	

## **Quality Control Report**

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Lab IDs: 16-W680 to 16-W6	584	Pr	oject: CC	CR Grour	idwater/2nd Q						Work Order: 201682-0855						
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Rec	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %		MSD/ Dup RPD Limit (<)	Rec	1 054 PF005 PE34 00 070 200	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-			-	351 19	349 19		0.6	20 20	-	-	< 1

**Ouality Control Report** 

Approved by: C. Caniel Z Mey 16



Bismarck ND 58501

400 N. 4th

Sample Description: MW105 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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

PO #: 160249 OP

#### Temp at Receipt: 2.5C ROI

As Received Method Method Date Result RL Reference Analyzed Analyst Metal Digestion EPA 200.2 KMD 8 Apr 16 11 Apr 16 17:00 pH \* 6.8 units N/A SM4500 H+ B ML Total Suspended Solids 108 mg/l 1 T3765-85 11 Apr 16 10:48 MT. pH - Field 6.83 units NA SM 4500 H+ B 7 Apr 16 11:30 JSM Temperature - Field NA SM 2550B 7 Apr 16 11:30 JSM 6.98 Degrees C Total Alkalinity 437 mg/l CaCO3 20 SM2320-B 11 Apr 16 17:00 ML Conductivity - Field EPA 120.1 7 Apr 16 11:30 JSM 6972 umhos/cm 1 SM4500-F-C Fluoride 0.26 mg/l 0.10 10 Apr 16 9:30 CC Sulfate 4450 5.00 ASTM D516-07 14 Apr 16 9:51 EMS mg/l SM4500-C1-E 15 Apr 16 9:24 Chloride 348 mg/l 1.0 EMS Mercury - Total Mercury - Dissolved < 0.0002 0.0002 EPA 245.1 12 Apr 16 12:35 EV mg/l 12 Apr 16 13:10 EPA 245.1 EV 0.0002 < 0.0002 mg/l Total Dissolved Solids 6680 mg/l 5 I1750-85 12 Apr 16 11:10 MT. Calcium - Total 364 mg/l 1.0 6010 19 Apr 16 9:54 SZ. Magnesium - Total 675 mg/l 1.0 6010 19 Apr 16 9:54 SZ 19 Apr 16 9:54 SZ Sodium - Total mg/l 1.0 6010 710 19 Apr 16 9:54 SZ Potassium - Total 18.2 mg/l 1.0 6010 Lithium - Total 1.02 mg/l 0.10 6010 15 Apr 16 10:00 KMD 0.10 6010 12 Apr 16 14:04 KMD Boron - Total 0.39 mg/l mg/l 1.0 6010 8 Apr 16 15:05 KMD Calcium - Dissolved 347 KMD 6010 8 Apr 16 15:05 Magnesium - Dissolved 710 mg/l 1.0 8 Apr 16 15:05 KMD Sodium - Dissolved 705 mg/l 1.0 6010 Potassium - Dissolved mg/l 1.0 6010 8 Apr 16 15:05 KMD 18.4 6010 15 Apr 16 11:00 KMD Lithium - Dissolved 1.06 mg/l 0.10 Boron - Dissolved mg/l 6010 12 Apr 16 16:04 KMD 0.36 0.10 Antimony - Total Arsenic - Total < 0.001 0.0010 6020 10 Apr 16 19:45 CC mg/l < 0.01 mg/l 0.0020 6020 10 Apr 16 19:45 CC mg/l Barium - Total 0.0737 0.0020 6020 10 Apr 16 19:45 CC 10 Apr 16 19:45 CC Beryllium - Total < 0.0005 mg/l 0.0005 6020 Cadmium - Total < 0.0005 0.0005 6020 10 Apr 16 19:45 CC mg/l 0.0020 CC 6020 10 Apr 16 19:45 Chromium - Total 0.0087 mg/l Cobalt - Total 0.0045 mg/l 0.0020 6020 10 Apr 16 19:45 CC Lead - Total 0.0019 mg/l 0.0005 6020 10 Apr 16 19:45 CC Molybdenum - Total 0.0067 mg/l 0.0020 6020 10 Apr 16 19:45 CC Selenium - Total 10 Apr 16 16:29 CC mg/l 0.0020 6020 0.0066 Thallium - Total CC 0.0005 10 Apr 16 19:45 < 0.0005 mg/l 6020 Antimony - Dissolved < 0.001 0.0010 6020 10 Apr 16 1:00 CC mg/l

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW105 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analy	zed		Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Ap	r 16	1:00	CC
Barium - Dissolved	0.0221	mg/l	0.0020	6020	10 A <u>r</u>	r 16	1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 16	1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 16	1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Ap	r 16	1:00	CC
Cobalt - Dissolved	0.0029	mg/l	0.0020	6020	10 Ap	r 16	1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 16	1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Ap	r 16	1:00	CC
Selenium - Dissolved	0.0067	mg/l	0.0020	6020	10 Ap	r 16	17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 16	1:00	CC

\* Holding time exceeded

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

Approved by:

1C ZMay16 Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 2

Amended 25May16 (Flag total Cr)

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

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW80R Sample Site: MDU Heskett Report Date: 2 May 16 Lab Number: 16-W681 Work Order #:82-0855 Account #: 002800 Date Sampled: 7 Apr 16 14:55 Date Received: 8 Apr 16 8:00 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
На	* 7.4	units	N/A	SM4500 H+ B	11 Apr 16 17:00	ML
Total Suspended Solids	18	mg/l	1	13765-85	11 Apr 16 10:48	ML
pH - Field	7.18	units	NA	SM 4500 H+ B	7 Apr 16 14:55	JSM
Temperature - Field	8.10	Degrees C	NA	SM 2550B	7 Apr 16 14:55	JSM
Total Alkalinity	522	mg/l CaCO3	20	SM2320-B	11 Apr 16 17:00	ML
Conductivity - Field	5732	umhos/cm	1	EPA 120.1	7 Apr 16 14:55	JSM
Fluoride	0.30	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	3070	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	161	mg/l	1.0	SM4500-C1-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	5360	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	291	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	545	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	590	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.76	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	0.32	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	254	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	498	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	548	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	4.2	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.74	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	0.35	mg/l	0.10	6010	12 Apr 16 16:04	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0143	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.0570	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	0.0008	mg/l	0.0005	6020	10 Apr 16 19:45	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 2

Amended 25May16 (Flag total Cr)

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

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW80R Sample Site: MDU Heskett Report Date: 2 May 16 Lab Number: 16-W681 Work Order #:82-0855 Account #: 002800 Date Sampled: 7 Apr 16 14:55 Date Received: 8 Apr 16 8:00 Sampled By: MVTL Field Services

#### PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

\* Holding time exceeded

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

Approved by:

CC 26 Mey 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW102 Sample Site: MDU Heskett

	As Receive	d	Method	Method Reference	Date Analyzed	Analyst
	Result		RL	Reference	Anaryzeu	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 6.9	units	N/A	SM4500 H+ B	11 Apr 16 17:00	ML
Total Suspended Solids	14	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.81	units	NA	SM 4500 H+ B	7 Apr 16 9:15	JSM
Temperature - Field	7.41	Degrees C	NA	SM 2550B	7 Apr 16 9:15	JSM
Total Alkalinity	529	mg/l CaCO3	20	SM2320-B	11 Apr 16 17:00	ML
Conductivity - Field	8739	umhos/cm	1	EPA 120.1	7 Apr 16 9:15	JSM
Fluoride	0.20	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	5440	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	7.0	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV
Total Dissolved Solids	7410	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	462	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	372	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	1470	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	19.0	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.84	mg/l	0.10	6010	15 Apr 16 10:00	KMD
Boron - Total	1.18	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	414	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	360	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	1340	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	19.2	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.80	mg/l	0.10	6010	15 Apr 16 11:00	KMD
Boron - Dissolved	1.12	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0319	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	0.0054	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW102

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

**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: 2 of 2

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

PO #: 160249 OP

Sample Site: MDU Heske	ett			Temp at Re	eceipt: 2.5C ROI	
	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Barium - Dissolved	0.0265	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Chromium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Cobalt - Dissolved	0.0042	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
Molybdenum - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16 17:42	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC

\* Holding time exceeded

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

Approved by:

(c 2 May 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW70 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

bampie biee. Mbe nebkeee			Temp de Receipe. 2.56 Roi					
		As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst	
	Metal Digestion				EPA 200.2	8 Apr 16	KMD	
		7.2	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC	
	Total Suspended Solids	351	mg/l	1	I3765-85	11 Apr 16 10:48	ML	
	pH - Field	7.06	units	NA	SM 4500 H+ B	7 Apr 16 12:44	JSM	
	Temperature - Field	7.74	Degrees C	NA	SM 2550B	7 Apr 16 12:44	JSM	
	Total Alkalinity	427	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC	
	Conductivity - Field	4370	umhos/cm	1	EPA 120.1	7 Apr 16 12:44	JSM	
	Fluoride	0.36	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC	
	Sulfate	2380	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS	
	Chloride	32.3	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS	
	Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV	
	Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 13:10	EV	
	Total Dissolved Solids	3630	mg/l	5	I1750-85	12 Apr 16 11:10	ML	
	Calcium - Total	434	mg/l	1.0	6010	19 Apr 16 9:54	SZ	
	Magnesium - Total	164	mg/l	1.0	6010	19 Apr 16 9:54	SZ	
	Sodium - Total	555	mg/l	1.0	6010	19 Apr 16 9:54	SZ	
	Potassium - Total	11.8	mg/l	1.0	6010	19 Apr 16 9:54	SZ	
	Lithium - Total	0.33	mg/l	0.10	6010	15 Apr 16 12:00	KMD	
	Boron - Total	0.38	mg/l	0.10	6010	12 Apr 16 14:04	KMD	
	Calcium - Dissolved	339	mg/l	1.0	6010	8 Apr 16 15:05	KMD	
	Magnesium - Dissolved	152	mg/l	1.0	6010	8 Apr 16 15:05	KMD	
	Sodium - Dissolved	535	mg/l	1.0	6010	8 Apr 16 15:05	KMD	
	Potassium - Dissolved	11.4	mg/l	1.0	6010	8 Apr 16 15:05	KMD	
	Lithium - Dissolved	0.33	mg/l	0.10	6010	15 Apr 16 11:00	KMD	
	Boron - Dissolved	0.35	mg/l	0.10	6010	12 Apr 16 16:30	KMD	
	Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC	
	Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC	
	Barium - Total	0.1110	mg/l	0.0020	6020	10 Apr 16 19:45	CC	
	Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC	
	Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC	
	Chromium - Total	0.0091	mg/l	0.0020	6020	10 Apr 16 19:45	CC	
	Cobalt - Total	0.0030	mg/l	0.0020	6020	10 Apr 16 19:45	CC	
	Lead - Total	0.0035	mg/l	0.0005	6020	10 Apr 16 19:45	CC	
	Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC	
	Selenium - Total	0.0580	mg/l	0.0020	6020	10 Apr 16 16:29	CC	
	Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC	
	Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC	

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW70 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

\* Holding time exceeded

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

CC May 16 Clauditte Approved by: K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW101 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 6.8	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	7	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.74	units	NA	SM 4500 H+ B	7 Apr 16 15:19	JSM
Temperature - Field	8.88	Degrees C	NA	SM 2550B	7 Apr 16 15:19	JSM
Total Alkalinity	443	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Conductivity - Field	4895	umhos/cm	1	EPA 120.1	7 Apr 16 15:19	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	2720	mg/l	5.00	ASTM D516-07	14 Apr 16 9:51	EMS
Chloride	17.8	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	4350	mg/l	5	I1750-85	12 Apr 16 11:10	ML
Calcium - Total	369	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	278	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	610	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	20.4	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.60	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	1.04	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	316	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Magnesium - Dissolved	262	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Sodium - Dissolved	565	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Potassium - Dissolved	18.7	mg/l	1.0	6010	8 Apr 16 15:05	KMD
Lithium - Dissolved	0.61	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	1.03	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0236	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW101 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

\* Holding time exceeded

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

Approved by:

1C 2 May 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

		calibration worksheet	,				
Site: MO	M Heskett	Technician: _	Darren Nieswaas				
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056				
	Pre Site Calibr	ation	Post Site Check				
Date: 6 Anr 1	16 <u>Time: 0748</u>		Time: 1730				
pH	Temp ℃ Pre Cal Post Cal	mv Range +/- Post Cal Range mv 50	<b>pH</b> Temp °C Reading				
Buffer 7	21,61 7.04 7.00	6.95-7.05 -22,3 0+/-50	Buffer 7 19,94 6,99				
Buffer 10	20,87 10,00 10,00	9.95-10.05 <u>- 200, 4</u> -180 +/- 50					
Conductivity		ردر کے Check	Conductivity				
/ 2_890 Buffer <del>10000</del>	21.32 12934 12906	$\pm 10\%$ Buffer 5000 $1414$	1402				
ORP							
231 mV @ 25C	7,52 256,4 257.0	±10 mV					
DO		Barometric Pressure (mm Hg)					
71111/2	18.41 8.88 9.27	mg/L 715,4					
Date: 7 BANI	<u>16</u> <u>Time:</u> 0725		Time: 1638				
рН	Temp °C Pre Cal Post Cal	mv Range +/- Post Cal Range 50	pHTemp °CReading				
Buffer 7	20.34 7.00 7.00	6.95-7.05 - <u>22.0</u> 0 +/- 50	Buffer 7 18,36 6.99				
Buffer 10	20.30 10.00 10.00	9.95-10.05 -200,7 -180 +/- 50					
Conductivity	10102	JCCA 1413 Check	Conductivity				
Buffer <del>10000</del> -	19.94 12940 12893	±10% Buffer <del>500</del> 0 -2-50 1404	Buffer 5000 19,33 1399				
ORP		1 April 12 Dr	ICA 1413				
231 mV @ 25C	5,91 257,4 257,	±10 mV					
DO		Barometric Pressure (mm Hg)					
	15.85 10.04 9.33	mg/L 71517					

# M/TL Calibration Workshoot

\*



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

### Sampling Personnel:

Jeverny Huy

# **Field Datasheet**

### Water Level

Company:

MDU Heskett - Ash Site

F	1	<u> </u>								
Well ID	Date	Time	Depth to Water	Well Depth	Casing Diameter	Well Locked	Well Labeled	Well Strait	Grount Seal Intact	Comments
MW 1-90	7 Ap- 16	1551	11.37	17.02	2"	Yes / No	Yesy No	Yes/ No	Yes / No <-Not Visable.	
MW2	7, 1, 16	1546	36,75	63.70	2"	Yes /No>	Yes PNo	(Tes No	Yes / No	
MW4B	74-16	1602	18,45	26.15	2"	Yes / 🕼	Yest No	Yes:/ No	Yes / No Not Visable	
MW8	7.40,16	1557	17.07	17,0= 28,02	2"	Yes / Ma	Xes/No	Yes'/No	Yes / No	
				7.A.16	2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	
					2"	Yes / No	Yes / No	Yes / No	Yes / No Not Visable	



**Groundwater Assessment** 

Company:	MDU Heskett		
Event:	2nd Qtr 2016		-^^
Sample ID:	MWIOS	4	
Sampling Personal:	Joven player		
	FAOrlb	-	
	l		

Field Measurements

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity		mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1120	6.85	6918	6.83	4.86	140.2	52.3	13,59	500,0	Slighthy Turbid Slighthy Turbid Slighthy Turbid
12	1125	6.96	6956	6.83	4.83	139,5	56.2	13.60	500,0	Slightly Tubid
13	1130	6.9B	6972	6,83	4.80	138.8	56.8	13.60	500,0	Slightly Turliel
14										-
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
Stabilized	Yes	No		I	1	т	otal Volume	e Removed	10.000	mL

Comments:



**Groundwater Assessment** 

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	MW105	•
Sampling Personal:	Jeven Ney-	

4 - 1 Liter Nitric

Phone: (701) 258-9720

Weather Conditions:		Temp:	45 "	F	Wind:	N @ 10	-15		Precip:	Sunr	y / Partly C	loudy (Clo	Jdy
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	(Nō)				Purgin	g Method:	Blad	der		Cor	ntrol Setting	S
Well Labeled?	Nes	No				Samplin	g Method:	Blad	der		Purge:	4	sec.
Casing Straight?	Yes	No				Dedicate	d Equip?:	Yes	No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Vis	sible		Duplicate \$	Sample?:	Yes	(Nò)		PSI:	20	
Repairs Necessary:						Duplicate S	ample ID:	•			Pumping Ra	ate: <u>/00</u>	mL/min
	Diameter:		2"					•		• • • • • • • • • • • • • • • • • • •			
Water Level Befo			13,37	ft		Pu	urge Date:	7 Air 1	6	Time Purg	ing Began:	0950	a∰/pm
	/ell Depth:	-	32,39	ft		Well Pu	rged Dry?	Yes	No	Time F	Purged Dry:	······································	am/pm
	Il Volume:		11.7	liters		Sar	nple Date:	FAOUL	2	Time or	f Sampling:	1130	am/pm
Depth to Top	o of Pump:	2	29.50	ft									
Water Level Afte			13.53	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			

List:

### **Field Measurements**

Electric Water Level Indicator

i icia measaremente												
zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:			
ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.			
Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft					
1000	693	5050	6.93	4,73	184.7	82,9	13.52	1000.0	Slightly Turkid			
			6.90	4.89	182.4	72.8	13,57	1000.0	Slightly Turkid			
	and the second se	5669	6.89	5,00	165.5	63.6	13,52	1000,0	Slightly Turkid			
1030		6056		5,08	155,8	63.6	13,57	1000,0	Slightly Turked			
1040	and the second se	6305		4.83	144,4	57.7	13.57	1000,0	Slightly Turkid			
1050		6538		4,94	143.2	60.4	13.57	1000.0	Slightly Turbed			
1100				4,91	142.3	63,0		1000.0	Slightly Turbid			
		6791	6.84	4.90	142.0	48.6	13.58	500.0	Slightly Turbid			
1110		6821	6.84	4.67	141.8	56.5	13.58	500.0	Slightly Turbed			
1115				4.29	140.9	58.8	13.59	\$00,0	Slightly Turbiel			
	ecutive) Time [000 1010 1020 10	(°C)           Time $1000$ $6.93$ $1010$ $7.10$ $1020$ $7.17$ $1030$ $7.19$ $1040$ $7.09$ $1050$ $6.977$ $100$ $6.84$ $1100$ $6.84$ $1105$ $6.86$ $1110$ $6.75$	(°C)         Cond.           Time $\pm 5\%$ 1000 $6.93$ $5050$ 1010 $7.10$ $54444$ 1020 $7.19$ $6.056$ 1030 $7.19$ $6.056$ 1040 $7.09$ $6305$ 1050 $6.977$ $6536$ 1050 $6.977$ $6536$ 1100 $6.84$ $6697$ 1105 $6.86$ $6791$ 1110 $6.75$ $6821$	(°C)         Cond.         pH           Time $\pm 5\%$ $\pm 0.1$ 1000 $6.93$ $5050$ $6.93$ 1010 $7.10$ $5444$ $6.90$ 1020 $7.10$ $5444$ $6.90$ 1030 $7.10$ $5444$ $6.90$ 1030 $7.10$ $5444$ $6.90$ 1030 $7.10$ $5444$ $6.89$ 1030 $7.10$ $6.054$ $6.89$ 1040 $7.09$ $6305$ $6.89$ 1050 $6.97$ $6538$ $6.84$ 1100 $b.84$ $b697$ $b.83$ 1100 $b.84$ $b621$ $b.84$ 1110 $6.75$ $b821$ $b.84$	Zation(°C)Cond.pH(mg/L)Time $\pm 5\%$ $\pm 0.1$ $\pm 10\%$ $1000$ $6.93$ $5050$ $6.93$ $4.73$ $1010$ $7.10$ $5444$ $6.90$ $4.89$ $1020$ $7.17$ $5669$ $6.89$ $5.00$ $1030$ $7.19$ $6056$ $6.89$ $5.00$ $1030$ $7.19$ $6056$ $6.89$ $4.83$ $1040$ $7.09$ $6305$ $6.89$ $4.83$ $1050$ $6.97$ $6536$ $6.84$ $4.94$ $1100$ $6.84$ $6697$ $6.83$ $4.91$ $1105$ $6.86$ $6791$ $6.64$ $4.90$ $1110$ $6.75$ $6821$ $6.64$ $4.87$	ZationI offipCond.pH(mg/L)(mV)rime $\pm 5\%$ $\pm 0.1$ $\pm 10\%$ $\pm 20 \text{ mV}$ $1000$ $6.93$ $5050$ $6.93$ $4.73$ $184.7$ $1010$ $7.10$ $54444$ $6.90$ $4.89$ $182.4$ $1020$ $7.17$ $5689$ $6.89$ $5.00$ $165.5$ $1030$ $7.19$ $Co56$ $6.87$ $5.00$ $155.8$ $1040$ $7.09$ $6305$ $6.89$ $4.93$ $144.4$ $1050$ $6.97$ $6538$ $6.84$ $4.94$ $143.2$ $1100$ $6.84$ $6791$ $6.84$ $4.90$ $142.3$ $1105$ $6.86$ $6791$ $6.84$ $4.90$ $142.0$ $1110$ $6.755$ $6821$ $6.84$ $4.90$ $147.0$	ZationrompCond.pH(mg/L)(mV)(NTU)Time $\pm 5\%$ $\pm 0.1$ $\pm 10\%$ $\pm 20 \text{ mV}$ $\pm 10\%$ $1000$ $6.93$ $5050$ $6.93$ $4.73$ $184.7$ $82.9$ $1010$ $7.10$ $5444$ $6.90$ $4.89$ $182.4$ $72.6$ $1020$ $7.17$ $5669$ $6.89$ $5.00$ $165.5$ $63.6$ $1030$ $7.19$ $6056$ $6.89$ $5.00$ $165.5$ $63.6$ $1030$ $7.19$ $6056$ $6.87$ $5.06$ $155.6$ $63.6$ $1040$ $7.09$ $6305$ $6.89$ $4.83$ $144.4$ $57.7$ $1050$ $6.97$ $6536$ $6.84$ $4.94$ $143.2$ $60.4$ $1100$ $6.64$ $6697$ $6.83$ $4.91$ $142.3$ $63.0$ $1105$ $6.86$ $6791$ $6.84$ $4.90$ $142.0$ $46.6$ $1110$ $6.75$ $6821$ $6.64$ $4.90$ $142.0$ $46.6$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	zationremipopec.pH(mg/L)(mV)(NTU)Level (ft)Removedrime $\pm 5\%$ $\pm 0.1$ $\pm 10\%$ $\pm 20 \text{ mV}$ $\pm 10\%$ $0.25 \text{ ft}$ $1000$ $6.93$ $5050$ $6.93$ $4.73$ $184.7$ $82.9$ $13.52$ $1000.0$ $1010$ $7.10$ $54444$ $6.90$ $4.89$ $182.4$ $72.6$ $13.57$ $1000.0$ $1020$ $7.17$ $5689$ $6.89$ $5.00$ $165.5$ $63.6$ $13.57$ $1000.0$ $1030$ $7.19$ $6056$ $6.89$ $5.00$ $155.6$ $63.6$ $13.57$ $1000.0$ $1030$ $7.19$ $6056$ $6.89$ $5.00$ $155.6$ $63.6$ $13.57$ $1000.0$ $1040$ $7.09$ $6305$ $6.89$ $4.83$ $144.4$ $57.7$ $13.57$ $1000.0$ $1050$ $6.97$ $6305$ $6.89$ $4.94$ $143.22$ $60.44$ $13.57$ $1000.0$ $1000$ $6.84$ $6.83$ $4.91$ $142.2$ $60.4$ $13.57$ $1000.0$ $1100$ $6.84$ $6697$ $6.83$ $4.91$ $142.3$ $63.0$ $13.58$ $500.0$ $1100$ $6.86$ $6791$ $6.84$ $4.90$ $147.0$ $46.6$ $13.58$ $500.0$ $1100$ $6.75$ $6821$ $6.84$ $4.90$ $147.0$ $46.6$ $13.58$ $500.0$ $1100$ $6.75$ $6821$ $6.84$ $4.90$ $147.0$ $46.6$ $13.58$ $500.0$			

Stabilized. Yes No

Measurement Method:

Total Volume Removed: <u>8</u>5*c*の, o\_mL

500 mL Nitric (filtered)

Comments:

Continued on next page



Phone: (701) 258-9720

**Field Datasheet** 

**Groundwater Assessment** 

Company:	MDU Heskett		·
Event:	2nd Qtr 2016	ĸ.	n.*
Sample ID:	MWBOR		
Sampling Personal:	Jerenny obyer		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	7 Apr 16		
	L		

### Field Measurements

	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1430	E.Cl	5744	7,19	4.40	89,7	6.37	14.87	500,0	Clear
12	1435	8,00	5742	7.19	4.39	89.0	5.40	14.87	500,0	Clear
13	1440	7.95	5738	7,19	4.35	<i>8</i> E.3	4.94	14.68	500.0	Clean
14	1445	8.07	5740	7.18	4.45	88.6	3,44	14,88	500.0	Clear
15	1450	Ë.22	5738	7,19	4,37	68.4	3.60	14,88	500.0	Clear
16	1455	8,10	5732	7.18	4.34	87.8	3,33	14.88	500.0	Clear
17										
18										
19										
20										
21										
22										na da makeura anticipana anticipana anticipana anticipana anticipana anticipana anticipana anticipana anticipan Anticipana anticipana anticipana anticipana anticipana anticipana anticipana anticipana anticipana anticipana an
23										
24										
25										
26										
27										
28										
29									<u>`.</u>	:
30										
tabilized:	Yes	No	-			Т	otal Volume	Removed:	13,000.0	mL

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2nd Qtr 2016
Sample ID:	MW80R
Sampling Personal:	Scremy Almar
·	

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Weather Conditions:		Temp:	<u>45°</u>	F	Wind:	NOI	2-15		Precip	: Sun	ny / Partly C	loudy / Clo	udy)
	Well Info	rmation						Sa					
Well Locked?	Yes	NO				Purg	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	Yes>	No				Sampl	ing Method:	Blac	lder	]	Purge:	4	sec
Casing Straight?	Kes	No				Dedica	ted Equip?:	Yes	(NO)	]	Recover:	56	sec
Grout Seal Intact?	Yes	No	Not Vis	sible		Duplicate	Sample?:	Yes	(No)		PSI:	20	
Repairs Necessary:	-					Duplicate	Sample ID:				Pumping R	ate: /cO	mL/min
Casing	Diameter:		2"							_			
Water Level Befo	ore Purge:	l	14.69	ft			Purge Date:	7 April	°	Time Purg	ging Began:	1245	am/gm
Total W	/ell Depth:	2	30,10	ft		Well F	urged Dry?	Yes	(No)	Time F	Purged Dry:		am/pm
We	II Volume:		9.5	liters		Sa	ample Date:	7 April	6	Time o	f Sampling:	1455	am/pm
Depth to Top	o of Pump:	2	27.05	ft									
Water Level After	er Sample:	1	4.87	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric \	Nater Level II	ndicator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	iter Nitric			

**Field Measurements** 

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	1255	7,65	5737	7.20	6,48	ાવન,ન	80,3	14,73	1000,D	Slightly Turkid (ST)
2	1305	7.67	5723	7.20	5.65	134.8	59.5	14,80	1000.0	ST '
3	1315	7.68	5721	7.19	5.25	13013	112.0	14.85	1000,0	St
4	1325	7.65	5720	7,19	4.98	127.7	68.5	14.86	1000.0	SF
5	1335	7.68	5717	7,19	4.85	125,1	74.3	14.86	1000, O	st
6	1345	7.64	5711	7,19	4,70	114.4	43.3	14,86	1000,0	ST
7	1355	7.77	5745	7,19	4.62	101.6	25.5	14.87	1000.0	ST
8	1405	7.75	5749	7,19	4.52	97.0	16.6	14.86	1000.0	ST
9	1415	7.78	5744	7,19	4,47.	94.3	12.9	14.87	1000,0	ST
10	1425	7:97	5750	7,19	4.43	90.1	9,74	14.87	1000,0	Clear
01 1 11 1	Vee	<b>b</b> 1_						-		

Stabilized: Yes No - 7.416

Total Volume Removed: 10,000.0 mL

Comments:

Continued on next sheet



1

**Groundwater Assessment** 

Phone: (701) 258-9720

Event:	2nd Qtr 20	16
Sample ID:	•	MW102
Sampling Personal	: Darren	Nieswaag
	Ψ	/

			~ <i>t</i>										
Weather Conditions:		Temp:	36	۴F	Wind:	NW	24		Precip	: Sun	ny / Partly (	Cloudy / Cl	oudy
V	Vell Info	ormation					/	S	ampling I				
Well Locked?	Yes	No				Purgi	ing Method:		dder		1	ontrol Settin	as
Well Labeled?	Yes	No				Sampli	ing Method:	Bla	dder	1	Purge:		sec.
Casing Straight?	Mes	No				Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	des	No	Not V	isible		Duplicate	e Sample?:	Yes	NO		PSI:	15-20	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: [ 00	mL/min
Casing E	Diameter:		2"							1	<u> </u>		
Water Level Befor	e Purge:	17	,64	ft		F	Purge Date:	TAN	16	Time Purc	ing Began:	1070	am/pm
Total We	ell Depth:	1APT 44-33.	20-33	.20 ft			Purged Dry?	Yes	No2		Purged Dry:	13 20	am/pm
Well	Volume:		9.6	liters			ample Date:		the second se			0915	am/pm
Depth to Top	of Pump:	28	, 6 Y	ft				<u></u>	<u> </u>			010	anypin
Water Level After	Sample:	20,	54	ft		Bottle	500 m	L Nitric	1 Lite	er Raw	[		
Measurement	Method:	Electric V	Vater Level	Indicator		List:	500 mL Nit			ter Nitric			

### **Field Measurements**

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	0830	7,30	10020	6.85	1,04	-22,7	2,05	18,33	1000	Claq
2	0835	734	9994	6.85	1,56	-46.3	1.93	16:58	500	rlea
. 3	0840	7,35	9924	6,84	0.55	-54.9	1.31	18.75	500	(1.0)
4	0845	7,32	9839	6,83	6.87	-55.3	2:05	18.84	500	Cler
5	0850	7.17	9602	6.82	0,80.	-3.9	1,65	19.03	500	Cler
6	3855	7.20	9417	6,81	0.50	-51,3	1.63	19,17	500	Clar,
	080900	7.22	9314	6.81	0,48	-50.0	1,70	19.26	500	C (en
8	0905	7,37	9146	6.80	0,61	-48.0	2,20	19,31	500	clea
9	0910	7.40	8949	6.81	0.63	-47.7	2.01	19,48	500	cler
10	0915	7,41	8739	6.81	0.63	-47,1	2,17	19.51	500	Olean
Stabilized:	Yes	No	•			To	otal Volume	Removed:		mL

Comments:



2\*

F	ie		d	D	a	ta	S	h	e	e	t
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Groundwater Assessment

Company:	MDU Heskett	
Event:	2nd Qtr 2016	e a
Sample ID:	MW 70	
Sampling Personal:	Parren Nieswaag.	u.,
		······

## 2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

# **Field Measurements**

	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons		(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1209	7,76	4320	7.06	4.23	125.6	50.8	23.57	1000	Clear
12	1219	7.80	4349	7.06	4,21	123.3	49.7	23,92	1000	Cleer
13	1229	7,74	4365	7.06	4.22	120,7	52.6	24,11	1000.	Clean
14	1234	7.72	4373	7.0£	4.19	119.3	54,8	24,19	500	clean
15	1239	7.69	4369	7.06	4.24	118.8	573	24,29	500	ilea-
16	1244	7,74	4370	7.06	4.22	118,9	57.0	24,41	500	Clear Clear Clear Clear clear clear
17	,			-		-				
18										
19										
20										
21										<u></u>
22										
23										
24										
25										
26										
27										
28										
29										
30	$\bigcirc$									
abilized:	Yes	No				Tc	tal Volume	Removed <sup>.</sup>	14,500	ml



Groundwater Assessment

2616 E	. Broadway	Ave,	Bismarck,	ND
--------	------------	------	-----------	----

Phone: (701) 258-9720

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	MW70	
Sampling Personal:	Darren Nieswaag	

Weather Conditions:	Temp: 4 °F	Wind:	NW24	1		Precip	: Sun	ny / Partly C	loudy / Clou	ıdy
Well Info	rmation			1	Sa	mpling	nformatio	on		
Well Locked? Yes No			Purg	ing Method:	Blad	lder		Co	ntrol Settings	3
Well Labeled? Yes	No		Sampl	ing Method:	Blad	lder		Purge:	1278 5	sec.
Casing Straight?	No		Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	No Not Visi	ble	Duplicate	e Sample?:	Yes	NO		PSI:	20-25	
Repairs Necessary:			Duplicate	Sample ID:	·	•		Pumping R	ate: 100	mL/min
Casing Diameter:	2"						-			
Water Level Before Purge:	21.06	ft	l	Purge Date:	TAN.	16	Time Purg	ing Began:	1019	am/pm
Total Well Depth:	43.06	ft	Well F	Purged Dry?	Yes	(No)	Time F	Purged Dry:	$\sim$	am/pm
Well Volume: 13, 6 liters		liters	Sa	ample Date:	TAOrl	b	Time o	f Sampling:	1244	am/pm
Depth to Top of Pump:	37:71	ft								
Water Level After Sample: 25, 88 ft		ft	Bottle	Bottle 500 mL Nitric 1 Lite		er Raw				
Measurement Method:	Electric Water Level Inc	licator	List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

#### Field Measurements

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	TAPY16D		
1	1029	7.96	4469	7.09	3.51	61.5	41.3	21.98	500 10a	o Clear	
2	1039	7,73	4338	7.06	3,77	82.2	68.5	22.09	1000	Class	
3	10491	7.73	4227	7.05	3.95	94.6	103	22.09		clercleas 7 milar Sligh	1/2 7Aprilla
4	1059	7166	4175	7,04	3.98	107.4	178	22.09	1000	Clering Slight	hit we all
5	1109	717	4200		4.40	113.0	143	22,09	1000	Slightly turbid	1. 201%
6	1119	7:62	4208	7,05	4,47	120.8	144	22.41	1000	Slighty turkid	
7	1129	7,82	4225	7.05	4.77	123,5	127	22.65	1000	rlea.	
8	1139	7.91	4254	7,06	4,29	125.5	9.9.0	22.83	1000	Cheg-	
9	1149	7,76	4276	7.06	4.37.	126.5	74.1	23,18	1000	clear	
10	1159	7.74	4299	7.06	4,28	126,9	55.0	23,39	1000	clear	
Stabilized:	Yes	No		L		Тс	otal Volume	Removed:		mL	

Comments:

Continued on next page



**Groundwater Assessment** 

Company:	MDU Heskett	
Event:	2nd Qtr 2016	2
Sample ID:	MWIDI	
Sampling Perse	onal: parron Nizsuarg	ы <sub>р</sub>

2616 E.	Broadway Ave	, Bismarck, ND
---------	--------------	----------------

Phone: (701) 258-9720

### Field Measurements

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
11	1519	8.88	4895	6.74	t,07	41.6	4,19	40,88	500	Clean
12									<u> </u>	
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29	-									
30	$\bigcap$									
Stabilized:	Yes	No				Тс	otal Volume	Removed:	9000	mL
Comments								-		



Groundwater Assessment

Company:	MDU Heskett
Event:	2nd Qtr 2016
Sample ID:	MW101
Sampling Persor	al: Marren Niesurias
oumpling roloor	an manter where day

Phone: (701) 258-9720

Weather Conditions:		Temp:	45	°F	Wind:	NW2-	7		Precip	Sun	ny (Partly (	Cloudy) Clou	udy
······	Well Info	rmation				Sampling Information							
Well Locked?	Yes	(No)				Purgi	ng Method:	Bla	adder		Co	ontrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Bla	adder		Purge:	.5	sec.
Casing Straight?	Yes	No				Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Xes	No	Not V	isible		Duplicate	e Sample?:	Yes	(No		PSI:	25-30	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	late: / <i>00</i>	mL/min
Casing	Diameter:		<u> </u>										
Water Level Befo	ore Purge:	36	189	ft		F	Purge Date:	TAN	:16	Time Purg	ging Began:	1348	am/pm
Total W	ell Depth:	57	.09'	ft		Well P	urged Dry?	Ýes	(No)	Time F	Purged Dry:	$\sim$	am/pm
We	Il Volume:	1.	2.5	liters		Sa	ample Date:	TADE	16	Time o	f Sampling:	1519	am/pm
Depth to Top	of Pump:	51.	10	ft									
Water Level After	r Sample:	42.	02	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric V	Nater Level	Indicator		List:	500 mL Nit	ric (filtered	d) 4 - 1 Li	ter Nitric			

### **Field Measurements**

Γ	Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
	(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
[	SEQ #	Time		±5%	±0.1	±10%	् ±20 mV	±10%	0.25 ft		
lby	1 1352	1350	8.69	4948	6,77	0,50	* EEt	96.6 19.1	37.68	1000	rlen
<pre>/ [</pre>	2	1408	8.51	4930	6.76	0,39	81.5	18,8	38.64	1000	clear
	3	1418	8.50	4909	6.77	0.35	651	20.8	39.29	1000	rlear
	4	1428	8,68	4898	6.74	0.37	50,3	21,3	39,66	1000	clear
	5	1439	8,77	4883	6,74	0.42	37,2	19.7	39,79	1000	clear
	6	1449	8.88	4881	6,15	1.34	47.9	8.54	40,16	1000	den
	7	1459	8,78	4890	6.74	1,31	48,7	5.25	40.46	1000	cles-
	8	1504	877	4893	6,75	1,23	45.6	4.8D	40.66	500	clear
- [	9	1509	8.73	4890	6,74	1.14	43,2	4,30	40,78	500	Clean
[	10	1514	8.81	4891	6.74	1,10	43.0	4.38	40,84	500	Clear
-	Stabilized:	-Yes	No	1			1Aprilo To	otal Volume	Removed:	·	mL

Comments:

Continued on next pase

TAG



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

Phone (701) 258-9720

# **Chain of Custody Record**

Projec	t Name:						Name c	of Sam	pler(s):	/		
MDU	Heskett	CCR Grou	undwater	2nc	l Qtr 2016		Je	eng	Hayer,	Darre	n Mesu	2244
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon ( <u>Attn</u> : Address						lumber:			855
·	Sam	ple Informat	tion				 е Туре	<u>}</u>	Fi	eld Para	ameters	Analysis
12897 12977 129777 129777 129777 129777 129777 129777 129777 129777 129777 1297777 129777 129777 1297777 1297777 1297777 1297777 12977777 1297777777777	9 9 WW105 MW105 MW105 MW105 MW102 MW102 MW101	7 Aprilo 7 Aprilo 7 Aprilo 7 Aprilo 7 Aprilo 7 Aprilo 7 Aprilo	09 1130 1455 0915 1244 1519	R R R Sample Type	Gradient	$\times$			B + 1 + 1 9 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	100 - 100 100 - 100	E Point 6.83 7.18 6.81 7.06 6.74	Analysis Required MDU CCR List with TSS and
												Dissolved CCR Metals. No RadChem.

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
10	Anthe	Wslhin#2	77 Arr 10 7 April	C. Jackson		SAPTIB	-RO1 2:5
2							
3							-





### CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: 201682-0856 S1604163

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

Project Identification:

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 16-W685 through 16-W689 S1604163-001 through S1604163-005

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

### I. RECEIPT

- All samples were received at the laboratory on 8 April 2016 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 2.5°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 12 April 2016.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

### II. HOLDING TIMES

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

### III. METHODS

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





### CASE NARRATIVE

MVTL Lab Reference No/SDG:	201682-0856
IML Lab Reference No/SDG:	S1604163

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

Project Identification:

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 **16-W685** through **16-W689 \$1604163-001** through **\$1604163-005** 

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

### IV. ANALYSIS

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

### V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

Undette Canif

\_\_\_ DATE: Z May 16

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW105 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

2 May 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW80R Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

2 May 16 Clauditte Approved by: K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW102 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

2 Man 16 Approved by: Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW70 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

(C 2 May 16 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 2.5C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW101 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

(C

ZMay 16

Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

K. Canto

RL = Method Reporting Limit

Clauditte

CERTIFICATION: ND # ND-00016



Your Environmental Monitoring Partner

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

Date: 4/29/2016

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project: Lab Order:	201682-0856 S1604163	Report ID: S1604163001
Lab Oldel.	51004105	

Samples 16-W685 MW105, 16-W686 MW80R, 16-W687 MW102, 16-W688 MW70, and 16-W689 MW101 were received on April 12, 2016.

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

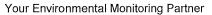
"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in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

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

Reviewed by:

<

Page 1 of 1





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

Sample Analysis Report

Comments		 	Matrix:		Water
			Matrix:		Water
COC:	201682-0856		FieldSa	mpler:	
ClientSample ID:	16-W685 MW105		DateRe	ceived:	4/12/2016 11:00:00 AM
Lab ID:	S1604163-001		Collect	ionDate:	4/7/2016 11:30:00 AM
ProjectName:	201682-0856		WorkO	rder:	S1604163
	8616 E Broadway Ave. Bismarck, ND 58501		Report	ID	S1604163001
Company: N	/VTL Laboratories, Inc		Date R	eported	4/29/2016

· · · · · · · · · · · · · · · · · · ·			••••			
Radionuclides - Total						
Radium 226	0.18	pCi/L	0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-1.7	pCi/L	1	Ga-Tech	04/23/2016 1632	MB
Radium 228 Precision (±)	1.1	pCi/L		Ga-Tech	04/23/2016 1632	MB

These results apply only to the samples tested.

### **RL - Reporting Limit**

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

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

Page 1 of 5



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         4/29/2016           ProjectName:         201682-0856         WorkOrder:         \$1604163           Lab ID:         \$1604163-002         CollectionDate:         4/7/2016 2:55:00 PM           ClientSample ID:         16-W686 MW80R         DateReceived:         4/12/2016 11:00:00 AM           COC:         201682-0856         FieldSampler:         Matrix:           Matrix:         Water         Matrix:	Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
2616 E Broadway Ave.         Report ID         S1604163001           Bismarck, ND 58501         WorkOrder:         S1604163           ProjectName:         201682-0856         WorkOrder:         S1604163           Lab ID:         S1604163-002         CollectionDate:         4/7/2016 2:55:00 PM           ClientSample ID:         16-W686 MW80R         DateReceived:         4/12/2016 11:00:00 AM           COC:         201682-0856         FieldSampler:         Vorkore:	Comments							
2616 E Broadway Ave. Bismarck, ND 58501         Report ID         S1604163001           ProjectName:         201682-0856         WorkOrder:         S1604163           Lab ID:         S1604163-002         CollectionDate:         4/7/2016 2:55:00 PM           ClientSample ID:         16-W686 MW80R         DateReceived:         4/12/2016 11:00:00 AM						Matr	ix:	Water
2616 E Broadway Ave.         Report ID         \$1604163001           Bismarck, ND 58501         WorkOrder:         \$1604163           ProjectName:         201682-0856         WorkOrder:         \$1604163           Lab ID:         \$1604163-002         CollectionDate:         4/7/2016 2:55:00 PM	COC:	201682-0856				Field	ISampler:	
2616 E Broadway Ave.         Report ID         \$1604163001           Bismarck, ND 58501         WorkOrder:         \$1604163	ClientSample ID:	16-W686 MW80R				Date	Received:	4/12/2016 11:00:00 AM
2616 E Broadway Ave. Report ID S1604163001 Bismarck, ND 58501	Lab ID:	S1604163-002				Colle	ectionDate:	4/7/2016 2:55:00 PM
2616 E Broadway Ave. <b>Report ID</b> S1604163001	ProjectName:	201682-0856				Wor	kOrder:	S1604163
	Company:	2616 E Broadway Ave					•	

Analyses	Result	Onits	Quui	115	Method		
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-1.7	pCi/L		1	Ga-Tech	04/23/2016 1933	MB
Radium 228 Precision (±)	1.2	pCi/L			Ga-Tech	04/23/2016 1933	MB

These results apply only to the samples tested.

#### в Analyte detected in the associated Method Blank Qualifiers:

#### Е Value above quantitation range

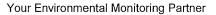
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions
- M O X Matrix Effect

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 5



Inter-Mountain Labs

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

### Sample Analysis Report

	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604163001
ProjectName:	201682-0856	WorkOrder:	S1604163
Lab ID:	S1604163-003	CollectionDate:	4/7/2016 9:15:00 AM
ClientSample ID:	16-W687 MW102	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0856	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-0.5	pCi/L		1	Ga-Tech	04/23/2016 2234	MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/23/2016 2234	MB

These results apply only to the samples tested.

### **RL - Reporting Limit**

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 3 of 5



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

### Sample Analysis Report

Comments					
			Matr	ix:	Water
COC:	201682-0856		Field	Sampler:	
ClientSample ID:	16-W688 MW70		Date	Received:	4/12/2016 11:00:00 AM
Lab ID:	S1604163-004		Colle	ectionDate:	4/7/2016 12:44:00 PM
ProjectName:	201682-0856		Wor	kOrder:	S1604163
	2616 E Broadway Ave. Bismarck, ND 58501		Rep	ort ID	S1604163001
	MVTL Laboratories, Inc			Reported	4/29/2016

0.3	pCi/L	0.2	SM 7500 Ra-B	04/20/2016 810	MB
0.1	pCi/L		SM 7500 Ra-B	04/20/2016 810	MB
-1.4	pCi/L	1	Ga-Tech	04/24/2016 135	MB
1.1	pCi/L		Ga-Tech	04/24/2016 135	MB
	0.1 -1.4	0.1 pCi/L -1.4 pCi/L	0.1 pCi/L -1.4 pCi/L 1	0.1         pCi/L         SM 7500 Ra-B           -1.4         pCi/L         1         Ga-Tech	0.1         pCi/L         SM 7500 Ra-B         04/20/2016 810           -1.4         pCi/L         1         Ga-Tech         04/24/2016 135

These results apply only to the samples tested.

## RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 4 of 5



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

### Sample Analysis Report

	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604163001
ProjectName:	201682-0856	WorkOrder:	S1604163
Lab ID:	S1604163-005	CollectionDate:	4/7/2016 3:19:00 PM
ClientSample ID:	16-W689 MW101	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0856	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.6	pCi/L		0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-2.3	pCi/L		1	Ga-Tech	04/24/2016 436	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/24/2016 436	MB

These results apply only to the samples tested.

## **RL - Reporting Limit**

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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 5 of 5



			You	r Environmen	tal Monitoring F	Partner
rer-Mountain	Inter-Mountain Labs	nue, Sheridan, Wyoming 82801 ph:	(307) 672-8945		- ye ye waar a da	
	ANAL	YTICAL QC SUMMARY R	EPORT			
LIENT:	MVTL Laboratories, Inc.		Da	te: 4/29/201	6	
/ork Orde	er: \$1604163		Report	ID: S160416	33001	
roject:	201682-0856					
Radiu	m 228 by Ga/Tech	Sample Type MBLK	Units: pCi/	Ľ		
	MB-336 (04/21/16 10:15)	RunNo: 133408	PrepDate: 04/14/16 1	14:00 Bat	chID: 11674	
	Analyte	Result	RL Spike Ref	Samp %REC	% Rec Limits	Qual
	Total Radium 228	ND	1			
Radiu	m 228 by Ga/Tech	Sample Type LCS	Units: pCi/	Ľ		
	LCS-336 (04/21/16 13:16)	RunNo: 133408	PrepDate: 04/14/16 1		chID: 11674	
	Analyte	Result	RL Spike Ref	Samp %REC	% Rec Limits	Qual
	Total Radium 228	34	1 39.5	86.0	61.3 - 120	
Radiu	m 228 by Ga/Tech	Sample Type MS	Units: pCi/			
	MS-336 (04/21/16 19:18)	RunNo: 133408	PrepDate: 04/14/16 1	l4:00        Bat Samp  %REC	chID: 11674 % Rec Limits	Qual
	Analyte	Result				Qual
<b>D</b>	Total Radium 228	29		ID 73.9	64.3 - 120	
Radiu	m 228 by Ga/Tech	Sample Type MSD	Units: pCi/		-LID: 44074	
	MSD-336 (04/21/16 22:19) Analyte	RunNo: 133408 Result	PrepDate: 04/14/16 1 RL Conc %F	RPD %REC	chID: 11674 % RPD Limits	Qual
	·	<u>.</u>				
Radiu	Total Radium 228 m 226 in Water - Total	32 Sample Type MBLK	1 29 10 Units: pCi/	D.1 81.7 I	20	
	MB-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0		chID: 11640	
	Analyte	Result		Samp %REC	% Rec Limits	Qual
l	Radium 226	ND	0.2			
Radiu	m 226 in Water - Total	Sample Type LCS	Units: pCi/	L		
	LCS-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0	):00 Bat	chID: 11640	
	Analyte	Result	RL Spike Ref S	Samp %REC	% Rec Limits	Qual
	Radium 226	4.9	0.2 5.54	88.3	67.1 - 122	
Radiu	m 226 in Water - Total	Sample Type LCSD	Units: pCi/	L	*****	
	LCSD-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0	):00 Bate	chID: 11640	
	Analyte	Result	RL Conc %R	RPD %REC	% RPD Limits	Qual
	Radium 226	5.7	0.2 4.9 15	5.9 104	20	
Radiu	m 226 in Water - Total	Sample Type <b>MS</b>	Units: pCi/			
	S1604125-002B MS (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0		chID: 11640	
l	Analyte	Result	RL Spike Ref	Samp %REC	% Rec Limits	Qual
	Radium 226	5.3	0.2 5.54 N	ID 95.4	65 - 131	

Qualifiers:	В	Analyte detected in the associated Method Blank	Е	Value above quantitation range
	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

X Matrix Effect



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

# Chain of Custody Record

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

	Toll Free: (800) 279-6885 Fax: (701) 258-9724							201682-0856					
Company Nam	e and Address:			Account #: Phone #:									
	R <i>4</i> 1									701-258-9720			
		<u>VTL</u> Broadway		Contact:	01		_				Fax #:		
		. ND 58501		Claudette Name of Sampler:							For faxed report check box		
Billing Address	s (indicate if different			Name of C	ampier.						E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box		
Ū	, end			Quote Nu	mber						Date Submitted:		
	<u>PO B</u>									4/8/2016			
	<u>New Ulm</u> ,		Project Na	ame/Numbe	er:					Purchase Order #:			
	·····										BL5551		
	Sample Information						B	ottle	Ty	pe	Analysis		
51604	163												
	* 2						03	ed					
						ed	Ĩ	als serv	ar				
IML Lab			Sample	Date	Time	Untreated	E 0	C VI	ss J	er			
Number	MVTL Lab Number	Client Sample ID	Туре	Sampled	Sampled	Unt	100	VOC Vials Umpreserved	Glass Jar	Other	Analysis Required		
	16-W685	MW105		4/7/2016	1130						Radium226 & Radium228 on all		
002	16-W686	MW80R		4/7/2016	1455								
<u> </u>	16-W687	MW102		4/7/2016	915								
004	16-W688	MW70		4/7/2016	1244								
005	16-W689	MW101		4/7/2016	1519								
		orted as a numerical value											

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
C. Jackson	4/8/2016	1700		Kathy Barn ML	4.12.110	11 pm	11.4 2
2.				t			**************************************



Laboratories, Inc. 2616 E. Broadway

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

# **Chain of Custody Record**

Projec	t Name:						N	ame o	f Sam	pler(s):	/	,	
MDU	Heskett	CCR Rad	iochem	2	nd Qtr 2016			Jer	my f	leyer/	Derre	, Alesw	229
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		<u>Carbon (</u> <u>Attn</u> : <u>Address</u>	6		e.	M	<u>/ork O</u>	rder N	lumber:	82	- 08	223 356
	Sam	ple Informat	ion				Bottle	• Туре		Fi	eld Para	ameters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO <sub>3</sub>				Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W685	MWIOS	7Apr16	1130	GW	5	4				6.98	6972	6.83	
W686	MWEOR	7.Ap.16	1455	GW		4				8.10	5732	7.18	
W687	MWIOZ	7 Aprillo	0915	GW		4				7.41	8739	6.81	
1688	MW70	7.Apr/6	1244	Gui		4				7.74	4370	7.06	
w689	Mwiol	7 Apr 16	1519	64						83.88	4895	6.74	MDU CCR combined RadChem

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	Helm-	Log in/wolkin #2	7 Apr 16 170045002-799p-16	C. Jackson		8Apr16 0800	Rol 2.5
2	( )						
3							





## MVTL Lab Reference No/SDG:

CASE NARRATIVE 201682-0862

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

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

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

## I. RECEIPT

- All samples were received at the laboratory on 8 April 2016 at 1247.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 4.7°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

## II. HOLDING TIMES

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

## III. METHODS

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

## IV. ANALYSIS

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





## MVTL Lab Reference No/SDG:

CASE NARRATIVE 201682-0862

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

MVTL Laboratory Identifications: Page 2 of 2 **16-W690** through **16-W695** 

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

laboratory report.

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

All laboratory data has been approved by MVTL Laboratories.

laudate Canto SIGNED:

DATE: 2 May 16

Claudette Carroll - MVTL Bismarck Laboratory Manager



Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Sample Description: Equip Blank Pump 1

Project Name: CCR Groundwater/2nd Qtr 2016

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



Page: 1 of 2

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

#### PO #: 160249 OP

### Temp at Receipt: 4.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
На	* 7.5	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	< 1	mg/l	1	I3765-85	11 Apr 16 10:48	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	12 Apr 16 12:35	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC
		57-		na para na manga na 197 (1979).	and the second s	1

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Sample Description: Equip Blank Pump 1

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

\* Holding time exceeded

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

ZMay 16 Clauditte Approved by: K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Sample Description: Equip Blank Pump 2

Project Name: CCR Groundwater/2nd Qtr 2016

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



Page: 1 of 2

Report Date: 2 May 16 Lab Number: 16-W691 Work Order #:82-0862 Account #: 002800 Date Sampled: 8 Apr 16 Date Received: 8 Apr 16 12:47 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
Н	* 5.6	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	< 1	mg/l	1	I3765-85	11 Apr 16 10:48	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 12:07	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	< 1	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	12 Apr 16 14:04	KMD
Calcium - Dissolved	3.8	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	5.5	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	6.0	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC
Arsenic - Dissolved	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 16 1:00	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Sample Description: Equip Blank Pump 2

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

Report Date: 2 May 16 Lab Number: 16-W691 Work Order #:82-0862 Account #: 002800 Date Sampled: 8 Apr 16 Date Received: 8 Apr 16 12:47 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

\* Holding time exceeded

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

Approved by:

(C 2 May 16 Clauditte K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW3-90 Sample Site: MDU Heskett

	As Receive	ed	Method	Method	Date	
2	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 6.8	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	6	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.88	units	NA	SM 4500 H+ B	8 Apr 16 10:31	DJN
Temperature - Field	7.10	Degrees C	NA	SM 2550B	8 Apr 16 10:31	DJN
Total Alkalinity	524	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Conductivity - Field	4795	umhos/cm	1	EPA 120.1	8 Apr 16 10:31	DJN
Fluoride	0.12	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	2690	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	36.2	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 12:07	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	4470	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	515	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	230	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	550	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	12.0	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.22	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	0.12	mg/l	0.10	6010	12 Apr 16 15:04	KMD
Calcium - Dissolved	525	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	234	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	560	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	12.2	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	0.21	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	0.12	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0119	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.1326	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW3-90

Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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



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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

\* Holding time exceeded

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

Approved by:

ľC. Z May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW33 Sample Site: MDU Heskett

	As Receive	ed	Method	Method	Date	-
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
pH	* 6.8	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	3	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.53	units	NA	SM 4500 H+ B	8 Apr 16 8:47	DJN
Temperature - Field	8.09	Degrees C	NA	SM 2550B	8 Apr 16 8:47	DJN
Total Alkalinity	445	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Conductivity - Field	5038	umhos/cm	1	EPA 120.1	8 Apr 16 8:47	DJN
Fluoride	0.23	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	3140	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	10.6	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 12:07	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	4850	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	470	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	414	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	419	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	20.4	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	0.69	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	0.32	mg/l	0.10	6010	12 Apr 16 15:04	KMD
Calcium - Dissolved	494	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	433	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	440	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	21.0	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	0.67	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	0.31	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0117	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^ mg/1		0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	0.0011	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW33

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

\* Holding time exceeded

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

Approved by:

CC 2 May 16 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





Page: 1 of 2

Report Date: 2 May 16 Lab Number: 16-W694 Work Order #:82-0862 Account #: 002800 Date Sampled: 8 Apr 16 9:10 Date Received: 8 Apr 16 12:47 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW104 Sample Site: MDU Heskett

	As Receive Result	ed.	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
рН	* 7.1	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	19	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.98	units	NA	SM 4500 H+ B	8 Apr 16 9:10	DJN
Temperature - Field	5.23	Degrees C	NA	SM 2550B	8 Apr 16 9:10	DJN
Total Alkalinity	541	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Conductivity - Field	13993	umhos/cm	1	EPA 120.1	8 Apr 16 9:10	DJN
Fluoride	0.51	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	11200	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	95.3	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 12:07	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	15500	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	403	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	1390	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	1820	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	30.7	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	2.11	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	0.88	mg/l	0.10	6010	12 Apr 16 15:04	KMD
Calcium - Dissolved	451	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	1540	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	1990	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	33.8	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	2.21	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	0.90	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0106	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	0.0028	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.1442	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW104

Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Groundwater/2nd Qtr 2016

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: 2 of 2

Report Date: 2 May 16 Lab Number: 16-W694 Work Order #:82-0862 Account #: 002800 Date Sampled: 8 Apr 16 9:10 Date Received: 8 Apr 16 12:47 Sampled By: MVTL Field Services

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

As Received Method Method Date Analyst Result RL Reference Analyzed 0.0020 6020 CC 10 Apr 16 1:00 Arsenic - Dissolved < 0.01 mg/l CC Barium - Dissolved 0.0070 0.0020 6020 10 Apr 16 1:00 mg/l Beryllium - Dissolved < 0.0005 mg/l 0.0005 6020 10 Apr 16 1:00 CC Cadmium - Dissolved Chromium - Dissolved < 0.0005 mg/l 0.0005 6020 10 Apr 16 1:00 CC 10 Apr 16 1:00 CC 0.0020 6020 < 0.005 mg/l 1:00 0.0020 10 Apr 16 CC Cobalt - Dissolved 0.0025 mg/l 6020 Lead - Dissolved < 0.0005 0.0005 6020 10 Apr 16 1:00 CC mg/l 0.0020 6020 10 Apr 16 1:00 CC Molybdenum - Dissolved < 0.005 mg/l Selenium - Dissolved Thallium - Dissolved 28 Apr 16 11:30 KMD 0.0020 6020 0.1427 mg/l 10 Apr 16 1:00 CC 6020 < 0.0005 mg/l 0.0005

\* Holding time exceeded

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

Approved by:

C Z May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 2

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

#### Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW2-90 Sample Site: MDU Heskett

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	8 Apr 16	KMD
Н	* 7.2	units	N/A	SM4500 H+ B	8 Apr 16 17:00	CC
Total Suspended Solids	3	mg/l	1	I3765-85	11 Apr 16 10:48	ML
pH - Field	6.99	units	NA	SM 4500 H+ B	8 Apr 16 10:58	DJN
Temperature - Field	6.99	Degrees C	NA	SM 2550B	8 Apr 16 10:58	DJN
Total Alkalinity	488	mg/l CaCO3	20	SM2320-B	8 Apr 16 17:00	CC
Conductivity - Field	7916	umhos/cm	1	EPA 120.1	8 Apr 16 10:58	DJN
Fluoride	1.00	mg/l	0.10	SM4500-F-C	10 Apr 16 9:30	CC
Sulfate	5800	mg/l	5.00	ASTM D516-07	14 Apr 16 10:35	EMS
Chloride	81.3	mg/l	1.0	SM4500-Cl-E	15 Apr 16 9:24	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 12:07	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	18 Apr 16 13:53	EV
Total Dissolved Solids	5260	mg/l	5	I1750-85	12 Apr 16 13:27	ML
Calcium - Total	478	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Magnesium - Total	745	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Sodium - Total	795	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Potassium - Total	23.8	mg/l	1.0	6010	19 Apr 16 9:54	SZ
Lithium - Total	1.13	mg/l	0.10	6010	15 Apr 16 12:00	KMD
Boron - Total	0.36	mg/l	0.10	6010	12 Apr 16 15:04	KMD
Calcium - Dissolved	540	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Magnesium - Dissolved	790	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Sodium - Dissolved	830	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Potassium - Dissolved	25.2	mg/l	1.0	6010	19 Apr 16 11:22	SZ
Lithium - Dissolved	1.10	mg/l	0.10	6010	15 Apr 16 13:00	KMD
Boron - Dissolved	0.34	mg/l	0.10	6010	12 Apr 16 16:30	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Apr 16 19:45	CC
Arsenic - Total	< 0.01 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Barium - Total	0.0097	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Chromium - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Molybdenum - Total	< 0.005 ^	mg/l	0.0020	6020	10 Apr 16 19:45	CC
Selenium - Total	0.1570	mg/l	0.0020	6020	10 Apr 16 16:29	CC
Thallium - Total	< 0.0005	mg/l	0.0005	6020	10 Apr 16 19:45	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 16 1:00	CC

#### RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Samantha Marshall

Project Name: CCR Groundwater/2nd Qtr 2016

Sample Description: MW2-90 Sample Site: MDU Heskett

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

\* Holding time exceeded

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

Approved by:

C 2 May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

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## Page: 1 of 5

Lab IDs: 16-W690 to 16-W	/695	P	roject: CC	CR Grour	ndwater/2nd Q	tr 2016	-			Work Order: 201682-0862							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.001 < 0.001	0.1107 0.1092	111 109	75-125 75-125	0.1107 0.1092	0.1124 0.1080	112 108	1.5 1.1	20 20	-		< 0.001
Antimony - Total mg/l	0.1000	106	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	<0.001 <0.001 <0.001	0.4036 0.4444 0.1066	101 111 107	75-125 75-125 75-125	0.4036 0.4444 0.1066	0.4256 0.4300 0.1077	106 108 108	5.3 3.3 1.0	20 20 20	-		< 0.001
Arsenic - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0030 0.0025	0.1124 0.1148	109 112	75-125 75-125	0.1124 0.1148	0.1164 0.1120	113 110	3.5 2.5	20 20		-	< 0.002
Arsenic - Total mg/l	0.1000	106	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0050 0.0021 < 0.002	0.4274 0.4266 0.1126	106 106 113	75-125 75-125 75-125	0.4274 0.4266 0.1126	0.4300 0.4150 0.1084	106 103 108	0.6 2.8 3.8	20 20 20	- - -		< 0.002
Barium - Dissolved mg/l	0.1000	103	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0070 0.0103	0.1062 0.1120	99 102	75-125 75-125	0.1062 0.1120	0.1078 0.1152	101 105	1.5 2.8	20 20	-	-	< 0.002
Barium - Total mg/l	0.1000	102	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0737 0.0119 0.0312	0.5010 0.4274 0.1278	107 104 97	75-125 75-125 75-125	0.5010 0.4274 0.1278	0.4866 0.4092 0.1342	103 99 103	2.9 4.4 4.9	20 20 20		-	< 0.002
Beryllium - Dissolved mg/l	0.1000	111	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005	0.1080 0.1060	108 106	75-125 75-125	0.1080 0.1060	0.1115 0.1052	112 105	3.2 0.8	20 20		-	< 0.0005
Beryllium - Total mg/l	0.1000	103	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	<0.0005 <0.0005 <0.0005	0.4442	107 111 110	75-125 75-125 75-125	0.4272 0.4442 0.1105	0.4292 0.4302 0.1066	107 108 107	0.5 3.2 3.6	20 20 20	- - -		< 0.0005
Boron - Dissolved mg/l	0.40	100	85-115	0.300	16-W684	1.03	1.28	83	75-125	1.28	1.31	93	2.3	20	-	-	< 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	100 100	80-120 80-120	0.600 0.400	16-W680 16-W692	0.39 0.12	0.96 0.48	95 90	75-125 75-125	0.96 0.48	0.97 0.48	97 90	1.0 0.0	20 20			< 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	104	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005	0.1028 0.1045	103 104	75-125 75-125	0.1028 0.1045	0.1046 0.1014	105 101	1.7 3.0	20 20	-		< 0.0005

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Lab IDs: 16-W690 to 16-W	695	P	roject: CC	CR Groun	dwater/2nd Q1	r 2016						Wo	rk Orde	er: 201682	2-0862		
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Cadmium - Total mg/l	0.1000	102	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	<0.0005 <0.0005 <0.0005	0.4316	99 108 104	75-125 75-125 75-125	0.3976 0.4316 0.1041	0.4128 0.4228 0.1042	103 106 104	3.8 2.1 0.1	20 20 20			< 0.0005
Calcium - Dissolved mg/l	20.0	114	85-115	500	16-W693	494	960	93	75-125	960	975	96	1.6	20			<1 <1
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	2000 500 500 100	16-M895 16-W683 16-W692 16-W707	2640 434 515 58.1	4420 910 995 152	89 95 96 94	75-125 75-125 75-125 75-125 75-125	910 995 152	965 995 154	106 96 96	5.9 0.0 1.3	20 20 20	- - - -		< 1 < 1 < 1 < 1
Chloride mg/l	30.0	99	80-120	30.0	16-D1417	23.6	52.7	97	80-120	52.7	51.3	92	2.7	20		-	<1 <1
Chromium - Dissolved mg/l	0.1000 0.1000	102 98	80-120 80-120	0.100 0.100 0.400	16-W694QC 16-W695QC 16-W799QC	0.0025 0.0053 < 0.002	0.1072 0.1080 0.3986	105 103 100	75-125 75-125 75-125	0.1072 0.1080 0.3986	0.1098 0.1095 0.3744	107 104 94	2.4 1.4 6.3	20 20 20	-	-	< 0.002 < 0.002
Chromium - Total mg/l	0.1000	100	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0087 < 0.002 0.0024	0.3984 0.3980 0.1042	97 100 102	75-125 75-125 75-125	0.3984 0.3980 0.1042	0.4090 0.3882 0.1030	100 97 101	2.6 2.5 1.2	20 20 20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.1000	99	80-120	0.100 0.100	16-W694QC 16-W695QC	0.0025 < 0.002	0.1024 0.0987	100 99	75-125 75-125	0.1024 0.0987	0.1073 0.0980	105 98	4.7 0.7	20 20	-		< 0.002
Cobalt - Total mg/l	0.1000	99	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0045 < 0.002 < 0.002	0.3924 0.4068 0.1021	97 102 102	75-125 75-125 75-125	0.3924 0.4068 0.1021	0.3966 0.3950 0.0983	98 99 98	1.1 2.9 3.8	20 20 20		-	< 0.002
Fluoride mg/l	0.50 0.50	104 104	90-110 90-110	0.500 0.500	16-W681 16-W692	0.30 0.12	0.77 0.62	94 100	80-120 80-120	0.77 0.62	0.79 0.62	98 100	2.6 0.0	20 20		-	< 0.1 < 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	100	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.0005 < 0.0005		102 104	75-125 75-125	0.1015 0.1042	0.1042 0.1070	104 107	2.6 2.7	20 20	-	-	< 0.0005

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Lab IDs: 16-W690 to 16-W6	595	P	roject: CC	CR Grour	ndwater/2nd Qt	tr 2016						Wo	rk Orde	er: 201682	2-0862		
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Lead - Total mg/l	0.1000	104	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0019 < 0.0005 < 0.0005	0.4072 0.4032 0.0960	101 101 96	75-125 75-125 75-125	0.4072 0.4032 0.0960	0.4008 0.3936 0.0988	100 98 99	1.6 2.4 2.9	20 20 20			< 0.0005
Lithium - Dissolved mg/l	0.40	108	85-115	2.00	16-W695	1.10	3.36	113	75-125	3.36	3.28	109	2.4	20	-	-	<0.1 <0.1
Lithium - Total mg/l	0.40	110	85-115	0.400	16-W692	0.22	0.65	108	75-125	0.65	0.64	105	1.6	20	-	-	< 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	114	80-120	500	16-W693	433	900	93	75-125	900	915	96	1.7	20	-	-	< 1 < 1
Magnesium - Total mg/l	20.0 20.0	112 112	80-120 80-120	2000 500 500 100	16-M895 16-W683 16-W692 16-W707	< 20 164 230 80.8	1970 655 725 174	98 98 99 93	75-125 75-125 75-125 75-125	655 725 174	690 725 176	105 99 95	5.2 0.0 1.1	20 20 20		-	<1 <1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020	105	85-115	0.002	16-W702	< 0.0002	0.0019	95	70-130	0.0019	0.0020	100	5.1	20	-	-	< 0.0002
Mercury - Total mg/l	0.0020 0.0020	95 100	85-115 85-115	0.002 0.002 0.002 0.002	16-W690 16-W715 16-W722 16-W723	<0.0002 <0.0002 <0.0002 <0.0002 <0.0002	0.0018 0.0020 0.0015 0.0017	90 100 75 85	70-130 70-130 70-130 70-130	0.0018 0.0020 0.0015 0.0017	0.0017 0.0020 0.0014 0.0020	85 100 70 100	5.7 0.0 6.9 16.2	20 20 20 20 20			< 0.0002 < 0.0002
Molybdenum - Dissolved mg/l	0.1000	89	80-120	0.100 0.100	16-W694QC 16-W695QC	< 0.002 < 0.002	0.0948 0.0942	95 94	75-125 75-125	0.0948 0.0942	0.1016 0.0996	102 100	6.9 5.6	20 20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	89	80-120	0.400 0.400 0.100	16-W680QC 16-W692QC 16-W704QC	0.0067 < 0.002 0.0037	0.3236 0.3480 0.1004	79 87 97	75-125 75-125 75-125	0.3236 0.3480 0.1004	0.3486 0.3454 0.1060	85 86 102	7.4 0.7 5.4	20 20 20	-		< 0.002
pH units	-	-	-	-		-	-	-	-	6.8	6.9	-	1.5	20	-	-	-
Potassium - Dissolved mg/l	10.0	106	85-115	100	16-W693	21.0	118	97	75-125	118	121	100	2.5	20	-		< 1 < 1

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#### Lab IDs: 16-W690 to 16-W695 Project: CCR Groundwater/2nd Qtr 2016 Work Order: 201682-0862 Matrix Matrix Matrix MSD/ MSD/ LCS LCS LCS Matrix Matrix Matrix Spike Spike Spike Dup MSD/ MSD Dup MSD/ Known Known Spike Rec % Rec % Rec Spike Spike Orig Spike Rec Orig Dup Rec Dup **RPD** Rec % Rec Method Amt % Limits Amt ID Result % Result Limits Result % Analyte Result RPD Limit (<) (%) Limits Blank Potassium - Total mg/l 10.0 105 80-120 400 16-M895 736 1140 101 75-125 110 116 104 20 5.3 < 1 -10.0 105 80-120 100 16-W683 11.8 110 98 75-125 112 113 101 0.9 20 < 1 --100 16-W692 12.0 112 100 75-125 39.6 40.1 1.3 20 --< 1 -.... < 1Selenium - Dissolved mg/l 0.1000 114 80-120 0.100 16-W694 0.1584 0.2800 122 75-125 0.2800 0.2861 128 2.2 20 \_ < 0.002 -106 0.1000 80-120 0.100 16-W695 0.1737 0.3032 130 75-125 0.3032 0.3022 128 0.3 20 -< 0.002 -0.400 16-W799QC < 0.002 0.4370 109 75-125 0.4370 0.4094 102 6.5 20 --Selenium - Total mg/l 119 0.1000 80-120 0.400 16-W680 0.0066 0.4782 118 75-125 0.4782 0.4790 118 0.2 20 -< 0.002-0.400 16-W692 0.1326 0.6122 120 75-125 0.6122 0.6064 118 1.0 20 н 0.100 16-W704 < 0.002 0.1198 120 75-125 0.1198 0.1186 119 1.0 20 --Sodium - Dissolved mg/l 20.0 112 85-115 500 16-W693 440 91 895 75-125 895 895 91 0.0 20 < 1 ------< 1 -Sodium - Total mg/l 2000 20.0 110 80-120 90 16-M895 4560 6360 75-125 1030 101 2.9 20 1060 -< 1 -20.0 109 80-120 500 16-W683 555 1030 95 75-125 1040 1020 94 1.9 20 -< 1 -500 16-W692 550 1040 98 75-125 1110 1140 89 2.7 20 -< 1-500 16-W707 83 695 1110 75-125 -\_ < 1Sulfate mg/l 100 101 90-110 100 16-W690 < 5 105 105 80-120 105 105 105 0.0 20 \_ -< 5 Thallium - Dissolved mg/l 0.1000 97 80-120 0.100 16-W694QC < 0.0005 0.1048 105 75-125 0.1048 0.1073 107 2.4 20 --< 0.0005 16-W695QC 0.100 < 0.0005 0.1056 106 75-125 0.1056 0.1067 107 1.0 20 \_ ----Thallium - Total mg/l 0.1000 101 80-120 0.400 16-W680OC < 0.0005 0.3724 93 0.3724 0.3758 94 75-125 0.9 20 --< 0.0005 16-W692OC 0.400 < 0.0005 0.3782 95 75-125 0.3782 0.3814 95 0.8 20 --0.100 16-W704QC < 0.0005 0.0968 97 75-125 0.0968 0.0980 98 1.2 20 --Total Alkalinity mg/l CaCO3 91 410 410 90-110 16-W690 < 20 396 97 80-120 396 393 96 0.8 20 97 80-120 < 2097 410 90-110 < 20< 20Total Dissolved Solids mg/l ---------4850 4820 -0.6 20 --< 5 Total Suspended Solids mg/l -351 --------349 -0.6 20 < 1 --\_ -19 -----19 -0.0 20 --

Pg 5075 Approved by: <u>C. Cawrle</u> ZMay 16

.

Site: MDu	) Heskutt					Technician:	Jerron	1 Mg-		
Instrument (Circle One):	#1 65	50 MDS 08F10	0203	#2 65	50 MDS 04H14	1736		#3 55	6 MPS 12E10	2056
		Pre	e Site Calibr	ation				Po	ost Site Cheo	:k
Date: 7 Apr (	6	Time: OB	4B				·	Time: 1615		
рН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		рН	Temp °C	Reading
Buffer 7	20.12	7.04	7.00	6.95-7.05	-7,2	0 +/- 50		Buffer 7	19.33	7.01
Buffer 10	19,83	10.10	10.00	9.95-10.05	-184,5	-180 +/- 50				
Conductivity					1004 1413	Check		Conductivity		
2000 Buffer 1	20.04	12852	12891	±10%	Buffer 5000	1417		Buffer- <del>5000</del>	19,74	1418
ORP								1413		
231 mV @ 25C	7.70	258.6	257.0	±10 mV						
DO		- 7A17	1-74-17	Barometr	ic Pressure (n	nm Hg)				
Time 1005 1009	H3,80- B,701	+5,77 9,98	10.95	mg/L	759,4					
Date: & Arr		Time: 07						Time: 1240		
рН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		рН	Temp °C	Reading
Buffer 7	18,96	7.03	7.00	6.95-7.05	-8.4	0 +/- 50		Buffer 7	19.08	6.98
Buffer 10	18.98	10.00	10.00	9.95-10.05	-185.4	-180 +/- 50				
Conductivity						Check		Conductivity		
،۲۳۹۵ Buffer <del>10000</del> -	18.62	12903	128 89	±10%	17274 H13 Buffer <del>5000</del>	1427		१८७२ गया डे Buffer <del>5000</del>	10.01	142B
ORP										
231 mV @ 25C	8,10	258.1	257.0	±10 mV						
DO	Changer		( <u></u>	Barometi	ric Pressure (n					
71me 0750	4.51	12,75	12,26	mg/L	720,0	<u>)</u>			,	

# **MVTL Calibration Worksheet**

# **MVTL Calibration Worksheet**

Site: MDU He	skett		-		Technician:	arre	n Nie	sinaug	_
Instrument (Circle One):	#1 650 MDS (	8F100203	#2 6	50 MDS 04H14	736		#3 55	6 MPS 12E10	2056
	. /	Pre Site Calib	ration				Po	ost Site Chec	:k
Date: 8 Apr	Time:	0720					Time: []3	)	
рН	Temp °C Pre C	al Post Cal	Post Cal Range		mv Range +/- 50		рН	Temp °C	Reading
Buffer 7	19,24 7.0	1 7,00	6.95-7.05	-22.6	0 +/- 50		Buffer 7	6,90	7.01
Buffer 10	19.35 9.9		9.95-10.05	-199.4	-180 +/- 50				L
Conductivity			_	1413	Check		Conductivity		
Buffer <del>10000</del> /2 <i>890</i>	18,87 1297	0 12883	±10%	Buffer <del>5000</del> ZCCA	1416		Buffer <del>-5000</del> JCCA	9,72	1408
ORP				· · · · · · · · · · · · · · · · · · ·			J-C/T		
231 mV @ 25C	5,02 255	4 257,7	±10 mV						
DO			Baromet	tric Pressure (m	ım Hg)				
	13.71 \$100 STAPPIGA	18 9.85	mg/L	721.	0				۰.
Date:	Time:				/		Time:		
pĦ	Temp °C Pre C	al Post Cal	Post Cal Range	mv	mv Range +/- 50		рН	Temp °C	Reading
Buffer 7			6.95-7.05		0 +/- 50		Buffer 7		
Buffer 10			9.95-10.05		-180 +/- 50				
Conductivity					Check		Conductivity	$\$	
Buffer 10000			±10%	Buffer 5000			Buffer 5000		
ORP							/	$ \land $	
231 mV @ 25C			±10 mV			-			
DO			Baromet	tric Pressure (m	HRQ Hg)				
			mg/L	L					$\sim$



# **Field Datasheet**

**Groundwater Assessment** 

2616 E.	Broadway	Ave,	Bismarck,	ND
---------	----------	------	-----------	----

Phone: (701) 258-9720

Company:	MDU Hes	skett
Event:	2nd Qtr 2	2016
Sample ID:	0	MW3-90
Sampling Persor	nal: Darre	n Arieshman
F	Precip: <b>Sur</b>	nny/ Partly Cloudy / Cloudy

Weather Conditions:		Temp:	28	°F	Wind:	NW10	
	Well Info	rmation	20				
Well Locked?	Yes	No				Purgir	
Well Labeled?	Tes	No				Samplir	
Casing Straight?	tes	No				Dedicat	
Grout Seal Intact?	Yes	No	No	t Visible		Duplicate	
Repairs Necessary:			$\subseteq$			Duplicate \$	
Casing	Diameter:		2"				
Water Level Bef	ore Purge:	18	.62	ft		P	•
Total W	Vell Depth:	21	.93.	ft		Well P	
We	ell Volume:		2.1	liters		Sa	,
Depth to Top	o of Pump:	19	.78	ft			
Water Level After	er Sample:	18.	69	ft		Bottle	
Measuremer	nt Method:	Electric	Water Lev	vel Indicator		List:	

		Sa	mpling l	nformatio	on		
Purgir	ng Method:	Blad	lder		Co	ontrol Settin	gs
Samplir	ng Method:	Blad	lder		Purge:	5	sec.
Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Duplicate	Sample?:	Yes	NO		PSI:	15	
Duplicate \$	Sample ID:				Pumping F	<b>Rate:</b> / 0 0	mL/min
P	urge Date:	SAnr	16_	Time Purg	ing Began:	1951	/am/pm
Well P	urged Dry?	Yes	No	Time F	Purged Dry:	4	am/pm
Sa	mple Date:	SAOF 1	0	Time of	f Sampling:	1031	am/pm
		,					
Bottle	Bottle 500 mL Nitric		1 Lite	er Raw			
List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

## **Field Measurements**

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рΗ	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	1001	6,99	4793	6.88	1.90	-31,1	1.07	18.68	1000	Clean
2	1006	7.08	4796	6.88	1.81	-50,5	0,89	18.68	500	Clear
3	1011	-1.06	4802	6.88	1.85	- 44.5	0.49	18:68	500	clus
4	10.16	7,00	4798	6.88	1.80	-40.3	0,39	18.69	500	Cler
5	1021	7,05	4795	6.88	1.78	-38,1	0.27	18.69	500	clar
6	1026	7.14	4797	6.88	1.76	- 34.6	D.24	18:69	500	167
7	1031	7.10	4795	6.88	1,73	-319	0,25	18.69	500	162
8	· · ·									
9										
10										
Stabilized:	Yes	) <b>No</b>				Тс	otal Volume	Removed:	4000	mL



# **Field Datasheet**

**Groundwater Assessment** 

Company:	MDU Heskett
Event:	2nd Qtr 2016
Sample ID:	MW33
Sampling Persor	nal: Dorren Nieswaag
***************************************	

Phone: (701) 258-9720

Weather Conditions:		Temp:	23	°F	Wind:	NWS			Precip:	( Sunn	y/ Partly (	Cloudy / Clo	udy
	Well Info	ormation			1	2		Sa	mpling l	nformatio	n		
Well Locked?	Yes	No				Purgi	ng Method:	Blad	der		Co	ontrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Yes	No		~		Dedicat	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not V	sible		Duplicate	Sample?:	Yes	No-		PSI:	30	
Repairs Necessary:			- WILL IN THE			Duplicate	Sample ID:	·			Pumping R	late: / <i>0</i> 0	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	40	.38	ft		F	Purge Date:	SApr 1	6	Time Purgi	ng Began:	0757	@m/pm
Total W	ell Depth:	46	,55	ft		Well P	urged Dry?	Yes	No	Time P	urged Dry:		am/pm
We	Il Volume:	Kaprit 12	- 03-3.8	liters		Sa	mple Date:	8 April	b	Time of	Sampling:	0847	(am)pm
Depth to Top			342.0	י ז ft				,					
Water Level Afte	r Sample:		40.59	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measurement	t Method:	Electric	Water Level	ndicator		List:	500 mL Nit	tric (filtered)	4 - 1 Lit	er Nitric			
				Field	Measure	ements							
Stabilization	Temp	Spec.	T	DO	ORP	Turbidity	Water	mL		Discription:			

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	0807	7,89	4993	6.55	1,82	57.9	23.6	40.40	1000	Clau
2	0817	7.85	4970	6.52	1.45	69.8	5.49	40,46	1000	claar
3	1827	7.90	5010	6.53	1,27	58,0	3.70	40.46	1000	rler
4	0832	7,93	5019	1.53	1,24	54,2	1,82	40,58	500	Clear
5	0837	8.06	5022	6.52	1.21	50,7	1.48	40,59	500	rler
6	0842	7.96	5031	653	1,20	47.3	1,48	40,59	500	Cles -
7	0847	8,09	5038	6,53	1.21	41,2	1.47	40,59	500	cler
8	- /	· · ·	1 10		i (		• 1			
9										
10	$\frown$									
Stabilized:	/Yes/	No				То	otal Volume	Removed:	5000	mL

Comments:





**Groundwater Assessment** 

Company:	MDU Heskett	
Event:	2nd Qtr 2016	
Sample ID:	MW104	
Sampling Personal:	Jeven rley-	

Phone: (701) 258-9720

Weather Conditions:		Temp	: 30	°F	Wind:	N @S-	-10		Precip	: Sun	ny) Partly C	loudy / Clo	udy
I	Well Information							Sampling Information					
Well Locked?	Yes	Nø				Purgi	ing Method:	Bla	dder		Co	ntrol Setting	s
Well Labeled?	Yes	No				Sampli	ing Method:	Bla	dder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedica	ted Equip?:	Yes	Nô		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate	e Sample?:	Yes	No		PSI:	20	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: / <i></i> c <u></u>	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		14.2B	ft		F	Purge Date:	8 Apr	16	Time Purg	ing Began:	0755	@m/pm
Total W	ell Depth:		32,85	ft		Well P	Purged Dry?	Yes	No	Time F	Purged Dry:		am/pm
Wel	I Volume:		11.4	liters		Sa	ample Date:	8.Aprl	0	Time o	f Sampling:	0910	am/pm
Depth to Top	of Pump:		29,10	ft									
Water Level After	r Sample:		14.48	ft		Bottle	500 ml	L Nitric	1 Lite	er Raw			
Measurement Method: Electric Water		Water Leve	I Indicator		List:	500 mL Nit	ric (filtered	4 - 1 L	iter Nitric				

## **Field Measurements**

	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	0805	5,56	14089	6.97	6,12	252.0	25.1	14.39	1000.C	Clea
2	0815	5.49	14013	6.96	6.02	251.6	18.0	14.43	1000.0	clear
3	0825	5,61	13999	6.98	5.33	246.7	13.2	14,52	10,00,0	Clear
4	0835	5.05	13984	6.98	0,76	244,5	10.4	14,59	1000,0	Clear
5	2645	5,24	14006	59.5	0.76	237,4	8,51	14,61	1000.0	clea
6	0850	5,06	175+13917	6.96	0.75	235,7	8,30	14,58	500,0	den
7	0855	5.56	13954	6,98	0,80	233,7	6,59	14,58	500,0	clear
8	0900	5.43	13967	6.98	0,82	232.9		14.57	500,0	Clear
9	<i>©</i> 905	5.00	13984	6,98	0.88	231,6		14,52	500,0	cles
10	0910	5.23	13993	6.98	0.92	230,7	7.63	14.55	500,0	Cles
Stabilized		No				Т	otal Volume	Removed:	7500.0	mL





**Groundwater Assessment** 

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

Phone: (701) 258-9720

Weather Conditions:		Temp:	40	°F	Wind:	Nes-	-10		Precip	: Sun	ny / Partly C	loudy / Cl	oudy
١	Nell Info	rmation						Sa	ampling I	nformatio	on		
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder		Co	ntrol Settin	gs
Well Labeled?	Yes	No				Sampli	ng Method:	Blac	lder		Purge:	4	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	(No)		Recover:	Sé	sec.
Grout Seal Intact?	Yes	No	< Not	Visible>		Duplicate	Sample?:	Yes	(NO)	]	PSI:	18	
Repairs Necessary:			**************************************	ran <sup>101</sup>		Duplicate	Sample ID:			]	Pumping R	ate: / 00	mL/min
Casing I	Diameter:		2"										
Water Level Befo	re Purge:		21.06	ft		F	Purge Date:	B.Ap-	16	Time Purg	ging Began:	1028	@m/pm
Total W	ell Depth:	Z	24.80	ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:	den Salamangangian Salah Sa	am/pm
Wel	I Volume:		2,3	liters		Sa	ample Date:	8 April	6	Time o	f Sampling:	ioso	am/pm
Depth to Top	of Pump:	2	2,60	ft									
Water Level After	r Sample:	2	21,42	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measurement	: Method:	Electric W	later Leve	I Indicator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

## **Field Measurements**

	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	<b>Discription:</b> Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		
1	79036 1033	7,28	7973	50,F	3.71	244.2	1.4k	21.28	\$4000-2500.U	· Clear
2	\$10461038	7.04	7972	6.99	3,37	242.1	1.36	21.33	*1000,050,0	Clea
3	1043	6.88	7945	6.99	3.38	237.0m	20.72	21.35	500,0	Clean ORP 237.0
4	1048	6.99	7935	10.98	3,40	231,4	0.48	21.33	500,0	Cler
5	1053	6.99	7923	6.93	3,44	227.4	0.43	21,33	500,0	Clez
6	1058	6.99	7916	6.99	3.45	225:3	2.42	21.33	500.0	Cler
7										
8										-
9										
10										
abilized	: (Yes	No				Т	otal Volume	Removed:	2,000,0	mL

Stabilized: (Yes



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

# **Chain of Custody Record**

Projec	t Name:							Name	of Sam	pler(s):		/	
MDU	Heskett	CCR Grou	ndwater	21	nd Qtr 2016			Dair	201	Viesno	rag/	Tere	my Meyor
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 5850 701-222-7829		<u>Carbon Co</u> <u>Attn</u> : <u>Address</u> :	<u>ספע:</u>				Work (	Order N	lumber:	-(		862
	S	Sample Informati	on				Bott	le Тур	e	Fi	eld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	500 mI HNO.	1 liter 3 500 ml HNG	(filtered)		Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W690	Egnip. Blank Pour	v1 Stor 16	-			$\times$	$\times \times$			-	/		
W691	Fquip, Blank Pum.	12 8Apr16	(			$\times$	$ earrow \times$						
W692	mw3-90	5 torllo	103)	GW		X	XX			7.10	4795	6.88	
w693	MW 33	6 Aprils	0847	GW		X	XX			8.09	5038	6,53	MDU COD List with TCC and
W694	MW 104	8April6	0910	GW		4	++			5.23	13993	6.98	MDU CCR List with TSS and Dissolved CCR Metals. No
w695	MW 2-90	8 April 6	1058	61		X	++	-		6.99	7916	6.99	RadChem.
		,	-										-
		2											-

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	hopen-	Login	8.4-16 1247	C. Jackson	5	870516	4.7°C
2		J					7M588 ROI
3							-





## CASE NARRATIVE

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

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

**Project Identification:** 

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 16-W696 through 16-W701 S1604162-001 through S1604162-006

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

## I. RECEIPT

- All samples were received at the laboratory on 8 April 2016 at 1247.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 4.7°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 12 April 2016.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

## II. HOLDING TIMES

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

## III. METHODS

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

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.





## CASE NARRATIVE

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

Client: Location: Montana Dakota Utilities MDU Heskett Ash Site

**Project Identification:** 

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

MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 16-W696 through 16-W701 S1604162-001 through S1604162-006

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

## 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 Canif

DATE: ZMZY K

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: Equip Blank Pump 1

Approved by:

2 May 16 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

11

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: Equip Blank Pump 2

Approved by:

ZMay 16 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





Analyst

1 of 1 Page:

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

DO # 160240 00

7C ROI

Sample Descri	ption: MW3-90		PO #: 16	0249 OP
Sample Site:			Temp at	Receipt: 4.7C
	As Received Result	Method RL	Method Reference	Date Analyzed

pH - Field	6.88	units	NA	SM 4500 H+ B	8	Apr	L6 10:31	DJN
Temperature - Field	7.10	Degrees C	NA	SM 2550B	8	Apr	L6 10:31	DJN
Conductivity - Field	4795	umhos/cm	1	EPA 120.1	8	Apr	L6 10:31	DJN
Radium 226	See Atta	ached Report			19	Apr	16	OL
Radium 228	See Atta	ached Report			23	Apr	16	OL

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

2 Mey 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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

C





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW33 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

2 May 16 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

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

OL = Analysis performed by an Outside Laboratory.

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Sample Description: MW104 Sample Site: MDU Heskett

Montana Dakota Utilities

Project Name: CCR Radiochem/2nd Qtr 2016

Approved by:

C Claudite K. Canrep 2 May 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

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

PO #: 160249 OP

Temp at Receipt: 4.7C ROI

Samantha Marshall								
Montana D	Montana Dakota Utilities							
400 N. 4t	h	τ						
Bismarck	ND	58501						

Project Name: CCR Radiochem/2nd Qtr 2016

Sample Description: MW2-90 Sample Site: MDU Heskett

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

OL = Analysis performed by an Outside Laboratory.

Approved by:

a 2 May is Clauditte K. Cantle

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: 4/29/2016

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project: Lab Order:	201682-0863 S1604162	Report ID: S1604162001

Samples 16-W696 Equip Blank Pump 1, 16-W697 Equip Blank Pump 2, 16-W698 MW3-90, 16-W699 MW33, 16-W700 MW104, and 16-W701 MW2-90 were received on April 12, 2016.

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

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

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

<

Page 1 of 1



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

# Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604162001
ProjectName:	201682-0863	WorkOrder:	S1604162
Lab ID:	S1604162-001	CollectionDate:	4/8/2016
ClientSample ID:	16-W696 Equip Blank Pump 1	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0863	FieldSampler:	
		Matrix:	Water

#### Comments

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

#### These results apply only to the samples tested.

#### **RL - Reporting Limit**

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

Qualifiers:

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 1 of 6



Inter-Mountain Labs

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

# Sample Analysis Report

1 5	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604162001
ProjectName:	201682-0863	WorkOrder:	S1604162
Lab ID:	S1604162-002	CollectionDate:	4/8/2016
ClientSample ID:	16-W697 Equip Blank Pump 2	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0863	FieldSampler:	
		Matrix:	Water
Comments			

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

These results apply only to the samples tested.

## **RL - Reporting Limit**

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

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

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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

# Sample Analysis Report

	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	4/29/2016 S1604162001
ProjectName:	201682-0863	WorkOrder:	S1604162
Lab ID:	S1604162-003	CollectionDate:	4/8/2016 10:31:00 AM
ClientSample ID:	16-W698 MW3-90	DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0863	FieldSampler:	
		Matrix:	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	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-2.2	pCi/L		1	Ga-Tech	04/23/2016 428	MB
Radium 228 Precision (±)	1.1	pCi/L			Ga-Tech	04/23/2016 428	MB

These results apply only to the samples tested.

## RL - Reporting Limit

- Qualifiers: B
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - M Value exceeds Monthly Ave or MCL or is less than LCL

Analyte detected in the associated Method Blank

- O Outside the Range of Dilutions X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

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

Sample Analysis Report

Company:	MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501				Date Reported Report ID	4/29/2016 S1604162001
ProjectName:	201682-0863				WorkOrder:	S1604162
Lab ID:	S1604162-004				CollectionDate:	4/8/2016 8:47:00 AM
ClientSample ID:	16-W699 MW33				DateReceived:	4/12/2016 11:00:00 AM
COC:	201682-0863				FieldSampler:	
					Matrix:	Water
Comments						
A		D 14	1124	0		Dete Angland

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	04/23/2016 729	MB
Radium 228 Precision (±)	1.0	pCi/L			Ga-Tech	04/23/2016 729	MB

These results apply only to the samples tested.

# **RL - Reporting Limit**

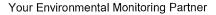
- Qualifiers: В Analyte detected in the associated Method Blank
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - Μ Value exceeds Monthly Ave or MCL or is less than LCL
  - 0 X Outside the Range of Dilutions
  - Matrix Effect

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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Inter-Mountain Labs

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

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Date Repo	Reported rt ID	4/29/2016 S1604162001
ProjectName:	201682-0863				Work	Order:	S1604162
Lab ID:	S1604162-005				Colle	ctionDate:	4/8/2016 9:10:00 AM
ClientSample ID:	16-W700 MW104				DateF	Received:	4/12/2016 11:00:00 AM
COC:	201682-0863				Fields	Sampler:	
					Matrix	c	Water
Comments							
Analyses		Result	Units	Qual	RL	Metho	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.7	pCi/L	0.2	SM 7500 Ra-B	04/19/2016 1504	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	04/19/2016 1504	MB
Radium 228	0.0	pCi/L	1	Ga-Tech	04/23/2016 1030	MB
Radium 228 Precision (±)	1.0	pCi/L		Ga-Tech	04/23/2016 1030	MB

These results apply only to the samples tested.

## **RL** - Reporting Limit

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

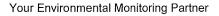
- С Calculated Value Н
- Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory Not Detected at the Reporting Limit
- ND Spike Recovery outside accepted recovery limits S

o X Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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

# Sample Analysis Report

Analyses		Result	Units	Qual	RL	Metho	d Date Analyzed/Init
Comments							
					Matr	ix:	Water
COC:	201682-0863				Field	ISampler:	
ClientSample ID:	16-W701 MW2-90				Date	Received:	4/12/2016 11:00:00 AM
Lab ID:	S1604162-006				Colle	ectionDate:	4/8/2016 10:58:00 AM
ProjectName:	201682-0863				Wor	kOrder:	S1604162
	Bismarck, ND 58501				Nop		07001102001
	2616 E Broadway Ave.				Rep	ort ID	S1604162001
Company:	MVTL Laboratories, Inc	2.			Date	Reported	4/29/2016

Radionuclides - Total						
Radium 226	0.3	pCi/L	0.2	SM 7500 Ra-B	04/20/2016 810	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	04/20/2016 810	MB
Radium 228	-1.6	pCi/L	1	Ga-Tech	04/23/2016 1331	MB
Radium 228 Precision (±)	1.1	pCi/L		Ga-Tech	04/23/2016 1331	MB

# These results apply only to the samples tested.

## **RL - Reporting Limit**

- Qualifiers: В
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - Value exceeds Monthly Ave or MCL or is less than LCL М

Analyte detected in the associated Method Blank

- o X Outside the Range of Dilutions
- Matrix Effect

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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· Inter Manutain Laba

Marken Loss           ANALYTICAL QC SUMMARY REPORT           ANALYTICAL QC SUMMARY REPORT           ENT:         MALLYTICAL QC SUMMARY REPORT           ENT:         MALLYTICAL QC SUMMARY REPORT           ENT:         MALLY Exponence           Report ID: S1604162           Report ID: S1604162           Report ID: S1604162:001           Market Market Stander	-MOUNTAIN	Inter-Mountain Labs	up Charidan Muoming 92901 nh:	207) 672 9045	
ENT:       MVTL Laboratories, Inc.       Date: 4/29/2015         rk Order:       S1604162       Rejort ID:       S1804162:0003         Radium 228 by GaTech       Sample Type       MBLK       Units::       pC/JL       BatchID:       11674         MB-336 (04/21/16 10:16)       Runkb: 133400       PropDate:       04/14/16 14:00       BatchID:       11674         Radium 228 by GaTech       Sample Type       LCS-336 (04/21/16 13:16)       Runkb:       133400       PrepDate:       04/14/16 14:00       BatchID:       11674         CLS-336 (04/21/16 13:16)       Runkb:       Rasuit       RL       Spike       Ref Samp       %REC       % Rec Limits       Qua         MS-336 (04/21/16 19:18)       Runkb:       Runkb:       133408       PrepDate:       04/14/16 14:00       BatchID:       11674         MS-338 (04/21/16 19:18)       Runkb:       Rasuit       RL       Spike       Ref Samp       %REC       % Rec Limits       Qua         MS-338 (04/21/16 19:18)       Runkb:       Runkb:       133408       PrepDate:       04/14/16 14:00       BatchID:       11674         MS-338 (04/21/16 19:18)       Runkb:       Sample Type       MS       91.00       8.0       6.1.3       1.0.20       1			• • •		
rk Order:       S1604162 201682-0863       Report ID:       S160416201         Radium 228 by Ga/Tech       Sample Type       MBLK       Uhits:       PCPU       BachlD:       11674         MB-336 (04/21/16 10:16)       RunNo:       Sample Type       LCS       Uhits:       PC/UL       PREC       % Rec Limits       Quit         Radium 228 by Ga/Tech       Sample Type       LCS       Uhits:       PC/UL       BachlD:       11674         Radium 228 by Ga/Tech       Sample Type       LCS       Uhits:       PC/UL       BachlD:       11674         Radium 228 by Ga/Tech       Sample Type       MS       Uhits:       PC/UL       BachlD:       11674         Radium 228 by Ga/Tech       Sample Type       MS       Uhits:       PC/UL       BachlD:       11674         Radium 228 by Ga/Tech       Sample Type       MS       Uhits:       PC/UL       BachlD:       11674         Radium 228 by Ga/Tech       Sample Type       MS       Uhits:       PC/UL       BachlD:       11674         MS-336 (04/21/16 19:18)       RunNo: 133408       PrepDate:       OH141:16 14:00       BatchID:       11674         MB-336 (04/21/16 22:19)       RunNo: 133408       PrepDate:       OH141:16 14:00       BatchID:					
Report 10: 31004 10201           get:         201882-0863           Radium 228 by Ga/Tech         Sample Type         MBLK         Units:         pG/L           MB-336 (04/21/16 10:15)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Result         RL         Spike Ref Samp         %REC         % Rec Limits         Quit           Total Radium 228         ND         1         Sample Type         LCS         Units:         pG/L         Exclusion         Quit           LCS-336 (04/21/16 13:16)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quit           MS-336 (04/21/16 19:16)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quit           MS-336 (04/21/16 19:18)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quit           MS-336 (04/21/16 19:18)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quit           MS-336 (04/21/16 19:18)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           MB-336 (04/21/16 19:18)         Runko: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           MB-336 (04/21/16 19:04)         Runko: 1334					
Radium 228 by Ga/Tech         Sample Type         MBLK         Units:         pC//L           MB-336 (04/21/16 10:16)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Qui           Total Radium 228         ND         1         Intes:         pC//L         Excession         BatchID: 11674         Qui           LCS-336 (04/21/16 13:16)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Qui           MS-336 (04/21/16 19:18)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           MS-336 (04/21/16 19:18)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           Analyte         Result         RL         Spike         Ref Samp         % REC         % Rec Limits         Qui           MS-336 (04/21/16 19:18)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui         Analyte         Result         RL         Spike         % REC         % REC				Report ID: S1604162001	
MB-336 (04/21/16 10:15) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Total Radium 228         ND         1         Spike Ref Samp %REC         % Rec Limits         Qui           Radium 228 by Ga/Tech         Sample Type         LCS         Units: pC//L         BatchID: 11674           LCS-336 (04/21/16 13:16) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           MS-336 (04/21/16 13:16)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           MS-336 (04/21/16 13:16)         Sample Type         MS         Units: pC//L         BatchID: 11674           MS-336 (04/21/16 19:18)         Sample Type         MS         Units: pC//L         BatchID: 11674           MS-336 (04/21/16 19:18)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Resuit         RL         Spike Ref Samp %REC         % Rec Limits         Qui           MS-336 (04/21/16 22:19)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           Radium 226         ND         0.2         Core         % REC	oject:	201682-0863			
Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits         Quarter           Total Radium 228         ND         1         Units:         pC/L         Example Type LCS         Units:         pC/L         Example Type LCS         Units:         pC/L         Example Type LCS         BatchID: 11674         Quarter           LCS-336 (04/21/16 13:16)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quarter	Radiu	m 228 by Ga/Tech	Sample Type MBLK	Units: pCi/L	
Total Radium 228         ND         1           Radium 228 by Ga/Tech         Sample Type         LCS         Units: pC//L           LCS-336 (04/21/16 13:16)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits         Qu           Total Radium 228         34         1         39.5         86.0         61.3 - 120         Units: pC//L           MS-336 (04/21/16 19:18)         Sample Type         MS         Units: pC//L         BatchID: 11674           Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits         Qu           Total Radium 228         gample Type         MS         39.5         ND         73.9         64.3 - 120           MSD-336 (04/21/16 12:1:9)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Malum 228         Sample Type         MSD         32         1         29         10.1         81.7         20           Total Radium 228         Sample Type         MBLK         Units: pC//L         EdithID: 11640         Result         RL         Spike         Ref Samp %REC         % Rec Limits         Qu         Rad		MB-336 (04/21/16 10:15)	RunNo: 133408		
Radium 228 by Ga/Tech         Sample Type         LCS         Units:         pC/L           LCS-336 (04/21/16 13:16)         RunNo: 133408         PrepDate:         04/14/16 14:00         BatchD: 11674         Out           Total Radium 228 by Ga/Tech         Sample Type         MS         1         39.5         86.0         61.3 - 120         Out           MS-336 (04/21/16 19:18)         Sample Type         MS         Cultis:         pC/L         Values         98.0         61.3 - 120         Out		Analyte	Result	RL Spike Ref Samp %REC % Rec Limi	ts Qua
LCS-336 (04/21/16 13:16) Analyte         RunNo: 133408 Result         PrepDate: 04/14/16 14:00 RL         BatchID: 11674           Total Radium 228         34         1         39.5         86.0         61.3 - 120           MS-336 (04/21/16 19:18) Analyte         Sample Type         MS         Units: pC/L         Value         Qu           Total Radium 228         29         1         39.5         ND         64.3 - 120         Qu           MS-336 (04/21/16 19:18) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qu           Total Radium 228         29         1         39.5         ND         73.9         64.3 - 120           MSD-336 (04/21/16 12::19) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qu           MSD-336 (04/21/16 22:19) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qu           MSD-336 (04/21/16 15:04) Analyte         RunNo: 133408         PrepDate: 04/14/16 10:00         BatchID: 11674         Qu           Radium 226 in Water - Total         Sample Type         MBL         Units: pC/L         Qu         Radium 226         % Rec Limits< Qu		Total Radium 228	ND	1	
Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Qu           Total Radium 228         Sample Type         MS         1         39.5         86.0         61.3 - 120         Freedation	Radiu	m 228 by Ga/Tech	Sample Type LCS	Units: pCi/L	
Total Radium 228         34         1         39.5         86.0         61.3 - 120           Radium 228 by Ga/Tech         Sample Type         MS         Units: pC/L         Distance         Quart           MS-336 (04/21/16 19:18) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quart           Total Radium 228         by Ga/Tech         Sample Type         MSD         1         39.5         ND         73.9         64.3 - 120         Quart           Radium 228 by Ga/Tech         Sample Type         MSD         Units: pC/L         BatchID: 11674         Quart           MSD-336 (04/21/16 22:19)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Quart           MSD-336 (04/16 16:01         Radium 228         Sample Type         MBLK         Units: pC/L         Quart           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Radium 226         ND         0.2         Sample Type         Units: pC/L           ICS-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Radium 226         Sample Type         LCSD         Water - Total         Quart </td <td></td> <td>LCS-336 (04/21/16 13:16)</td> <td>RunNo: 133408</td> <td></td> <td></td>		LCS-336 (04/21/16 13:16)	RunNo: 133408		
Radium 228 by Ga/Tech         Sample Type         MS         Units:         C//L           MS-336 (04/21/16 19:18) Analyte         RunNo: 133408         PrepDate:         04/14/16 14:00         BatchID:         11674           Total Radium 228         29         1         39.5         ND         73.9         64.3 - 120         Quints:           Radium 228 by Ga/Tech         Sample Type         MSD         Units:         pc//L         BatchID:         11674           MSD-336 (04/21/16 22:19) Analyte         RunNo:         133408         PrepDate:         04/14/16 14:00         BatchID:         11674           MSD-336 (04/21/16 22:19) Analyte         RunNo:         133408         PrepDate:         04/14/16 14:00         BatchID:         11674           MSD-336 (04/12/16 22:19)         RunNo:         133408         PrepDate:         04/14/16 14:00         BatchID:         11640           MSD-3597 (04/19/16 15:04)         RunNo:         Radium 226         ND         0.2         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Quints:           Radium 226         ND         0.2         Sample Type         LCS         Units:         PC//L         Rec Limits         Quints:         PC//L         Kec Limits		Analyte	Result	RL Spike Ref Samp %REC % Rec Limi	ts Qua
MS-336 (04/21/16 19:18) Analyte         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Total Radium 228         29         1         39.5         ND         73.9         64.3 - 120           Radium 228 by Ga/Tech         Sample Type         MSD         Units: pCi/L         BatchID: 11674           MSD-336 (04/21/16 22:19)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Result         RL         Conc         %RPD         %REC         % RPD Limits         Qui           MSD-336 (04/21/16 22:19)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674         Qui           Analyte         Result         RL         Conc         %RPD         %REC         % RPD Limits         Qui           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640         Qui           Radium 226         ND         0.2         Quits: pCi/L         Quits: pCi/L         Quits: pCi/L           Radium 226         ND         0.2         Sample Type         LCS         Units: pCi/L         Quits: pCi/L           Radium 226         ND         0.2         S5.4         88.3         67.1 - 122         Quits: pCi/L		Total Radium 228	34	1 39.5 86.0 61.3 - 120	
Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Quarter           Total Radium 228         29         1         39.5         ND         73.9         64.3 - 120         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9         73.9	Radiu	m 228 by Ga/Tech	Sample Type <b>MS</b>	Units: pCi/L	
Total Radium 228         29         1         39.5         ND         73.9         64.3 - 120           Radium 228 by Ga/Tech         Sample Type         MSD         Units:         pCi/L         Endition         Galaction         Gal		MS-336 (04/21/16 19:18)	RunNo: 133408	PrepDate: 04/14/16 14:00 BatchID: 11674	
Radium 228 by Ga/Tech         Sample Type         MSD         Units:         pc//L           MSD-336 (04/21/16 22:19)         RunNo: 133408         PrepDate:         04/14/16 14:00         BatchID: 11674         Quita:           Analyte         Result         Result         RL         Core         %RPD         %REC         % RPD Limits         Quita:           Total Radium 228         32         1         29         10.1         81.7         20         7         20           Radium 226 in Water - Total         Sample Type         MBLK         Units:         pc//L         81.6         % Rec         % Rec Limits         Quita:           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate:         04/14/16 0:00         BatchID: 11640         Quita:         Quita:         pci/L         Vita:         Quita:		Analyte	Result	RL Spike Ref Samp %REC % Rec Limi	ts Qu
MSD-336 (04/21/16 22:19)         RunNo: 133408         PrepDate: 04/14/16 14:00         BatchID: 11674           Analyte         Result         RL         Conc         %RPD         %REC         % RPD Limits         Quiteration           Total Radium 228         32         1         29         10.1         81.7         20           Radium 226 in Water - Total         Sample Type         MBLK         Units: pCi/L         8tachID: 11640           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits           Radium 226         ND         0.2         0.2         11640         0.4         0.4           Radium 226 in Water - Total         Sample Type         LCS         Units: pCi/L         0.2         11640           Radium 226 in Water - Total         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits           LCS-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Result         RL         Conc		Total Radium 228	29	1 39.5 ND 73.9 64.3 - 120	
Analyte         Result         RL         Conc         %RPD         %REC         % RPD Limits         Quadity           Total Radium 228         32         1         29         10.1         81.7         20         7           Radium 226 in Water - Total         Sample Type         MBLK         Units:         pC/L         8         70         7         70           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchD: 11640         Quadity           Radium 226         ND         0.2	Radiu	m 228 by Ga/Tech	Sample Type MSD	Units: pCi/L	
Total Radium 228       32       1       29       10.1       81.7       20         Radium 226 In Water - Total       Sample Type       MBLK       Units:       pCi/L       Dist       20         MB-1597 (04/19/16 15:04)       RunNo: 133143       PrepDate:       04/14/16 0:00       BatchID:       11640         Analyte       Result       RL       Spike       Ref Samp       %REC       % Rec Limits       Qua         Radium 226       ND       0.2                       Qua		MSD-336 (04/21/16 22:19)	RunNo: 133408	PrepDate: 04/14/16 14:00 BatchID: 11674	
Radium 226 in Water - Total         Sample Type         MBLK         Units:         pc//L           MB-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate:         04/14/16         0:00         BatchD:         11640         Qua           Radium 226         ND         0.2         Units:         pCi/L         Vector         Vector         Vector         Qua           Radium 226 in Water - Total         Sample Type         LCS         Units:         pCi/L         Vector         Vector         Vector         Vector         Qua           LCS-1597 (04/19/16 15:04)         RunNo:         133143         PrepDate:         04/14/16 0:00         BatchD:         11640         Qua           Radium 226         4.9         0.2         5.54         88.3         67.1 - 122         Vector		Analyte	Result	RL Conc %RPD %REC % RPD Lim	ts Qua
MB-1597 (04/19/16 15:04) Analyte         RunNo: 133143 Result         PrepDate: 04/14/16 0:00 Result         BatchID: 11640 Result         Qual Result           Radium 226         ND         0.2		Total Radium 228	32	1 29 10.1 81.7 20	
Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Qual           Radium 226         ND         0.2          Units:         pCi/L <td>Radiu</td> <td>m 226 in Water - Total</td> <td>Sample Type MBLK</td> <td>Units: pCi/L</td> <td></td>	Radiu	m 226 in Water - Total	Sample Type MBLK	Units: pCi/L	
Radium 226       ND       0.2         Radium 226 in Water - Total       Sample Type       LCS       Units:       pCi/L         LCS-1597 (04/19/16 15:04)       RunNo: 133143       PrepDate:       0.4/14/16 0:00       BatchID:       11640         Analyte       Result       RL       Spike       Ref Samp       %REC       % Rec Limits       Qua         Radium 226 in Water - Total       Sample Type       LCSD       0.2       5.54       88.3       67.1 - 122         Radium 226 in Water - Total       Sample Type       LCSD       Units:       pCi/L       Visite		MB-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0:00 BatchID: 11640	
Radium 226 in Water - Total         Sample Type         LCS         Units:         pCi/L           LCS-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate:         04/14/16 0:00         BatchID:         11640         Quadratic           Radium 226         Radium 226         4.9         0.2         5.54         88.3         67.1 - 122         7           Radium 226 in Water - Total         Sample Type         LCSD         Units:         pCi/L         7         7           LCSD-1597 (04/19/16 15:04)         RunNo:         133143         PrepDate:         04/14/16 0:00         BatchID:         11640           Analyte         Result         RL         Conc         %RPD         %REC         % RPD         7           LCSD-1597 (04/19/16 15:04)         RunNo:         133143         PrepDate:         04/14/16 0:00         BatchID:         11640           Analyte         Result         RL         Conc         % RPD         % REC         % RPD Limits         Quadratic           Radium 226 in Water - Total         Sample Type         MS         Units:         pCi/L         20         11640         11640         11640         11640         11640         11640         11640         11640         111640         111640		Analyte	Result	RL Spike Ref Samp %REC % Rec Limi	ts Qu
LCS-1597 (04/19/16 15:04)       RunNo: 133143       PrepDate: 04/14/16 0:00       BatchID: 11640         Analyte       Result       RL       Spike       Ref Samp       %REC       % Rec Limits       Quadratic Q	ŀ	Radium 226	ND	0.2	
Analyte         Result         RL         Spike         Ref Samp         %REC         % Rec Limits         Quadratic           Radium 226         4.9         0.2         5.54         88.3         67.1 - 122 <td>Radiu</td> <td>m 226 in Water - Total</td> <td>Sample Type LCS</td> <td>Units: pCi/L</td> <td></td>	Radiu	m 226 in Water - Total	Sample Type LCS	Units: pCi/L	
Radium 226       4.9       0.2       5.54       88.3       67.1 - 122         Radium 226 in Water - Total       Sample Type       LCSD       Units:       pCi/L         LCSD-1597 (04/19/16 15:04)       RunNo: 133143       PrepDate:       04/14/16 0:00       BatchID:       11640         Analyte       Result       RL       Conc       %RPD       %REC       % RPD Limits       Quality         Radium 226 in Water - Total       Sample Type       MS       Units:       pCi/L       20         Radium 226 in Water - Total       Sample Type       MS       Units:       pCi/L       20         Radium 226 in Water - Total       Sample Type       MS       Units:       pCi/L       20         S1604125-002B MS (04/19/16 15:04)       RunNo:       133143       PrepDate:       04/14/16 0:00       BatchID:       11640         Analyte       Result       RL       Spike       Ref Samp       % REC       % Rec Limits       Quality		LCS-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0:00 BatchID: 11640	
Radium 226 in Water - Total         Sample Type         LCSD         Units:         pCi/L           LCSD-1597 (04/19/16 15:04)         RunNo: 133143         PrepDate:         04/14/16 0:00         BatchID:         11640           Analyte         Result         RL         Conc         %RPD         %REC         % RPD Limits         Quitable           Radium 226         5.7         0.2         4.9         15.9         104         20           Radium 226 in Water - Total         Sample Type         MS         Units:         pCi/L         V           S1604125-002B MS (04/19/16 15:04)         RunNo:         133143         PrepDate:         04/14/16 0:00         BatchID:         11640           Analyte         RunNo:         133143         PrepDate:         04/14/16 0:00         BatchID:         11640		Analyte	Result	RL Spike Ref Samp %REC % Rec Limi	ls Qu
LCSD-1597 (04/19/16 15:04)       RunNo: 133143       PrepDate: 04/14/16 0:00       BatchID: 11640         Analyte       Result       RL       Conc       %RPD       %REC       % RPD Limits       Quadratic         Radium 226       5.7       0.2       4.9       15.9       104       20         Radium 226 in Water - Total       Sample Type       MS       Units: pCi/L       Endition       BatchID: 11640         S1604125-002B MS (04/19/16 15:04)       RunNo: 133143       PrepDate: 04/14/16 0:00       BatchID: 11640         Analyte       Result       RL       Spike       Ref Samp       % REC       % Rec Limits       Quadratic	1	Radium 226	4.9	0.2 5.54 88.3 67.1 - 122	
Analyte         Result         RL         Conc         % RPD         % REC         % RPD Limits         Quadratic           Radium 226         5.7         0.2         4.9         15.9         104         20           Radium 226 in Water - Total         Sample Type         MS         Units:         pCi/L         Endition           S1604125-002B MS (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640         Quadratic           Analyte         Result         RL         Spike         Ref Samp         % REC         % Rec Limits         Quadratic	Radiu	m 226 in Water - Total	Sample Type LCSD	Units: pCi/L	
Radium 226         5.7         0.2         4.9         15.9         104         20           Radium 226 in Water - Total         Sample Type         MS         Units:         pCi/L           S1604125-002B MS (04/19/16 15:04)         RunNo: 133143         PrepDate: 04/14/16 0:00         BatchID: 11640           Analyte         Result         RL         Spike         Ref Samp %REC         % Rec Limits         Quatered	]	LCSD-1597 (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0:00 BatchID: 11640	
Radium 226 in Water - Total     Sample Type     MS     Units: pCi/L       S1604125-002B MS (04/19/16 15:04)     RunNo: 133143     PrepDate: 04/14/16 0:00     BatchID: 11640       Analyte     Result     RL     Spike     Ref Samp %REC     % Rec Limits     Quitable		Analyte	Result	•	ts Qu
Radium 226 in Water - Total     Sample Type     MS     Units: pCi/L       S1604125-002B MS (04/19/16 15:04)     RunNo: 133143     PrepDate: 04/14/16 0:00     BatchID: 11640       Analyte     Result     RL     Spike     Ref Samp %REC     % Rec Limits     Quitable	L	Radium 226	5.7	0.2 4.9 15.9 104 20	
Analyte Result RL Spike Ref Samp %REC % Rec Limits Qu	Radiu				
Analyte Result RL Spike Ref Samp %REC % Rec Limits Qu	[	S1604125-002B MS (04/19/16 15:04)	RunNo: 133143	PrepDate: 04/14/16 0:00 BatchID: 11640	
Radium 226 53 0.2 5.54 ND 95.4 65131			Result	-	s Qu
	I	Radium 226	5.3	0.2 5.54 ND 95.4 65 - 131	

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

S Spike Recovery outside accepted recovery limits

X Matrix Effect



LABORATORIES, Inc.

2616 E Broadway Ave

Bismarck, ND 58501

# Chain of Custody Record

Page\_\_\_1\_\_of\_\_\_\_.

	1 none, (101) A	LUO-J1 LU										
Toll Free: (8	300) 279-6885	Fax: (701) 258-9724									201682-0863	
Company Nam	e and Address:			Account #	¢:						Phone #:	
	M	VTL		Contact:		·					701-258-9720	
		Broadway		Contact:	Clauc	inte	~				Fax #:	
	<u>Bismarck</u>	<u>, ND 58501</u>		Name of S		Jetti	e	······································	-		For faxed report check box E-mail: ccarroll@mvtl.com	
Billing Addres	s (indicate if different	t from above):									E-mail: <u>ccarroll@mvtl.com</u> For e-mail report check box	
		ay 040		Quote Number Date Submitted:								
		<u>ox 249</u> <u>, MN 56073</u>		During ( ))							4/8/2016	
	ttow onn		Project Na	ame/Numbe	er:					urchase Order #:		
			1			p	ottle	TV		BL5552		
516041	- 2		T					<u>iy</u>	pe	Analysis		
0100-11	pc											
							¥	s				
IML Lab			Sample	Date	Time	ate	Ē	Vial	Jar			
Number	MVTL Lab Number	Client Sample ID	Туре	Sampled		Untreated	1000 ml HNO3	VOC Vials Umpreserved	Glass	Other		
100	16-W696	Equip Blank Pump 1		4/8/2016	Varipieu		-	> >	0	0		
002	16-W697	Equip Blank Pump 2								┝─┤	Radium226 & Radium228 on all	
003	16-W698			4/8/2016								
004		MW3-90		4/8/2016	1031							
	16-W699	MW33		4/8/2016	847							
<u>05</u>	16-W700	MW104		4/8/2016	910							
000	16-W701	MW2-90		4/8/2016	1058							
	T								t			

comments: All results must be reported as a numerical value

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Defe	<u> </u>	T
C last					Date:	-	lemp:
C. Jackson	4/8/2016	1700		Kathy Bays	41211	111.01	120
2				- wing equ	1.10.10	$\mu$	120
				Ū			
						1	1



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

# **Chain of Custody Record**

Projec	t Name:				Nam	ne of Sar	npler(s):					
MDU	Heskett	CCR Rad	iochem	21	nd Qtr 2016		Da	sun	Niesn	10-25	150	Fremy Meye
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		<u>Carbon Co</u> <u>Attn</u> : <u>Address</u> :	<u>sttn</u> :					Number:	82	-08	
	Sample Information								Fi	eld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO <sub>3</sub>			Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
w696	Equip Blank Pump 1	SAPERIO				4						
W699 W698 W700 W701	Equip Blank fump 2 MW 3-90 MW 33 MW 104 MW 2-90	SAPT 16 SAPT16 SAPT16 SAPT16 SAPT16	1031 0847 0910 1058	GW GW GW		4 4 4 4 4			7.10 8.09 5.23 6.99	4795 5038 13993 7916	6.88 6.53 6.98 6.99	MDU CCR combined RadChem

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time,	°C
1 (	V-My-	begin	84-16 1247	C. Jackson		8 Apr 16 1247	H.7C ROI
2		.)					TM SP
3				-			







# CASE NARRATIVE - AMENDED 6 JUL 17 (Work Order)

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

MDU Sample Identification	MVTL Laboratory #
FB1	17-W1095
Dup1	17-W1096
13	17-W1097
101	17-W1098
102	17-W1099
103	17-W1100
70	17-W1101

# I. RECEIPT

- All samples were received at the laboratory on 21 Apr17 at 900.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - Temperature of samples upon receipt was 1.5°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

# II. HOLDING TIMES

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

# III. METHODS

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

# IV. ANALYSIS

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





# CASE NARRATIVE – AMENDED 6 JUL 17 (Work Order)

**MVTL Lab Reference No/SDG: Client:** Location: **Project Identification: MVTL Laboratory Identifications:** Page 2 of 2

201782-0987 **Montana Dakota Utilities MDU Heskett** CCR April 2017 17-W1095 through 17-W1101

Recoveries for two lithium matrix spike duplicates were outside of the acceptable limits. 0 Recoveries of the matrix spikes were acceptable. RPDs for the recoveries of the matrix spikes/matrix spike duplicates were acceptable. No further action was taken.

#### REPORTING v.

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

All laboratory data has been approved by MVTL Laboratories.

7JUL17 DATE: SIGNED:

Claudette Carroll - MVTL Bismarck Laboratory Manager

**MVTL** 

# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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

MEMBER ACIL

Quality Control R Lab IDs: 17-W1095 to 17	<b>Ceport</b>	<b>P</b> 1	roject: MI	DII Uech	ratt CCB	-	Wester		1.500 000								
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt		Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	······	MSD/ Dup	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ / Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Total mg/l	0.1000	109	80-120	0.400 0.400	17W1096q 17W1107q	< 0.001 < 0.001	0.4490 0.4302	112	75-125 75-125	0.4490	0.4302 0.4374		4.3 1.7	20 20		-	< 0.001
Arsenic - Total mg/l	0.1000	109	80-120	0.400 0.400	17W1096q 17W1107q	< 0.005 < 0.005	0.4588 0.4364		75-125 75-125	0.4588	0.4370 0.4518	109	4.9	20 20 20	-	-	< 0.002
Barium - Total mg/l	0.1000	103	80-120	0.400 0.400	17W1096q 17W1107q	0.0140 0.0158	0.3866 0.4114		75-125 75-125	0.3866	0.3974 0.4080	96 98	2.8 0.8	20 20 20		-	< 0.002
Beryllium - Total mg/l	0.1000	108	80-120	0.400 0.400	17W1096q 17W1107q	< 0.001 < 0.001	0.4430 0.4296		75-125 75-125		0.4270 0.4240	107 106	3.7 1.3	20 20	-	-	< 0.0005
Boron - Total mg/l	0.40 0.40	100 100	80-120 80-120		17-W1096 17-W1107 17-W1146	0.44 0.39 0.81	2.02 0.75 2.32	105 90 101	75-125 75-125 75-125	0.75	2.10 0.76 2.37	111 92 104	3.9 1.3 2.1	20 20 20			<0.1 <0.1 <0.1 <0.1
Cadmium - Total mg/l	0.1000	111	80-120	0.400 0.400	17W1096q 17W1107q	< 0.0005 < 0.0005	1		75-125 75-125	1 1	0.4380 0.4370	110 109	3.9 0.0	20 20			< 0.1
Calcium - Total mg/l	20.0 20.0	106 104	80-120 80-120		17W1013q 17W1101q	4.1 417	97.1 870	93 91	75-125 75-125	97.1	97.4 895	93 96	0.3 2.8	20 20			<1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0 30.0 30.0	84 83 85 85 107 87	80-120 80-120 80-120 80-120 80-120 80-120	30.0 30.0 30.0	17-W994 17-W1098 17-W1503	7.8 19.1 51.8	36.1 50.8 77.3	94 106 85	80-120 80-120 80-120 7	36.1 50.8 77.3	35.6 48.3 77.0	93 97 84	1.4 5.0 0.4	20 20 20	- - - - -		<1 <1 <1 <1 <1 <1 <1 <1 <1
Chromium - Total mg/l	0.1000	107	80-120	0.400 0.400	17W1096q 17W1107q	0.0044 < 0.002	0.4312 0.4082	107 102	75-125 75-125	0.4312 0.4082	0.4124 0.4122	102 103	4.5 1.0	20 20		-	< 0.002

# Page: 1 of 2

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MEMBER ACIL

# **Quality Control Report**

Lab IDs: 17-W1095 to 17-W	V1101	<u> </u>	roject: MI	JU Hesk	ett - CCR	Y	Work O	<b>rder:</b> 20 <sup>+</sup>	1782-0983	,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		MSD/ Dup	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Cobalt - Total mg/l	0.1000	104	80-120	0.400 0.400	17W1096q 17W1107q	< 0.002 < 0.002	0.4134 0.3972		75-125 75-125	5 0.4134	0.3992 0.4022	100	3.5 1.3	20 20	-	-	< 0.002
Fluoride mg/l	0.50	108	90-110	0.500 0.500	17-W1084 17-W1106	2.09 0.25	2.55 0.72	92 94	80-120 80-120	1	2.55 0.72	92 94	0.0 0.0	20 20		-	< 0.1 < 0.1
Lead - Total mg/l	0.1000	105	80-120	0.400 0.400	17W1096q 17W1107q	< 0.001 < 0.001	0.4026 0.3982		75-125 75-125		0.3852 0.3910		4.4	20 20		-	< 0.0005
Lithium - Total mg/l	0.40 0.40	102 105	80-120 80-120		17-W1096 17-W1107 17-W1146	0.82 1.55 2.06	1.98 2.03 3.18	116 120 112	75-125 75-125 75-125	5 2.03	2.03 2.09 3.32	121 135 126	2.5 2.9 4.3	20 20 20	- - - -		<0.1 <0.1 <0.1 <0.1 <0.1 <0.1
Mercury - Total mg/l	0.0020	105	85-115	0.002	17-W1102	< 0.0002	2 0.0020	100	70-130	0.0020	0.0020	100	0.0	20	-	-	< 0.0002
Molybdenum - Total mg/l	0.1000	102	80-120	0.400 0.400	17W1096q 17W1107q	< 0.002 < 0.002	0.4594 0.4468	1	75-125 75-125		0.4396 0.4468		4.4 0.0	20 20	-	-	< 0.002
pH units	-	-		-	-	-		-		8.4 7.2	8.5 7.3	-	1.2 1.4	20 20	-		-
Selenium - Total mg/l	0.1000	108	80-120	0.400 0.400	17W1096q 17W1107q	0.1528 0.1538	0.6106 0.6054		75-125 75-125		0.6232 0.6084		2.0 0.5	20 20			< 0.002
Sulfate mg/l	100 100	115 110	80-120 80-120		17-W1095 17-W1102	< 5 < 5	113 111	113 111	80-120 80-120		112 107	112 107	0.9 3.7	20 20	-		< 5 < 5
Thallium - Total mg/l	0.1000	105	80-120	0.400 0.400	17W1096q 17W1107q	< 0.0005 < 0.0005			75-125 75-125		0.3820 0.3880		5.2 1.2	20 20	-	-	< 0.0005
Total Dissolved Solids mg/l							-			1210 3720 6780	1190 3730 6840		1.7 0.3 0.9	20 20 20	-	-	<10 <10

# Page: 2 of 2

Approved by:

(. Const) 19 May 17





Page: 1 of 7

CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: FB1

Event and Year: April 2017

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

### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Clauditte Approved by: 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

CERTIFICATION: ND # ND-00016





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#### CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: Dup 1

Event and Year: April 2017

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

#### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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





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#### CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 13

Event and Year: April 2017

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

#### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Approved by:

1C 9M2417 Claudite K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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





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#### CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 101

Event and Year: April 2017

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

#### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Approved by:

Clauditte K. Cantle

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 Bismarck ND 58501 Report Date: 18 May 17 Lab Number: 17-W1099 Work Order #:82-0987 Account #: 002800 Date Sampled: 19 Apr 17 11:38 Date Received: 21 Apr 17 9:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: 102

Event and Year: April 2017

Temp at Receipt: 1.5C

As Receive	ed	Method	Method	Date		
Result		RL	Reference	Analyzed	Analyst	
				21 Apr 17	KMD	
		NA	SM 4500 H+ B	19 Apr 17 11:38	JSM	
* 7.2	units	0.1	SM4500 H+ B	21 Apr 17 17:00	SVS	
8.07	Degrees C	NA	SM 2550B	19 Apr 17 11:38	JSM	
6813	umhos/cm	1	EPA 120.1	19 Apr 17 11:38	JSM	
0.28	mg/l	0.10	SM4500-F-C	24 Apr 17 17:00	SVS	
4140	mg/l	5.00	ASTM D516-07	28 Apr 17 16:06	EMS	
11.6	mg/l	1.0	SM4500-Cl-E	2 May 17 11:40	EMS	
< 0.0002	mg/l	0.0002	EPA 245.1	25 Apr 17 13:54	EV	
6310	mg/l	10	I1750-85	21 Apr 17 15:35	SVS	
480	mg/l	1.0	6010	24 Apr 17 13:45	SZ	
0.75	mg/l	0.10	6010	25 Apr 17 14:24	KMD	
1.08	mg/l	0.10	6010	24 Apr 17 16:22	KMD	
< 0.001	mg/l	0.0010	6020	10 May 17 11:45	KMD	
< 0.005 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD	
0.0190	mg/l	0.0020	6020	10 May 17 11:45	KMD	
< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD	
< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD	
< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD	
< 0.002	mg/l	0.0020	6020	10 May 17 11:45	KMD	
< 0.001 ^	mg/l	0.0005	6020	10 May 17 11:45	KMD	
0.0025	mg/l	0.0020	6020	10 May 17 11:45	KMD	
< 0.01 ^	mg/l	0.0020	6020	10 May 17 11:45	KMD	
< 0.0005	mg/l	0.0005	6020	10 May 17 11:45	KMD	
	Result 6.88 * 7.2 8.07 6813 0.28 4140 11.6 < 0.0002 6310 480 0.75 1.08 < 0.001 < 0.001 < 0.0005 < 0.002 < 0.002 < 0.002 < 0.002 < 0.001 < 0.0025 < 0.01	<pre>6.88 units * 7.2 units 8.07 Degrees C 6813 umhos/cm 0.28 mg/l 4140 mg/l 11.6 mg/l 4140 mg/l 6310 mg/l 6310 mg/l 6310 mg/l 6310 mg/l 0.75 mg/l 1.08 mg/l 0.75 mg/l 1.08 mg/l &lt; 0.001 mg/l &lt; 0.001 mg/l &lt; 0.001 mg/l &lt; 0.002 mg/l &lt; 0.001 mg/l </pre>	Result     RL       6.88     units     NA       * 7.2     units     0.1       8.07     Degrees C     NA       6813     umhos/cm     1       0.28     mg/l     0.10       4140     mg/l     5.00       11.6     mg/l     1.0       < 0.0002	Result         RL         Reference           6.88         units         NA         SM 4500 H+ B           * 7.2         units         0.1         SM4500 H+ B           8.07         Degrees C         NA         SM 2550B           6813         umhos/cm         1         EPA 120.1           0.28         mg/l         0.10         SM4500-F-C           4140         mg/l         5.00         ASTM D516-07           11.6         mg/l         1.0         SM4500-Cl-E           < 0.0002	Result         RL         Reference         Analyzed           6.88         units         NA         SM 4500 H+ B         19 Apr 17           6.88         units         O.1         SM4500 H+ B         19 Apr 17         11:38           * 7.2         units         O.1         SM4500 H+ B         21 Apr 17         11:38           6813         umhos/cm         1         EPA 120.1         19 Apr 17         11:38           0.28         mg/l         0.10         SM4500-F-C         24 Apr 17         17:00           4140         mg/l         5.00         ASTM D516-07         28 Apr 17         16:06           11.6         mg/l         1.0         SM4500-CI-E         2 May 17         11:40            0.0002         EPA 245.1         25 Apr 17         15:45           6310         mg/l         1.0         I1750-85         21 Apr 17         15:35           480         mg/l         0.10         6010         24 Apr 17         16:22            0.001         mg/l         0.0020         6020         10 May 17         11:45            0.005         mg/l         0.0020         6020         10 May 17         11:45     <	

\* Holding time exceeded

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

Approved by:

Clauditte Manin 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 Bismarck ND 58501

Project Name: MDU Heskett Sample Description: 103

Event and Year: April 2017

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

#### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Approved by:

May 17 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 Bismarck ND 58501

Project Name: MDU Heskett Sample Description: 70

Event and Year: April 2017

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

#### Temp at Receipt: 1.5C

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

\* Holding time exceeded

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

Approved by:

1C 19 May ,7 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016