



| Company: | MDU Heskett | |
|--------------------|--------------|--|
| Event: | 2017 | |
| Sample ID: | , 13 | |
| Sampling Personal: | Jerry Menger | |

| Weather Conditions: | Temp: | 40 °F | | Wind: | NOS-10 | Pre | cip: Sun | ny / Partly (| Cloudy / Clo | ŭdŷ |
|--------------------------|------------|----------------|---------|-------|---------------------|-------------------|---------------|-----------------|----------------|---------------|
| Well Int | ormation | | | | | Samplin | g Informati | | | |
| Well Locked? Yes | (No) | | | | Purging Method | | <u> </u> | γ | ontrol Setting | s |
| Well Labeled? | No | | | | Sampling Method | Bladder | | Purge: | < | sec. |
| Casing Straight? (Yes | No | | | | Dedicated Equip? | Yes No | | Recover: | 55 | sec. |
| Grout Seal Intact? Yes | NO | Not Visi | ible | | Duplicate Sample?: | (Yes No | | PSI: | 20 | |
| Repairs Necessary: | <u> </u> | | | | Duplicate Sample ID | | | Pumping R | | mL/min |
| Casing Diameter | : | 2" | | | | | | <u></u> | | |
| Water Level Before Purge | : 21 | 3,76 | ft | | Purge Date | 19Apr17 | Time Purg | ing Began: | OBOS | @m/pm |
| Total Well Depth | | | ft | | Well Purged Dry? | | | Purged Dry: | | am/pm |
| Well Volume | - | | liters | | Sample Date | | | f Sampling: | OBSS | am/pm |
| Depth to Top of Pump | : | | ft | | | | | | | <u>Coppin</u> |
| Water Level After Sample | : | 9.23 | ft | | Bottle C | CR: 1L Raw, 500mL | Nitirc, 500mL | Nitric (filtere | ed) 4-11 Nitr | ic |
| Measurement Method | Electric \ | Vater Level In | dicator | | List: | | | (| | |

Field Measurements

| | | | T | | | | | | | |
|-------------|----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| | ization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | OBIC | 7.70 | 10365 | 6.95 | 4.01 | 218.5 | 3.89 | 29.15 | 502,0 | Clear |
| 2 | 0815 | 7.78 | 10353 | 6.95 | 3.90 | 220,2 | 3.96 | 29.20 | 500,0 | Clear |
| 3 | 0820 | 1.77 | 10357 | 6.95 | 3.94 | 220.9 | 1.90 | 29,27 | 520.0 | Clear |
| 4 | 0825 | 7.BI | 10345 | 6,95 | 3,96 | 221.4 | 2,23 | 29,30 | 500,0 | Clear |
| 5 | 0830 | 7.89 | 10355 | 6.96 | 4.06 | 204,0 | 10.0 | 29,25 | 500,0 | Cles |
| 6 | 0835 | 7.91 | 10374 | 6.96 | 4.22 | 159.9 | 11.9 | 29.24 | 520,0 | Clear |
| 7 | 0840 | 7.91 | 10395 | 696 | 4.30 | 98.7 | 12.4 | 29,25 | 500,0 | Clear |
| 8 | 0845 | 7.97 | 10712 | 6.96 | 4.25 | 77.8 | 9.36 | 29,24 | 500.0 | Clear |
| 9 | 0850 | 8.03 | 16424 | 6.96 | 4.26 | 69.4 | 9.52 | 29.25 | 500.0 | Clear |
| 10 | 0855 | Biol | 10457 | 6.96 | 4.35 | 62.1 | 9.74 | 29.24 | 500.0 | Clear |
| Stabilized: | | No | | | | Tc | tal Volume | Removed: | 5000.0 | mL |



Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

| Company: | MDU Heskett | |
|--------------------|-------------|--|
| Event: | 2017 | |
| Sample ID: | , 101, | |
| Sampling Personal: | Jan Heyon | |

-

| Weather Conditions: | | Temp: | <u> 45 °F</u> | ; | Wind: | 505-1 | 0 | | Precip | : Sunny / | Partly C | loudy FCla | udy |
|---------------------|-------------|------------|------------------|---------|-------|-----------|-------------|------------|---------------------------------------|-----------------|-------------|---------------|--------|
| | Well Info | ormation | | | | | | Sa | mpling I | nformation | | | |
| Well Locked? | Yes | No | | | | Purgi | ng Method: | Blad | lder | | Co | ntrol Setting | IS |
| Well Labeled? | Yes | No | | | | Samplii | ng Method: | Blac | lder | 1 | Purge: | 6 | sec. |
| Casing Straight? | <u>(Yes</u> | No | | | | Dedicat | ed Equip?: | (es) | No | 1 | Recover: | 55 | sec. |
| Grout Seal Intact? | <u> </u> | No | Not Vis | ible | | Duplicate | Sample?: | Yes | No | 1 | PSI: | 25 | |
| Repairs Necessary: | · <u> </u> | | | | | Duplicate | Sample ID: | | - | Pu | Imping Ra | ate: /00 | mL/min |
| Casing | Diameter: | | 2" | | | | | | · · · · · · · · · · · · · · · · · · · | J <u>L</u> | V | | |
| Water Level Befo | ore Purge: | | 36.54 | ft | | P | Purge Date: | 19 Apr 1" | }_ | Time Purging | Began: | 1422 | am/pm |
| Total W | /eli Depth: | | · | ft | | Well P | urged Dry? | Yes | No | Time Purg | ged Dry: | * | am/pm |
| We | II Volume: | | | liters | | Sa | mple Date: | (9 April | 7 | Time of Sa | ampling: | 1503 | am/@m |
| Depth to Top | of Pump: | | | ft | | | | | | | | | |
| Water Level Afte | er Sample: | | 40.32 | ft | | Bottle | CC | R: 1L Raw, | 500mL Nit | irc, 500mL Nitr | ic (filtere | d). 4-1L Nitr | ic |
| Measuremen | t Method: | Electric V | Nater Level In | dicator | | List: | | | | | | ,, | - |

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|--------------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1427 | 9,00 | 4766 | 6,80 | 4.46 | 69,7 | 8,48 | 37.35 | 500.0 | Cler |
| 2 | 1437 | 6.90 | 4751 | 6.76 | 1.26 | 11.7 | 8.65 | 38.25 | 1000,0 | Clear |
| 3 | 1447 | 8.91 | 4739 | 6.75 | 1.06 | 76 | 9,00 | 39.08 | 1000,0 | Clea |
| 4 | 1453 | 9.02 | 4736 | 6,75 | 1.06 | 11.8 | 8,30 | 39,15 | 500,0 | Clear |
| 5 | 1458 | 6.96 | 4734 | 6:75 | 1.02 | 16.0 | 7.92 | 39.20 | 500,0 | clear |
| 6 | 1503 | 8,97 | 4733 | 6.74 | 1.07 | 19.6 | 7.81 | 39.25 | 500,0 | Clear |
| 7 | | | | | | | | ······ | | |
| 8 | | | | | | | | | | ······································ |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |





| Company: | MDU Heskett | |
|--------------------|-------------|--|
| Event: | 2017 | |
| Sample ID: | . 102 | |
| Sampling Personal: | Jean store | |
| | 1. 1 | |

| Weather Conditions: | | Temp | 45 . | 'F | Wind: | 505-1 | 0 | | Precip: | Sun | ny (Partly C | loudy / Clo | oudy |
|---------------------|-------------|----------|---------------|----------|-------|-----------|-------------|------------|------------|------------|-----------------|--|--------|
| | Well Info | rmation | | | | | | Sa | mpling l | nformatio | on | | |
| Well Locked? | Yes | No> | | | | Purgi | ng Method: | Blad | der | | Co | ntrol Setting | as |
| Well Labeled? | Yes | No | | | | Sampli | ng Method: | Blad | der | 1 | Purge: | < | sec. |
| Casing Straight? | (Tês) | No | | | | Dedicat | ted Equip?: | Yes | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes) | No | Not Vi | sible | | Duplicate | Sample?: | Yes | N b | | PSI: | 15 | |
| Repairs Necessary: | | | | | | Duplicate | Sample ID: | | | | Pumping R | ate: 100 | mL/min |
| Casing | Diameter: | | 2" | | | | | | | - | · | | |
| Water Level Bef | ore Purge: | | 15.4B | ft | | F | Purge Date: | 1941/ | } | Time Purg | ing Began: | 1053 | am/pm |
| Total W | Vell Depth: | | | ft | | Well P | urged Dry? | Ýes | No> | Time F | urged Dry: | The second s | am/pm |
| We | ell Volume: | | | liters | | Sa | mple Date: | 19A-1 | F | Time of | Sampling: | 1138 | @m/pm |
| Depth to Top | o of Pump: | | | ft | | | | ····· | | | | | |
| Water Level Afte | er Sample: | | 18,15 | ft | | Bottle | CC | R: 1L Raw, | 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nit | ric |
| Measuremen | nt Method: | Electric | Water Level I | ndicator | | List: | | | | | • | | |

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1058 | 8.18 | B031 | 6.80 | 1.83 | 46.6 | 17.9 | 16.35 | 500,0 | Clear |
| 2 | 1108 | Birg | 7563 | 6.78 | 0.96 | 32.4 | 2,70 | 16.78 | 1000.0 | cles |
| 3 | 406 in3 | 8.16 | 7268 | 6.79 | 0,98 | 30,5 | 1.29 | 16,92 | 500.0 | Cles |
| 4 | 1118 | 8,19 | 7220 | 6.79 | 0,97 | 27.7 | 1.05 | 17.08 | 50,0 | Clear |
| 5 | 1123 | 8.29 | 7129 | 6.80 | 0.95 | 21.1 | 0,71 | 17.20 | 500,0 | Clea |
| 6 | 1128 | 6.27 | 7001 | 6.81 | 1.36 | 17.1 | OISZ | 17.25 | 500.0 | Clear |
| 7 | 1123 | 8.33 | 6774 | 6.84 | 1.45 | 13.0 | 0.52 | 17.31 | 500.0 | Clear |
| 8 | 1128 | BIZT | 6775 | 6.86 | 1.70 | 10,4 | 0,33 | 17.40 | 500.0 | Clear |
| 9 | 1133 | 8,10 | 6774 | 6.87 | 1.76 | 7.7 | 0.32 | 17.50 | 500,0 | Clear |
| 10 | 1130 | 8.07 | 6813 | 6.80 | 1.8 | 4.5 | 0:36 | 17.52 | 500,0 | Clear |
| Stabilized: Comments | Yes | No | | | | То | otal Volume | Removed: | 5500.0 | mL |





| MDU Heskett |
|-------------|
| 2017 |
| 103, |
| Jeny play |
| |

| Weather Conditions: | | Temp: | 45 °F | = | Wind: | NOS-1 | D | | Precip: | Suni | ny / Partly (| Cloudy Clou | udy |
|---------------------|-------------|------------|----------------|---------|-------|--------------|------------|------------|----------------|--|-----------------|-----------------|--------|
| | Well Info | ormation | | | | | | Sa | mpling l | nformatio | on | | |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Blac | lder | | Co | ontrol Setting | s |
| Well Labeled? |) des | No | | | | Samplir | ng Method: | Blac | lder | | Purge: | | sec. |
| Casing Straight? | Yeş | No | | | | Dedicat | ed Equip?: | (Tes- | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Vis | ible | | Duplicate | Sample?: | Yes | No. | | PSI: | 20 | |
| Repairs Necessary: | | - | | | | Duplicate \$ | Sample ID: | ~ | - | | Pumping R | ate: 100 | mL/min |
| Casing | Diameter: | | 2'' | | | | | | | | | | |
| Water Level Bef | ore Purge: | | 31.52 | ft | | P | urge Date: | 19A-1 | 2 | Time Purg | ing Began: | 1615 | am/pm |
| Total V | /ell Depth: | | ********* | ft | | Well Pi | urged Dry? | Yes | No | Time P | urged Dry: | | am/pm |
| We | Il Volume: | | | liters | | Sa | mple Date: | 1941- | 17 | the second s | Sampling: | 1635 | am/pm |
| Depth to Top | o of Pump: | | <u> </u> | ft | | | | | ······ /······ | Lu | | | v |
| Water Level Afte | er Sample: | | 33,00 | ft | | Bottle | СС | R: 1L Raw, | 500mL Nit | rc, 500mL | Nitric (filtere | ed), 4-1L Nitri | ic |
| Measuremer | t Method: | Electric \ | Nater Level In | dicator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-----------------|----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1620 | 8.49 | 4976 | 6.72 | 2.44 | 106.2 | 1.29 | 31.62 | Sayo | Clear |
| 2 | 1625 | 8,44 | 4990 | 6.73 | 2,51 | 114.2 | 1.66 | 31.65 | 500,0 | Clear |
| 3 | 1630 | 8.41 | 4996 | 6,73 | 2,41 | 123,0 | 1.56 | 31,72 | 500,0 | Clear |
| 4 | 1635 | 8,46 | 49913 | 6.73 | 2,30 | 128.8 | 1.48 | 31,82 | 500,0 | Clear |
| 5 | | | | | | - | | | | |
| 6 | | | | | | | | | | · · · · · · · · · · · · · · · · · · · |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 abilized: | (Yes | | | | | | | | | |



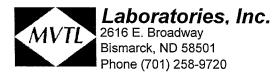


| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | .70 |
| Sampling Personal: | Jerry Keyer |
| | 1 V |

| Weather Conditions: | Temp: | <u>45 °F</u> | | Wind: | 505-10 | | Precip: | Sunny / Par | y Cloudy / el | oudy | | |
|---------------------------|-------------|----------------|---------|-------|----------------------|------------|------------|---|----------------|--------|--|--|
| Well Inf | ormation | | | | Sampling Information | | | | | | | |
| Well Locked? Yes | NO | | | | Purging Method: | Blad | lder | | Control Settir | ngs | | |
| Well Labeled? Yes | No | | | | Sampling Method: | Blad | lder | Pur | je: 5 | sec. | | |
| Casing Straight? (Yes | No | | | | Dedicated Equip?: | (Yes) | No | Recov | | sec. | | |
| Grout Seal Intact? Yes | No | Not Visi | ible | | Duplicate Sample?: | Yes | No | | si: 20 | | | |
| Repairs Necessary: | | | | | Duplicate Sample ID: | • | | Pumpir | g Rate: 100 | mL/min | | |
| Casing Diameter: | | 2" | | | · | | | 4 k aaaaaa k aaaaaa k aaaaaa k aaaaa ka k | | ····· | | |
| Water Level Before Purge: | 1 | 9.22 | ft | | Purge Date: | 19Air1 | 7 | Time Purging Beg | in: 1258 | am/pm | | |
| Total Well Depth: | - | | ft | | Well Purged Dry? | Yes | NO | Time Purged D | ry: | am/pm | | |
| Well Volume: | | | liters | | Sample Date: | 19Apr13 | | Time of Sampli | ig: 1323 | am/pm | | |
| Depth to Top of Pump: | - | | ft | | | | 4 | I | | | | |
| Water Level After Sample: | 2 | 0,85 | ft | | Bottle CC | R: 1L Raw. | 500mL Niti | irc, 500mL Nitric (fil | ered). 4-1L N | tric | | |
| Measurement Method: | Electric Wa | ater Level Ind | dicator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------|----------------------|--------------|----------------|------|---------------------------------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1303 | 8.57- | 4270 | 7.03 | 1.33 | 92.0 | 0,20 | 19.83 | 500,0 | Clear |
| 2 | 1308 | 8.61 | 4302 | 7.02 | 0.82 | 93.0 | 0.23 | 20,05 | Sec.0 | Clear |
| 3 | 1313 | 8,56 | 4312 | 7.02 | 0.79 | 93.4 | 0.67 | 20,19 | 500.0 | Clear |
| 4 | 1308 | 8.58 | 4314 | 7.02 | 0.73 | 94.6 | 0.84 | 20.30 | 50.0 | Clear |
| 5 | 1323 | 8.60 | 4313 | 7.02 | 0,73 | 95.7 | 0.79 | 20,40 | 500.0 | Clem |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | · · · · · · · · · · · · · · · · · · · | | | | | |
| 10 | | | | | | | | | | |



Chain of Custody Record

| Project Name | ······································ | | Event: | | | | Work O | rder N | | | | - |
|---|---|---------------|-----------------------------------|-------------|-------------------------|------------------------------------|-----------------------|--------|-----------|-------------|--------|---------------------------|
| | MDU Heskett | | | April 2017 | | | | | 88 | 2-09 | 87 | |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | | Carbon Copy: Attn: Address: | | | Name of Sampler(s): Jerry Mey c | | | | | | |
| | Samp | le Informatio | n | · | | Bot | tle Type | • | Fi | eld Para | meters | Analysis |
| Lab Number | Sample ID | Date | Time | Sample Type | 1 liter | 500mL Nitric | com Nitric (filtered) | | Temp (°C) | Spec. Cond. | Hd | Analysis Required |
| N1095 | FBI | 19 Apr 17 | - | GW | X | <u>x x</u> | | | | - | (| |
| W1096 | Dup 1 | 1951-17 | | GW | 8 | \times | | | | <u>ب</u> |) | |
| W1097 | 13 | 19Apr 17 | 0855 | GW | X | XX | 1 | | BIOL | 10457 | 6.96 | |
| W1098 | 101 | 191 Apr 17 | 1503 | GW | $\left \times \right $ | $\times \times$ | 1 | | 8.97 | 4733 | 6.74 | |
| W1099 | 102 | 19 Apr 17 | 1138 | GW | \times | \mathcal{X} | - | | B.07 | 6813 | 6.88 | MDU CCR List with TSS |
| W1100 | 103 | 19 Apr 17 | 1635 | GW | X | ४४ | | | 8,46 | 4993 | 6.73 | and Dissolved CCR Metals. |
| isiia | 70 | 19 Apr 17 | 1323 | GW | X | XX | | | 8.60 | 4313 | 7,02 | |
| - | | | | | | | | | | | | - |

| Relinquished By: | | Sar | nple Condition: |
|------------------|-----------|------------|-----------------|
| Name: | Date/Time | Location: | Temp (°C) |
| 1-1-11- | 212-17 | LogIn | 1.5 |
| - Y-LPG | 0740 | Walk In #2 | TM562 / TM588 |
| 2 | | | |

| Received | by: | |
|------------|-------------|-----|
| Name: | Date/Tir | ne |
| Mad Simman | 21 April 17 | 900 |
| | | |





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CASE NARRATIVE- AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-0988 Montana Dakota Utilities MDU Heskett CCR April 2017 17-W1102 through 17-W1109

| MDU Sample Identification | MVTL Laboratory # |
|---------------------------|------------------------------------|
| FB2 | 17-W1102 |
| Dup2 | 17-W1103 |
| 2-90 | 17-W1104 (Lab accident, no sample) |
| 3-90 | 17-W1105 |
| 33 | 17-W1106 |
| 44R | 17-W1107 |
| 80R | 17-W1108 |
| 105 | 17-W1109 |

I. RECEIPT

- All samples were received at the laboratory on 21 Apr17 at 930.
- 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 1.0°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- Due to a laboratory accident, sample 2-90 was unable to be analyzed. The sample will be recollected at another time and reported under separate cover.

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.





CASE NARRATIVE- AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-0988 Montana Dakota Utilities MDU Heskett CCR April 2017 17-W1102 through 17-W1109

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.
 - The recoveries for one fluoride matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
 - Recoveries for two lithium matrix spike duplicates were outside of the acceptable limits.
 Recoveries of the matrix spikes were acceptable.
 RPDs for the recoveries of the matrix spikes/matrix spike duplicates were acceptable.
 No further action was taken.

V. REPORTING

• On 6 Jul 17, it was discovered that the template used to create the case narrative had an extra 7 in the work order (e.g. 2017782-0988). Case narrative has been corrected to reflect the correct work order.

All laboratory data has been approved by MVTL Laboratories.

Claudette anto SIGNED:

DATE: 73

7JVL17

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 Report

| Lab IDs: 17-W1102 to 17- | W1109 | Pr | oject: MI | DU Hesk | ett - CCR | ŗ | Work Or | der: 201 | 782-098 | 8 | | | | | | | |
|--------------------------|---------------------|-----------------|------------------------|-------------------------|----------------------------------|-----------------------------------|----------------------------|-----------------------------|------------------------------------|-------------------------------|----------------------------|-------------------|--------------------|---------------------------------|---------------------|--------------------------|----------------------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Antimony - Total mg/l | 0.1000 0.1000 | 109 108 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | < 0.001 < 0.001 < 0.001 | 0.4490 0.4302 0.4444 | 112 108 111 | 75-125 75-125 75-125 | 0.4490 0.4302 0.4444 | 0.4302 0.4374 0.4196 | 108 109 105 | 4.3 1.7 5.7 | 20 20 20 | | - - | < 0.001 < 0.001 |
| Arsenic - Total mg/l | 0.1000 0.1000 | 109 106 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | < 0.005 < 0.005 < 0.005 | 0.4588 0.4364 0.4526 | 115 109 113 | 75-125 75-125 75-125 | 0.4588 0.4364 0.4526 | 0.4370 0.4518 0.4200 | 109 113 105 | 4.9 3.5 7.5 | 20 20 20 | | - | <0.002 <0.002 |
| Barium - Total mg/l | 0.1000 0.1000 | 103 104 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | 0.0140 0.0158 0.0089 | 0.3866 0.4114 0.3982 | 93 99 97 | 75-125 75-125 75-125 | 0.3866 0.4114 0.3982 | 0.3974 0.4080 0.3672 | 96 98 90 | 2.8 0.8 8.1 | 20 20 20 | | | < 0.002 < 0.002 |
| Beryllium - Total mg/l | 0.1000 0.1000 | 108 109 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | <0.001 <0.001 <0.001 | 0.4430 0.4296 0.4274 | 111 107 107 | 75-125 75-125 75-125 | 0.4430 0.4296 0.4274 | 0.4270 0.4240 0.4084 | 107 106 102 | 3.7 1.3 4.5 | 20 20 20 | - | - | < 0.0005 < 0.0005 |
| Boron - Total mg/l | 0.40 | 100 | 80-120 | 0.400 1.50 | 17-W1107 17-W1146 | 0.39 0.81 | 0.75 2.32 | 90 101 | 75-125 75-125 | 0.75 2.32 | 0.76 2.37 | 92 104 | 1.3 2.1 | 20 20 | - | | < 0.1 < 0.1 |
| Cadmium - Total mg/l | 0.1000 0.1000 | 111 111 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | <0.0005 <0.0005 <0.0005 | 0.4554 0.4368 0.4354 | 114 109 109 | 75-125 75-125 75-125 | 0.4554 0.4368 0.4354 | 0.4380 0.4370 0.4166 | 110 109 104 | 3.9 0.0 4.4 | 20 20 20 | - | | < 0.0005 < 0.0005 |
| Calcium - Total mg/l | 20.0 20.0 | 104 106 | 80-120 80-120 | 500 1000 | 17W1101q 17W1146q | 417 444 | 870 1430 | 91 99 | 75-125 75-125 | 870 1430 | 895 1390 | 96 95 | 2.8 2.8 | 20 20 | - | | <1 <1 <1 <1 <1 |
| Chloride mg/l | 30.0 30.0 | 107 87 | 80-120 80-120 | 30.0 | 17-W1098 | 19.1 | 50.8 | 106 | 80-120 | 50.8 | 48.3 | 97 | 5.0 | 20 | - | - | <1 |
| Chromium - Total mg/l | 0.1000 0.1000 | 107 105 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | 0.0044 < 0.002 < 0.002 | 0.4312 0.4082 0.4200 | 107 102 105 | 75-125 75-125 75-125 | 0.4312 0.4082 0.4200 | 0.4124 0.4122 0.3914 | 102 103 98 | 4.5 1.0 7.0 | 20 20 20 | - - - | - - - | < 0.002 < 0.002 |
| Cobalt - Total mg/l | 0.1000 0.1000 | 104 104 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | <0.002 <0.002 0.0023 | 0.4134 0.3972 0.4134 | 103 99 103 | 75-125 75-125 75-125 | 0.4134 0.3972 0.4134 | 0.3992 0.4022 0.3928 | 100 101 98 | 3.5 1.3 5.1 | 20 20 20 | | - - - | < 0.002 < 0.002 |

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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

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Page: 2 of 2

Quality Control Report

| Lab IDs: 17-W1102 to 17-W | 1109 | Pr | oject: MI | DU Heske | ett - CCR | I I | Vork Or | der: 201 | 782-098 | 8 | | | | | | | |
|-----------------------------|----------------------|-------------------|----------------------------|---------------------------------|--|-----------------------------------|------------------------------|-----------------------------|--|-------------------------------|------------------------------|-----------------------|---------------------------|---------------------------------|---------------------|--------------------------|---|
| 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 |
| Fluoride mg/l | 0.50 0.50 0.50 | 108 108 106 | 90-110 90-110 90-110 | 0.500 0.500 0.500 1.00 | 17-W1084 17-W1106 17-W1146 17-D1256 | 2.09 0.25 0.59 4.34 | 2.55 0.72 0.95 5.48 | 92 94 72 114 | 80-120 80-120 80-120 80-120 80-120 | 2.55 0.72 0.95 5.48 | 2.55 0.72 0.95 5.44 | 92 94 72 110 | 0.0 0.0 0.0 0.7 | 20 20 20 20 | | - | < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 |
| Lead - Total mg/l | 0.1000 0.1000 | 105 104 | 80-120 80-120 | 0.400 0.400 0.400 | 17W1096q 17W1107q 17W1146q | < 0.001 < 0.001 < 0.001 | 0.4026 0.3982 0.3890 | 101 100 97 | 75-125 75-125 75-125 | 0.4026 0.3982 0.3890 | 0.3852 0.3910 0.3696 | 96 98 92 | 4.4 1.8 5.1 | 20 20 20 | - | - | < 0.0005 < 0.0005 |
| Lithium - Total mg/l | 0.40 | 105 | 80-120 | 0.400 1.00 | 17-W1107 17-W1146 | 1.55 2.06 | 2.03 3.18 | 120 112 | 75-125 75-125 | 2.03 3.18 | 2.09 3.32 | 135 126 | 2.9 4.3 | 20 20 | | - | < 0.1 < 0.1 < 0.1 |
| Mercury - Total mg/l | 0.0020 0.0020 | 105 110 | 85-115 85-115 | | 17-W1102 AA14480 17-W1146 | <0.0002 <0.0002 <0.0002 | 0.0020 | 100 100 100 | 70-130 70-130 70-130 | 0.0020 | 0.0020 0.0021 0.0021 | 100 105 105 | 0.0 4.9 4.9 | 20 20 20 | - | - | < 0.0002 < 0.0002 |
| Molybdenum - Total mg/l | 0.1000 0.1000 | 102 102 | 80-120 80-120 | | 17W1096q 17W1107q 17-W1146 | <0.002 <0.002 0.0041 | 0.4594 0.4468 0.4422 | 115 112 110 | 75-125 75-125 75-125 | | 0.4396 0.4468 0.4172 | 110 112 103 | 4.4 0.0 5.8 | 20 20 20 | - | - | < 0.002 < 0.002 |
| pH units | | - | - | | | | | | | 8.4 7.2 7.0 6.8 | 8.5 7.3 7.1 7.8 | | 1.2 1.4 1.4 13.7 | 20 20 20 20 20 | | | |
| Selenium - Total mg/l | 0.1000 0.1000 | 108 96 | 80-120 80-120 | | 17W1096q 17W1107q 17-W1146 | 0.1528 0.1538 0.1264 | 0.6106 0.6054 0.5276 | 113 | 75-125 75-125 75-125 | 0.6054 | 0.6232 0.6084 0.5478 | 118 114 105 | 2.0 0.5 3.8 | 20 20 20 | - | - | < 0.002 < 0.002 |
| Sulfate mg/l | 100 | 110 | 80-120 | 100 | 17-W1102 | < 5 | 111 | 111 | 80-120 | 111 | 107 | 107 | 3.7 | 20 | - | - | < 5 |
| Thallium - Total mg/l | 0.1000 0.1000 | 1 | 80-120 80-120 | | 17W1096q 17W1107q 17W1146q | < 0.0005 < 0.0005 < 0.0005 | 0.3928 | 101 98 98 | 75-125 75-125 75-125 | 0.3928 | 0.3820 0.3880 0.3716 | 96 97 93 | 5.2 1.2 4.9 | 20 20 20 | | | < 0.000 < 0.000 |
| Total Dissolved Solids mg/l | | - | | | | - | | | | 1210 3720 6780 | 1190 3730 6840 | - | 1.7 0.3 0.9 | 20 20 20 | | - | < 10 < 10 |

Approved by: _____ C. C

C. CANTO 1542y17





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Report Date: 11 May 17

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Lab Number: 17-W1102 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

Project Name: MDU Heskett Sample Description: FB2

Event and Year: April 2017

| | As Received Result | 1 | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|-----------------------|-------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| На | * 6.0 | 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 16:06 | EMS |
| Chloride | < 1 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | | 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 13:45 | SZ |
| Lithium - Total | < 0.1 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | < 0.1 | 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 | < 0.002 | 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 | | 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 | | 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. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: Dup 2

Event and Year: April 2017

Report Date: 11 May 17 Lab Number: 17-W1103 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Receive Result | d | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH | * 7.3 | units | 0.1 | SM4500 H+ B | 21 Apr 17 17:00 | SVS |
| Fluoride | 0.14 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 17:00 | SVS |
| Sulfate | 2710 | mg/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 40.6 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 4380 | mg/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 498 | mg/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Lithium - Total | 0.25 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.11 | 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 | 0.0117 | 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 | 0.0020 | 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 | 0.0034 | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Selenium - Total | 0.2126 | 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:

(C Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 3-90

Event and Year: April 2017

Report Date: 11 May 17 Lab Number: 17-W1105 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 14:05 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Receive Result | ed | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | 4 | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 6.89 | units | NA | SM 4500 H+ B | 20 Apr 17 14:05 | JSM |
| рH | * 7.1 | units | 0.1 | SM4500 H+ B | 21 Apr 17 17:00 | SVS |
| Temperature - Field | 8.07 | Degrees C | NA | SM 2550B | 20 Apr 17 14:05 | JSM |
| Conductivity - Field | 4851 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 14:05 | JSM |
| Fluoride | 0.14 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 17:00 | SVS |
| Sulfate | 2760 | mg/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 43.0 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 4380 | mg/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 510 | mg/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Lithium - Total | 0.25 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.10 | 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 | 0.0112 | 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 | 0.0023 | 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 | 0.0027 | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Selenium - Total | 0.2052 | 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. 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

Report Date: 11 May 17 Lab Number: 17-W1106 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 12:40 Date Received: 21 Apr 17 9:30

Project Name: MDU Heskett Sample Description: 33

Event and Year: April 2017

Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Received Result | | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|------------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 6.59 i | units | NA | SM 4500 H+ B | 20 Apr 17 12:40 | JSM |
| Hq | * 6.8 1 | units | 0.1 | SM4500 H+ B | 21 Apr 17 17:00 | SVS |
| Temperature - Field | 8.76 I | Degrees C | NA | SM 2550B | 20 Apr 17 12:40 | JSM |
| Conductivity - Field | 4998 1 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 12:40 | JSM |
| Fluoride | 0.25 r | ng/l | 0.10 | SM4500-F-C | 24 Apr 17 17:00 | SVS |
| Sulfate | 3160 r | ng/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 14.1 r | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 r | ng/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 4770 r | ng/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 492 r | ng/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Lithium - Total | 0.79 r | ng/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.30 1 | ng/l | 0.10 | 6010 | 24 Apr 17 17:00 | KMD |
| Antimony - Total | | ng/l | 0.0010 | 6020 | 10 May 17 11:45 | KMD |
| Arsenic - Total | < 0.005 [°] r | ng/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Barium - Total | 0.0141 1 | ng/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Beryllium - Total | | mg/l | 0.0005 | 6020 | 10 May 17 11:45 | KMD |
| Cadmium - Total | < 0.0005 r | mg/l | 0.0005 | 6020 | 10 May 17 11:45 | KMD |
| Chromium - Total | | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Cobalt - Total | < 0.002 1 | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Lead - Total | < 0.001 ^ 1 | mg/l | 0.0005 | 6020 | 10 May 17 11:45 | KMD |
| Molybdenum - Total | | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Selenium - Total | | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Thallium - Total | | 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. 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





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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: 44R

Event and Year: April 2017

Report Date: 11 May 17 Lab Number: 17-W1107 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 7:43 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Receive Result | ed. | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 6.60 | units | NA | SM 4500 H+ B | 20 Apr 17 7:43 | JSM |
| рН | * 7.0 | units | 0.1 | SM4500 H+ B | 21 Apr 17 18:00 | SVS |
| Temperature - Field | 7.93 | Degrees C | NA | SM 2550B | 20 Apr 17 7:43 | JSM |
| Conductivity - Field | 9045 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 7:43 | JSM |
| Fluoride | 0.73 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 17:00 | SVS |
| Sulfate | 5600 | mg/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 259 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 8960 | mg/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 435 | mg/l | 1.0 | 6010 | 24 Apr 17 11:34 | SZ |
| Lithium - Total | 1.55 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.39 | 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 | 0.0158 | 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 | 0.1538 | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Thallium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 11:45 | KMD |

* Holding time exceeded

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

Approved by:

CC 15 May 17 Claudite K. Canrep

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: 80R

Event and Year: April 2017

Report Date: 11 May 17 Lab Number: 17-W1108 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 10:55 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Receive Result | d | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 7.12 | units | NA | SM 4500 H+ B | 20 Apr 17 10:55 | JSM |
| pH | * 7.6 | units | 0.1 | SM4500 H+ B | 21 Apr 17 18:00 | SVS |
| Temperature - Field | 7.48 | Degrees C | NA | SM 2550B | 20 Apr 17 10:55 | JSM |
| Conductivity - Field | 5747 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 10:55 | JSM |
| Fluoride | 0.33 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 18:00 | SVS |
| Sulfate | 3020 | mg/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 160 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 5340 | mg/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 291 | mg/l | 1.0 | 6010 | 24 Apr 17 11:34 | SZ |
| Lithium - Total | 0.93 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.27 | 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 | 0.0102 | 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 | 0.0035 | mg/l | 0.0020 | 6020 | 10 May 17 11:45 | KMD |
| Selenium - Total | 0.0601 | 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 15 May 17 Claudite K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 7 of 7

CERTIFICATE of ANALYSIS - CCR

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

Report Date: 11 May 17 Lab Number: 17-W1109 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 9:25 Date Received: 21 Apr 17 9:30

Project Name: MDU Heskett Sample Description: 105

Event and Year: April 2017

Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

| | As Receive Result | ed | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 6.75 | units | NA | SM 4500 H+ B | 20 Apr 17 9:25 | JSM |
| рн | * 7.2 | units | 0.1 | SM4500 H+ B | 21 Apr 17 18:00 | SVS |
| Temperature - Field | 7.36 | Degrees C | NA | SM 2550B | 20 Apr 17 9:25 | JSM |
| Conductivity - Field | 7168 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 9:25 | JSM |
| Fluoride | 0.28 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 18:00 | SVS |
| Sulfate | 4090 | mg/l | 5.00 | ASTM D516-07 | 28 Apr 17 16:06 | EMS |
| Chloride | 354 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | EV |
| Total Dissolved Solids | 6780 | mg/l | 10 | I1750-85 | 21 Apr 17 15:35 | SVS |
| Calcium - Total | 392 | mg/l | 1.0 | 6010 | 24 Apr 17 11:34 | SZ |
| Lithium - Total | 1.10 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.32 | mg/l | 0.10 | 6010 | 24 Apr 17 17:00 | KMD |
| Antimony - Total | < 0.001 | mg/l | 0.0010 | 6020 | 10 May 17 12:45 | KMD |
| Arsenic - Total | < 0.005 ^ | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Barium - Total | 0.0222 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Beryllium - Total | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Cadmium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Chromium - Total | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Cobalt - Total | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Lead - Total | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Molybdenum - Total | < 0.002 | mg/l | 0.0020 | 6020 | 11 May 17 14:42 | KMD |
| Selenium - Total | < 0.002 | mg/l | 0.0020 | 6020 | 11 May 17 8:40 | KMD |
| Thallium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |

* Holding time exceeded

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

Approved by:

(C 15 May 17 Claudite K. Canrep

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 7

CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 11 May 17 Lab Number: 17-W1102 Work Order #:82-0988 Account #: 002800 Date Sampled: 20 Apr 17 Date Received: 21 Apr 17 9:30 Sampled By: MVTL Field Services

Temp at Receipt: 1.0C ROI

Project Name: MDU Heskett Sample Description: FB2

Event and Year: April 2017

| | | 12 | | | | |
|------------------------|------------|------------|--------|-----------|-----------------|---------|
| | As Receive | ed | Method | Method | Date | |
| | Result | | RL | Reference | Analyzed | Analyst |
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| Total Suspended Solids | < 2 | mg/l | 2 | 13765-85 | 21 Apr 17 15:15 | SVS |
| Total Alkalinity | < 20 | mg/l CaCO3 | 20 | SM2320-B | 21 Apr 17 17:00 | SVS |
| Mercury - Dissolved | < 0.0002 | mg/l cucos | 0.0002 | EPA 245.1 | 26 Apr 17 11:57 | EV |
| Magnesium - Total | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Sodium - Total | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Potassium - Total | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 13:45 | SZ |
| Calcium - Dissolved | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 14:34 | SZ |
| Magnesium - Dissolved | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 14:34 | SZ |
| Sodium - Dissolved | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 14:34 | SZ |
| Potassium - Dissolved | < 1 | mg/l | 1.0 | 6010 | 24 Apr 17 14:34 | SZ |
| Lithium - Dissolved | < 0.1 | mg/l | 0.10 | 6010 | 25 Apr 17 16:24 | KMD |
| Boron - Dissolved | < 0.1 | mg/l | 0.10 | 6010 | 24 Apr 17 18:00 | KMD |
| Antimony - Dissolved | < 0.001 | mg/l | 0.0010 | 6020 | 10 May 17 12:45 | KMD |
| Arsenic - Dissolved | < 0.005 ^ | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Barium - Dissolved | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Beryllium - Dissolved | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Cadmium - Dissolved | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Chromium - Dissolved | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Cobalt - Dissolved | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Lead - Dissolved | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Molybdenum - Dissolved | < 0.002 | mg/l | 0.0020 | 6020 | 11 May 17 14:42 | KMD |
| Selenium - Dissolved | < 0.002 | mg/l | 0.0020 | 6020 | 11 May 17 8:40 | KMD |
| Thallium - Dissolved | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |

* Holding time exceeded

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

Approved by:

15 15Man 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





May 5, 2017

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

RE: Groundwater Sampling Event - MDU Heskett Ash Site

Dear Ms. Marshall:

From April 19-21, 2017, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule.

All wells were located and were found to be in generally good condition. The wells for CCR were purged and sampled using a dedicated bladder pump and BARR's SOP for low flow purging and sampling. We were able to collect a sample from well 104 during this event. The samples collected were, placed on ice and transported back to the MVTL laboratory in Bismarck, ND for analysis. The field data report for the sampling event accompanies this letter.

Due to a shipping error, well 2-90 was purged again and sampled on April 26, 2017.

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

Sincerely,

Jeremy Meyer MVTL Field Services



CCR

82-0988

82-0987

82-0994

82-1038

RadChem

82-0999

82-0998

82-0997

82-1039

WO#

| MDU | Heskett |
|-----|---------|
|-----|---------|

GROUNDWATER SAMPLING

Attn: Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829

| WELL ID | PURGE DATE | START PURGE TIME | SAMPLE DATE | TIME OF SAMPLE | WELL CASING ELEVATION | STATIC WATER LEVEL (ft) | WATER LEVEL START | WATER LEVEL END | VOLUME REMOVED (mL | SAMPLE METHOD | TEMP (°C) | EC | pН | Turbidity NTU | SAMPLE APPEARANCE OR COMMENT |
|------------|---------------|------------------------|----------------|----------------------|-----------------------------|-------------------------------|-------------------------|-----------------------|-----------------------|------------------|--------------|----------|------|------------------|------------------------------------|
| 2-90* | 26-Apr-17 | 11:40 | 26-Apr-17 | 12:00 | 1686.60 | 1666.24 | 20.36 | na | 2000.0 | Bladder | 7.91 | 7790 | 6.91 | 0.18 | clear |
| 3-90 | 20-Apr-17 | 13:40 | 20-Apr-17 | 14:05 | 1686.01 | 1668.71 | 17.30 | 17.42 | 2500.0 | Bladder | 8.07 | 4851 | 6.89 | 0.77 | clear |
| 13 | 19-Apr-17 | 8:05 | 19-Apr-17 | 8:55 | 1724.98 | 1696.22 | 28.76 | 29.23 | 5000.0 | Bladder | 8.01 | 10457 | 6.96 | 9.74 | clear |
| 33 | 20-Apr-17 | 12:00 | 20-Apr-17 | 12:40 | 1717.91 | 1676.61 | 41.30 | 41.51 | 4000.0 | Bladder | 8.76 | 4998 | 6.59 | 1.52 | clear |
| 70 | 19-Apr-17 | 12:58 | 19-Apr-17 | 13:23 | 1706.36 | 1687.14 | 19.22 | 20.85 | 2500.0 | Bladder | 8.60 | 4313 | 7.02 | 0.79 | clear |
| 80R | 20-Apr-17 | 10:15 | 20-Apr-17 | 10:55 | NA | NA | 14.24 | 14.52 | 4000.0 | Bladder | 7.48 | 5747 | 7.12 | 0.88 | clear |
| 44R | 20-Apr-17 | 6:53 | 20-Apr-17 | 7:43 | NA | NA | 25.05 | 25.11 | 5000.0 | Bladder | 7.93 | 9045 | 6.60 | 6.21 | clear |
| 101 | 19-Apr-17 | 14:22 | 19-Apr-17 | 15:03 | NA | NA | 36.54 | 40.32 | 4000.0 | Bladder | 8.97 | 4733 | 6.74 | 7.81 | clear |
| 102 | 19-Apr-17 | 10:53 | 19-Apr-17 | 11:38 | NA | NA | 15.48 | 18.15 | 5500.0 | Bladder | 8.07 | 6813 | 6.88 | 0.36 | clear |
| 103 | 19-Apr-17 | 16:15 | 19-Apr-17 | 16:35 | NA | NA | 31.52 | 33.00 | 2000.0 | Bladder | 8.46 | 4993 | 6.73 | 1.48 | clear |
| 104 | 21-Apr-17 | 8:30 | 21-Apr-17 | 9:15 | NA | NA | 13.21 | 22.20 | 4500.00 | Bladder | 8.14 | 13821.00 | 7.00 | 2.31 | clear |
| 105 | 20-Apr-17 | 8:45 | 20-Apr-17 | 9:25 | NA | NA | 12.24 | 12.58 | 4000.0 | Bladder | 7.36 | 7168 | 6.75 | 4.17 | clear |
| 1-90 | NA | NA | 20-Apr-17 | 16:28 | 1675.86 | 1666.37 | 9.49 | NA | NA | NA | NA | NA | NA | NA | water level only |

*well 2-90 had to be resampled on April 26, 2017 due to a shipping error.





| Company: | MDU Heske | tt | |
|-----------------|-------------|----------|--|
| Event: | 2017 | | |
| Sample ID: | 2-90 | | |
| Sampling Persor | nal: Darren | NTesnaag | |
| | | / | |

| Weather Conditions: | | Temp: | 50. | F | Wind: | Light | · | Precip | : Sun | ny / Partiy C | | udy) |
|---------------------|------------|------------|---------------|----------|-------|----------------------|-------------|-----------|-------------------|-----------------|----------------|--------|
| | Well Info | rmation | | · | | | Sa | mpling l | nformatio | on | | |
| Well Locked? | Yes | No | | | | Purging Method: | Blac | lder | | Co | ntrol Setting | s |
| Well Labeled? | Yes | No | | | | Sampling Method: | Blac | lder |] | Purge: | 5 | sec. |
| Casing Straight? | Yes | No | | | | Dedicated Equip?: | (Tes) | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Vis | sible | | Duplicate Sample?: | Yes | (NO) | | PSI: | | |
| Repairs Necessary: | | | | | | Duplicate Sample ID: | | - |] | Pumping R | ate: | mL/min |
| Casing | Diameter: | | 2" · | | | | | | - | | | |
| Water Level Befo | ore Purge: | 21 | 0.26 | ft | | Purge Date: | 20A0 | 17 | Time Purg | ing Began: | 1445 | am/pm |
| Total W | ell Depth: | | | ft | | Well Purged Dry? | Yes | No | Time F | Purged Dry: | Contraction | am/pm |
| Wel | ll Volume: | | | liters | | Sample Date: | 20ADI | 17 | Time of Sampling: | | 1525 | amlom |
| Depth to Top | of Pump: | 22 | 2,35 | ft | | | . / | (| | | | |
| Water Level Afte | r Sample: | | | ft | | Bottle C | CR: 1L Raw, | 500mL Nit | tirc, 500mL | Nitric (filtere | d), 4-1L Nitri | с |
| Measurement | t Method: | Electric V | Water Level I | ndicator | | List: | | | | | | |

Field Measurements

| | ization ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------------------|---------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1450 | 8,72 | 7100 | 6,90 | 4.79 | 55.3 | 1.36 | 20,53 | 500 | Clear |
| 2 | 1505 | 8,57 | 7856 | 6,90 | 3.02 | 60.6 | 0:73 | 20,74 | 1500 | rlea |
| 3 | 1510 | 8.61 | 7840 | 6,90 | 3.31 | 62,4 | 0,55 | 20,65 | 500 | Clear |
| 4 | 1515 | 8,64 | 7833 | 6,91 | 3.36 | 62.5 | 0.24 | 20,67 | 500 | cler. |
| 5 | 1520 | 8.64 | | 6,90 | 3,30 | 6311 | 0.28 | 20,73 | 500 | ch |
| 6 | 1525 | 8.66 | 7797 | 6,90 | 3.16 | 63,2 | OA 28 | 10.78 | 500 | clan |
| 7 | | | | | | | | 0 | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | $\Box \frown$ | | | | | | | | | |
| Stabilized: Comments | | r No | | | | Тс | otal Volume | Removed: | 9,000 | mL |





| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 3-90 |
| Sampling Personal: | Dang player |

| Weather Conditions: | | Temp: | 45°F | | Wind: | Nos- | ~(<i>O</i>) | | Precip | Sun | ny / Rartly C | loudy / Clou | udy |
|---------------------|-------------|----------|-----------------|--------|-------|--------------|----------------------|-----------|-----------|------------|-----------------|---------------|--------|
| | Well Info | rmation | · | | | | Sampling Information | | | | | | |
| Well Locked? | Yes | NO | | | | Purgir | ng Method: | Blac | lder | | Co | ntrol Setting | s |
| Well Labeled? | Tes | No | | | | Samplir | ng Method: | Blac | lder | | Purge: | 5 | sec. |
| Casing Straight? | Yes | No | | | | Dedicat | ed Equip?: | (fes | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Visit | le | | Duplicate | Sample?: | Yes | No | | PSI: | 10 | |
| Repairs Necessary: | | | | | | Duplicate \$ | Sample ID: | Dur | 2 | | Pumping R | ate: 100 | mL/min |
| Casing | Diameter: | | 2" | | | | | | | - | • | | |
| Water Level Befo | ore Purge: | | 17.30 | ft | | P | urge Date: | 20 Ap | 17- | Time Purg | ing Began: | 1340 | am/pm |
| Total W | /ell Depth: | | ç <u>————</u> | ft | | Well P | urged Dry? | Yes | NÔ | Time F | Purged Dry: | · | am/pm |
| We | II Volume: | | <u> </u> | liters | | Sa | mple Date: | 20 Ar | 17 | Time o | f Sampling: | 1405 | am/pm) |
| Depth to Top | of Pump: | | | ft | | | | | | | | | |
| Water Level Afte | er Sample: | | 17,42 | ft | | Bottle | CC | R: 1L Raw | 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nitr | ic |
| Measuremen | t Method: | Electric | Water Level Ind | icator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1345 | 8.33 | 4868 | 6.90 | 2,58 | -45.6 | 2.26 | 17.37 | 500,0 | Clea |
| 2 | 1350 | 8,23 | 4854 | 6,90 | 2,36 | -49.2 | 1.59 | 17,48 | 500,0 | Clean |
| 3 | 1355 | 8,12 | 4852 | 6,89 | 2,21 | -47.4 | 0.83 | 17.52 | 500.0 | clea |
| 4 | 1400 | 6.11 | 4854 | 6.69 | 2.16 | -43.6 | 0,79 | 17.48 | 500,0 | Clear |
| 5 | 1405 | 8:07 | 4851 | 6.89 | 2.17 | -41.3 | 0,77 | 17,40 | 5000 | clear |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | (Yes | No | | | | To | otal Volume | Removed: | 2500.0 | mL |





| Company: | MDU Heskett | |
|--------------------|-------------|---|
| Event: | 2017 | _ |
| Sample ID: | . 33 | _ |
| Sampling Personal: | ilen vly | - |

| Weather Conditions: | | Temp: | 4S °F | | Wind: | Nos- | 10 | | Precip: | Suni | ny / Partly C | loudy | udy |
|---------------------|-------------|------------|-----------------|---------|-------|-------------|------------|--------------------|-------------|------------|-----------------|---------------|--------|
| | Well Info | rmation | | | | | | Sa | ampling I | nformatio | on | | |
| Well Locked? | Yes | (NO) | | | | Purgin | ng Method: | Blac | dder | | Co | ntrol Setting | S |
| Well Labeled? | (CES) | No | | | | Samplin | ng Method: | Blac | dder | | Purge: | 5 | sec. |
| Casing Straight? | (Tes) | No | | | | Dedicate | ed Equip?: | œ | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Visi | ble | | Duplicate | Sample?: | Yes | Nó | | PSI: | 20 | |
| Repairs Necessary: | | | <u> </u> | | | Duplicate S | Sample ID: | + Pairs - Lynnesse | | | Pumping R | ate: /00 | mL/min |
| Casing | Diameter: | | 2" | | | | | | | | | | |
| Water Level Bef | ore Purge: | 1 | 11.30 | ft | | Р | urge Date: | 20 Kge | -17- | Time Purg | ing Began: | 1200 | am/pm |
| Total W | /ell Depth: | | | ft | | Well Pu | urged Dry? | Yes | Nø | Time F | Purged Dry: | ~~~~~ | am/pm |
| We | ell Volume: | | | liters | | Sar | mple Date: | ZOA | 17 | Time of | f Sampling: | 1240 | am/@m |
| Depth to Top | o of Pump: | | | ft | | | | | | | | | |
| Water Level After | er Sample: | 4 | 1,51 | ft | | Bottle | CC | R: 1L Raw | , 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nitr | ic |
| Measuremen | t Method: | Electric V | Vater Level Inc | dicator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|---|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1205 | B.73 | 5322 | 6.64 | 1.18 | -20,2 | 5.59 | 41,50 | 510.0 | Clear |
| 2 | 1215 | B.77 | 5070 | 6,61 | 1.45 | 4.8 | 6.20 | 41.47 | 1000,0 | Cles |
| 3 | 1225 | 8.76 | 5005 | 6.59 | 1.61 | 11.6 | 2.13 | 41,56 | 100000 | Clear |
| 4 | 1230 | 8.71 | 4999 | 6.59 | 1.66 | 4.0 | 1.61 | 41.52 | 500,0 | Clear |
| 5 | 1235 | B. 72 | 4998 | 6.59 | 1.64 | -6.0 | 1.56 | 41.53 | 500.0 | Clea |
| 6 | 1240 | 8.76 | 4998 | 6.59 | 1.63 | -11.3 | 1,52 | 41.54 | Sev, C | Clear |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | Stabilized: (Yes No Total Volume Removed: 4000.0 mL | | | | | | | | | |





| Company: | MDU Heskett | | | | | | |
|--------------------|-------------|--|--|--|--|--|--|
| Event: | 2017 | | | | | | |
| Sample ID: | 44R | | | | | | |
| Sampling Personal: | Jen Hen | | | | | | |

| Weather Conditions: | | Temp: | 40 | °F | Wind: | N@5-1 | υ | |
|---------------------|-------------|----------|-------------|-----------|-------|--------------|------------|---------|
| | Well Info | rmation | - | | | | | |
| Well Locked? | Yes | (NO) | | | | Purgir | ng Method: | Ε |
| Well Labeled? | Xes | No | | | | Samplir | ng Method: | E |
| Casing Straight? | Ves | No | | | | Dedicat | ed Equip?: | (Ye |
| Grout Seal Intact? | (es | No | Not Vi | isible | | Duplicate | Sample?: | Ye |
| Repairs Necessary: | | | | | | Duplicate \$ | Sample ID: | 124. |
| Casing | Diameter: | | 2" | | | | | |
| Water Level Bef | ore Purge: | 2 | 5.05 | ft | | Р | urge Date: | 200 |
| Total W | /ell Depth: | | | ft | | Well Pi | urged Dry? | Ye |
| We | II Volume: | | | liters | | Sa | mple Date: | ZoA |
| Depth to Top | of Pump: | | | ft | | | | |
| Water Level After | er Sample: | | 25.11 | ft | | Bottle | CC | R: 1L R |
| Measuremer | t Method: | Electric | Water Level | Indicator | | List: | | |

| N@5-1 | 0 | | Precip | : Sunny / Partly Cloudy / Cloudy | | | | | | | |
|--------------|------------|--------------|-----------|----------------------------------|------------------|--------------|--------|--|--|--|--|
| | | Sar | npling l | nformatio | on | | | | | | |
| Purgir | ng Method: | Blado | der | | Control Settings | | | | | | |
| Samplir | ng Method: | Blado | der | | Purge: | \$ | sec. | | | | |
| Dedicat | ed Equip?: | Yes | No | | Recover: | 55 | sec. | | | | |
| Duplicate | Sample?: | Yes | (Ño | | PSI: | 20 | | | | | |
| Duplicate \$ | Sample ID: | 114., | | | Pumping R | Rate: 700 | mL/min | | | | |
| | | | | - | | | | | | | |
| P | urge Date: | RO Ari | 7- | Time Purg | ing Began: | 0653 | am/pm | | | | |
| Well Pu | urged Dry? | Yes | Nø | Time F | Purged Dry: | | am/pm | | | | |
| Sa | mple Date: | ZOAN17 | L- | Time of | f Sampling: | 0743 | ám/pm | | | | |
| | | | | | | | | | | | |
| Bottle | CC | R: 1L Raw, s | 500mL Nit | irc, 500mL | Nitric (filtere | ed), 4-1L Ni | tric | | | | |
| List: | | | | | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. | |
|-------------|----------------------|--------------|--|------|--------------|-------------|--------------------|---------------------|---------------|--|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid | |
| 1 | 0658 | 7.73 | 9029 | 6.62 | 3,50 | 264.6 | 62.3 | 25.11 | కటి.ల | Clas | |
| 2 | 0716 | 7.76 | 9043 | 6,60 | 2.50 | 249.4 | 9,44 | 25,18 | 2000,0 | Cliz | |
| 3 | 0728 | 7.62 | 9049 | 6.60 | 2.45 | 245.0 | 7.59 | 25,15 | 1000.0 | Clim | |
| 4 | 0733 | 7.82 | 9040 | 6.60 | 2,43 | 242.4 | 6.35 | 25,19 | 500,0 | Clus | |
| 5 | 0738 | 7.69 | 9044 | 6,60 | 2,31 | 240.7 | 6.64 | 25.10 | 500 | Cles | |
| 6 | 0743 | 7.93 | 9045 | 6.60 | 2,36 | 239.0 | 6.21 | 25.08 | 500.0 | Clim | |
| 7 | | | | | | | | | | | |
| 8 | | | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| Stabilized: | | No | o Total Volume Removed: <u>5000,0</u> mL | | | | | | | | |





| Company: | MDU Heskett | | | | | | |
|--------------------|--------------|--|--|--|--|--|--|
| Event: | 2017 | | | | | | |
| Sample ID: | BOR | | | | | | |
| Sampling Personal: | Jerry play a | | | | | | |

| Weather Conditions: | | Temp | 45 . | F | Wind: | Nos- | 70 | | Precip | : Sun | ny / Partly C | Cloudy/ Clo | oudy |
|---------------------|-------------|----------|--|----------|-------|----------------------|------------|------------|---|-------------|-----------------|---------------|--------|
| | Well Info | rmation | l | | | Sampling Information | | | | | | | |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Blac | lder | | Co | ntrol Setting | as |
| Well Labeled? | χēs | No | | | | Samplin | ng Method: | Blac | lder | 1 | Purge: | 5 | sec. |
| Casing Straight? | Ves | No | | | | Dedicat | ed Equip?: | (es> | No | 1 | Recover: | 55 | sec. |
| Grout Seal Intact? | Nes | No | Not Vis | sible | | Duplicate | Sample?: | Yes | (No | 1 | PSI: | 15 | |
| Repairs Necessary: | | | | | | Duplicate : | Sample ID: | · | | 1 | Pumping R | ate: 100 | mL/min |
| Casing | Diameter: | | 2" | | | | | | | - | <u> </u> | | |
| Water Level Befo | ore Purge: | | 4.24 | ft | | P | urge Date: | 20 Ap | -17 | Time Purg | ing Began: | 1015 | @m/pm |
| Total W | /ell Depth: | - | Name 1 , 10, 10, 10, 10, 10, 10, 10, 10, 10, 10 | ft | | Well P | urged Dry? | Yes | NO | | Purged Dry: | | am/pm |
| We | ll Volume: | | eyeeneeneeneeneeneeneeneeneeneeneeneenee | liters | | Sa | mple Date: | 20.Ar | 17 | Time o | Sampling: | 1055 | am/pm |
| Depth to Top | of Pump: | | | ft | | | | | | 1 | | | |
| Water Level Afte | er Sample: | | 14.52 | ft | | Bottle | CCI | R: 1L Raw, | 500mL Nit | tirc, 500mL | Nitric (filtere | d). 4-1L Nit | ric |
| Measuremen | t Method: | Electric | Water Level Ir | ndicator | | List: | | · | *************************************** | | | <u></u> | |

Field Measurements

| Stabiliz | | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------------------|------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|-----------------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1020 | 7.50 | 5749 | 713 | 3,18 | 179.0 | 0.35 | 14.40 | 50.0 | Clea |
| 2 | 1025 | 7.42 | 5736 | 7,13 | 1,20 | 179.7 | 0,41 | 14,48 | 500,0 | Cles |
| 3 | 1030 | 7.47 | 5739 | 7,12 | 0.95 | 179.9 | 0.42 | 14,55 | 500-0 | Clier |
| 4 | 1035 | 7.44 | 5738 | 7,13 | 0,07 | 1699 | 0.48 | 14.58 | 520.0 | Clea |
| 5 | 1040 | 7.38 | 5742 | 7,12 | 0.84 | 143.8 | 1.13 | 14,56 | 500,0 | clies |
| 6 | ૧૦૧૮ | 7.38 | 5741 | 7,12 | 0,77 | 122,3 | 0.79 | 14,57 | 500,0 | clin |
| 7 | 1050 | 7.45 | 5743 | 7,12 | 0,74 | 116.5 | 0,84 | 14.59 | 500,0 | Clear |
| 8 | 1055 | 7.40 | 5742 | 7,12 | 0,74 | 111.3 | 0.98 | 14.57 | క లు. <i>0</i> | Clear |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: Comments | | | | | | | | | | |





| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 105 |
| Sampling Personal: | Jen May ~ |
| | |

| Weather Conditions: | | Temp: | 45 °F | | Wind: | NOST | Ö | | Precip: | Suni | ny / Partly C | | oudy | |
|---------------------|-------------|----------|-----------------|---------|-------|-------------|------------|----------------------|-----------|------------|-----------------|---------------|--------|--|
| | Well Info | rmation | | | | | | Sampling Information | | | | | | |
| Well Locked? | Yes | No | | | | Purgin | g Method: | Blad | der | | Co | ntrol Setting | gs | |
| Well Labeled? | Tes | No | | | | Samplin | g Method: | Blad | der | | Purge: | 5 | sec. | |
| Casing Straight? | Yes | No | | | | Dedicate | ed Equip?: | (Yes) | No | | Recover: | 55 | sec. | |
| Grout Seal Intact? | (Yes) | No | Not Visi | ble | | Duplicate | Sample?: | Yes | (No | | PSI: | 10 | | |
| Repairs Necessary: | <u> </u> | | | | | Duplicate S | Sample ID: | | *** | | Pumping R | ate: /ల౦ | mL/min | |
| Casing | Diameter: | | 2" | | | | | | | | | | | |
| Water Level Befe | ore Purge: | 1 | 2,24 | ft | | P | urge Date: | 20 Ar-1 | 7- | Time Purg | ing Began: | CB45 | (am/pm | |
| Total W | /ell Depth: | ۰ | | ft | | Well Pu | irged Dry? | Yes | (NO) | Time F | Purged Dry: | \sim | am/pm | |
| We | Il Volume: | | | liters | | Sar | nple Date: | 20 April | ン | Time o | f Sampling: | 0925 | àm/pm | |
| Depth to Top | o of Pump: | | | ft | | | | | | | | | | |
| Water Level After | er Sample: | | 2+12.58 | ft | | Bottle | CC | R: 1L Raw, | 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nit | ric | |
| Measuremen | t Method: | Electric | Water Level Inc | dicator | | List: | | | | • | | | | |

Field Measurements

| | zation ecutive) | Temp (°C) | Spec. Cond. | pН | DO pH (mg/L) | | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|--------------------|--------------|----------------|------|-----------------|--------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 0850 | 6.99 | 6334 | 6.79 | 0.99 | 192,6 | 9,54 | 12.58 | 500.0 | Clus |
| 2 | 0900 | 7.24 | 6245 | 6.78 | 0.69 | 175.7 | 3.71 | 12.55 | 1000.0 | Clear |
| 3 | 0905 | 7.27 | 6556 | 6.77 | 0.68 | 172.8 | 4.23 | 12.56 | 500.0 | Clear |
| 4 | O^{o}_{l} | 7.35 | 6775 | 6.76 | 0.67 | 171.0 | 4.53 | 12.58 | నంగిం | Ch~ |
| 5 | 0915 | 7.28 | 6932 | 6.76 | 0.68 | 170.2 | 4.37 | 12.55 | 500,0 | Cles |
| 6 | 0920 | 7.32 | 7076 | 6.75 | 0.68 | 169.7 | 4.16 | 12.57 | 500,0 | Clin |
| 7 | 0925 | 7.36 | 7168 | 6.75 | 0.60 | 169.3 | 4.17 | 12.56 | 500.0 | Clez/ |
| 8 | 6930 | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | bilized: No Tot | | | | | | | Removed: | 4000,0 | mL |

| Site: MDU Hesk | cett | | | | | Technician: | Jer | y they- | | |
|---|--|---|-------------------------------------|---|--|---|-----|--|------------------|-------------------------|
| Instrument (Circle One): | #1 65 | 50 MDS 08F1 | 00203 | #2 65 | 50 MDS 04H14 | 736 | | #3 55 | 6 MPS 12E102 | 2056 |
| | | Pr | e Site Calibr | ation | | | | Po | ost Site Cheo | k |
| Date: 19 Apr 17 | 2 | Time: C | 2650 | | | | Tim | ne: <i>164</i> | 10 | |
| pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO | Temp °C 19,47 19,73 [9,11 7.95 | Pre Cal 6.97 9.89 10225 241.5 | Post Cal 7.00 (0.00 (0,003 | Post Cal Range 6.95-7.05 9.95-10.05 ±10% ±10 mV | mv - 22.6 -196.5 Buffer 5000 | mv Range +/- 50 0 +/- 50 -180 +/- 50 Check 500 2 | | pH Buffer 7 onductivity Buffer 5000 | Temp °C [5:3] | Reading 7,02 5009 |
| | 10,00 | 104.8% | 94.2% | | 7/6.11 | | | | | |
| | 10,00 | 10-1.010 | /1, -/5 | mg/L | 476.11 |] | | | | |
| Date: 20April | 7 | Time: 00 | 650 | - · · · · · · · · · · · · · · · · · · · | | | Tim | ne: 16 | 30 | |
| pH Buffer 7 Buffer 10 Conductivity | Temp °C B; 7Z 9,01 9,31 | Pre Cal 7.02 10.05 | Post Cal 7.00 10.00 | Post Cal Range 6.95-7.05 9.95-10.05 | mv -23,9 -(98,7 | mv Range +/- 50 0 +/- 50 -180 +/- 50 Check | | pH Buffer 7 onductivity | Temp °C 20,53 | Reading 7.00 |
| Buffer 10000 ORP 231 mV @ 25C DO | 8.37 7.52 | 258.0 | 10000 250.5 94.3% | ±10% ±10 mV Barometi mg/L | Buffer 5000 ric Pressure (r 716.34 | <u> </u> | | Buffer 5000 | 20,00 | 4989 |

MVTL Calibration Worksheet



Field Datasheet

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

| Sampling Personnel: | Nieswaag | |
|---------------------|----------|--|
| | | |
| | | |

Company:

MDU Heskett

2017

| Well ID | Date | Time | Depth to Water | Comments |
|---------|----------|------|----------------|----------|
| MW1-90 | 20,40117 | 1628 | 9.49 | |
| | | | | |
| | | | | |
| | <u> </u> | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



Laboratories, Inc.

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

Chain of Custody Record

| Project Name: | | | Event: | | | | | Work C | Order | Number: | 00 | 0988 | 7 |
|--|---|--------------|--|---|-----------------|--------------|-------------------------|--------|-------|-----------|----------|--------|---------------------------|
| | MDU Heskett | | | Д | pril 2017 | | | | | | 00- | 0400 |) |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | | | Name of Sampler(s): Jengerbegen Dann Nicswaag | | | | | | | | | |
| | Sampl | e Informatio | n | | n de de la como | ringe B | Bot | le Typ | e | Fi | eld Para | meters | Analysis |
| | | | taan pada yaanaa yaan adaa ahaanta waxaa | Sample Type | | | Nitric | | | Temp (°C) | Cond | | |
| Lab Number | Sample ID | Date | Time | Samp | / | 1 liter | 500mL Nitric | | | Temp | Spec. | Ha | Analysis Required |
| KONU | FB2 | 20 Apr 17 | | GW | | | x x | | | | | \sim | |
| W1103 | Dup 2 | 20.Apr 17 | | Giai | | × 3 | * 7 | | | | <u> </u> | | |
| 101104 | 2-90 | -20AT-17 | -i525- | 6 | | - 2> | ×× | | | 8.66 | 7797 | 6.90 | - X |
| WINDS | 3-90 | 20Apr17 | 1405 | Giù | | 7 | ~ < | | | 8.07 | 4851 | 6.89 | |
| WIOG | 33 | 20 Apr 17 | 1240 | GW | | X | XX | | | 8.76 | 4998 | 6.59 | MDU CCR List with TSS |
| FOIL | 44R | 20Apr 17 | 0743 | Gw | | \mathbf{X} | $\overline{\mathbf{x}}$ | 1 | | 7.93 | 9045 | 6.60 | and Dissolved CCR Metals. |
| 801100 | BOR | 20 Apr 17 | 1055 | GW | | | \sim | | | 7.48 | 5747 | 7,12 | |
| W1109 | 105 | 20 Apr 17 | 0925 | Gu | | 8 | ×7 | 1 | | 7.36 | 7168 | 6.75 | |
| | | | | | | | | | | - | | | - |

Comments:

* Lab accident. Sample will be re-collected at a later date.

| Relinquished By: | and the second se | Sample Condition: | | | | | | | | |
|------------------|---|----------------------|---------------------------|--|--|--|--|--|--|--|
| Name | Date/Time | Location | Temp (°C) | | | | | | | |
| mark | 2117 0740 | Log In Walk In #2 | ROI 1,0 TM562 / (M588) | | | | | | | |
| 2 | | | | | | | | | | |

| Received | d by: |
|-------------|---------------|
| Name: | Date/Time |
| Chal Simmon | al Aprill 930 |
| | |





CASE NARRATIVE – AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 2017782-0994 Montana Dakota Utilities MDU Heskett CCR April 2017 17-W1146

| MDU Sample Identification | MVTL Laboratory # |
|---------------------------|-------------------|
| 104 | 17-W1146 |

I. RECEIPT

- All samples were received at the laboratory on 21 Apr17 at 1058.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.2°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

Approved methodology was followed for all sample analyses.
 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).
 - Recoveries for two lithium matrix spike duplicates were outside of the acceptable limits.
 Recoveries of the matrix spikes were acceptable.
 RPDs for the recoveries of the matrix spikes/matrix spike duplicates were acceptable.
 No further action was taken.
 - The recoveries for one fluoride matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.





CASE NARRATIVE - AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 2017782-0994 Montana Dakota Utilities MDU Heskett CCR April 2017 17-W1146

V. REPORTING

• On 6 Jul 17, it was discovered that the template used to create the case narrative had an extra 7 in the work order (e.g. 2017782-0994). Case narrative has been corrected to reflect the correct work order.

All laboratory data has been approved by MVTL Laboratories.

landitte Cari SIGNED:

DATE: TJULD

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 Report

| Lab ID: 17-W1146 | and the second | Pr | oject: MI | DU Heske | ett - CCR | r | Work Or | r der: 201 | 782-0994 | 4 | | | | | | | |
|-------------------------|--|-----------------|------------------------|------------------------|-----------------------|-----------------------------------|---------------------------|-----------------------------|------------------------------------|-------------------------------|------------------------|------------------|--------------------|---------------------------------|---------------------|--------------------------|----------------------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Antimony - Total mg/l | 0.1000 | 108 | 80-120 | 0.400 | 17W1146q | < 0.001 | 0.4444 | 111 | 75-125 | 0.4444 | 0.4196 | 105 | 5.7 | 20 | - | - | < 0.001 |
| Arsenic - Total mg/l | 0.1000 | 106 | 80-120 | 0.400 | 17W1146q | < 0.005 | 0.4526 | 113 | 75-125 | 0.4526 | 0.4200 | 105 | 7.5 | 20 | | _ | < 0.001 |
| Barium - Total mg/l | 0.1000 | 104 | 80-120 | 0.400 | 17W1146q | 0.0089 | 0.3982 | 97 | 75-125 | 0.3982 | 0.3672 | 90 | 8.1 | 20 | | - | |
| Beryllium - Total mg/l | 0.1000 | 109 | 80-120 | 0.400 | 17W1146q | < 0.001 | 0.4274 | 107 | 75-125 | 0.4274 | 0.4084 | 102 | 4.5 | 20 | | - | < 0.002 |
| Boron - Total mg/l | 0.40 | 100 | 80-120 | 0.400 1.50 | 17-W1107 17-W1146 | 0.39 0.81 | 0.75 | 90 101 | 75-125 75-125 75-125 | 0.75 | 0.76 2.37 | 92 104 | 1.3 2.1 | 20 20 20 | - | - | < 0.0005 < 0.1 < 0.1 |
| Cadmium - Total mg/l | 0.1000 | 111 | 80-120 | 0.400 | 17W1146q | < 0.0005 | 0.4354 | 109 | 75-125 | 0.4354 | 0.4166 | 104 | 4.4 | 20 | | _ | < 0.0005 |
| Calcium - Total mg/l | 20.0 | 106 | 80-120 | 1000 | 17W1146q | 444 | 1430 | 99 | 75-125 | 1430 | 1390 | 95 | 2.8 | 20 | - | | < 1 |
| Chloride mg/l | 30.0 30.0 | 107 87 | 80-120 80-120 | 30.0 | 17-W1098 | 19.1 | 50.8 | 106 | 80-120 | 50.8 | 48.3 | 97 | 5.0 | 20 | - | - | <1 |
| Chromium - Total mg/l | 0.1000 | 105 | 80-120 | 0.400 | 17W1146g | < 0.002 | 0.4200 | 105 | 75-125 | 0.4200 | 0.3914 | 98 | 7.0 | 20 | - | - | < 1 |
| Cobalt - Total mg/l | 0.1000 | 104 | 80-120 | 0.400 | 17W1146g | 0.0023 | 0.4134 | 103 | 75-125 | 0.4200 | 0.3914 | 98 | | | - | - | < 0.002 |
| Fluoride mg/l | 0.50 0.50 | 108 106 | 90-110 90-110 | 0.500 1.00 | 17-W1146 17-D1256 | 0.59 4.34 | 0.95 5.48 | 72 114 | 80-120 80-120 | 0.95 5.48 | 0.95 5.44 | 72 110 | 5.1 0.0 0.7 | 20 20 20 | - | | < 0.002 < 0.1 < 0.1 |
| Lead - Total mg/l | 0.1000 | 104 | 80-120 | 0.400 | 17W1146q | < 0.001 | 0.3890 | 97 | 75-125 | 0.3890 | 0.2000 | 00 | 5.1 | | - | - | < 0.1 |
| Lithium - Total mg/l | 0.40 | 105 | 80-120 | 0.400 1.00 | 17-W1107 17-W1146 | 1.55 2.06 | 2.03 3.18 | 120 112 | 75-125 75-125 75-125 | 2.03 3.18 | 0.3696 2.09 3.32 | 92 135 126 | 5.1 2.9 4.3 | 20 20 20 | - | - | < 0.0005 < 0.1 < 0.1 |
| Mercury - Total mg/l | 0.0020 | 110 | 85-115 | 0.002 0.002 | AA14480 17-W1146 | < 0.0002 < 0.0002 | 0.0020 0.0020 | 100 100 | 70-130 70-130 | 0.0020 0.0020 | 0.0021 0.0021 | 105 105 | 4.9 4.9 | 20 20 | - | - | < 0.1 |
| Molybdenum - Total mg/l | 0.1000 | 102 | 80-120 | 0.400 | 17-W1146 | 0.0041 | 0.4422 | 110 | 75-125 | 0.4422 | 0.4172 | 103 | 5.8 | 20 | | - | < 0.000 |
| pH units | - | - | - | - | - | - | - | | | 7.0 6.8 | 7.1 7.8 | | 1.4 13.7 | 20 20 20 | - | - | < 0.002 |

Page: 1 of 2

MVTL

MINNESOTA VALLEY TESTING LABORATORIES, INC.

Page: 2 of 2

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MEMBER ACIL

Quality Control Report

| Lab ID: 17-W1146 | - | Pr | oject: M | DU Heske | ett - CCR | Work Order: 201782-0994 | | | | | | | | | | | |
|-----------------------------|---------------------|-----------------|------------------------|------------------------|-----------------------|-----------------------------------|---------------------------|--------|--------|--------|-----------------------|-----------------|--------------------|---------------------------------|---------------------|--------------------------|--|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix | | | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Selenium - Total mg/l | 0.1000 | 96 | 80-120 | 0.400 | 17-W1146 | 0.1264 | 0.5276 | 100 | 75-125 | 0.5276 | 0.5478 | 105 | 3.8 | 20 | (70) | Lamits | t de la provincia de la composición de La composición de la c |
| Sulfate mg/l | 100 | 104 | 80-120 | 100 | 17-W1451 | < 5 | 96.1 | 96 | 80-120 | | 95.0 | 95 | 1.2 | 20 | - | | < 0.002 |
| Thallium - Total mg/l | 0.1000 | 104 | 80-120 | 0.400 | 17W1146g | < 0.0005 | | 98 | 75-125 | | | | 1.2 | | - | - | < 5 |
| Total Dissolved Solids mg/l | | | | | 171111104 | ~ 0.0005 | 0.3904 | 90 | /5-125 | 0.3904 | 0.3716 | 93 | 4.9 | 20 | - | - | < 0.0005 |
| Source Solids Ing/1 | - | | - | - | - | - | - | - | - | 326000 | | 1 | 6.3 | 20 | - | - | < 10 |
| | | | | - | - | - | - | - | - | 276000 | 275000 | - | 0.4 | 20 | - | - | |

Approved by: _____ (* CMTO) 15 May 17





Page: 1 of 1

CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 104 Report Date: 11 May 17 Lab Number: 17-W1146 Work Order #:82-0994 Account #: 002800 Date Sampled: 21 Apr 17 9:15 Date Received: 21 Apr 17 10:58 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

| | As Receive Result | ed. | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 21 Apr 17 | KMD |
| pH - Field | 7.00 | units | NA | SM 4500 H+ B | 21 Apr 17 9:15 | DJN |
| pH | * 7.6 | units | 0.1 | SM4500 H+ B | 21 Apr 17 18:00 | |
| Temperature - Field | 8.14 | Degrees C | NA | SM 2550B | 21 Apr 17 9:15 | DJN |
| Conductivity - Field | 13821 | umhos/cm | 1 | EPA 120.1 | 21 Apr 17 9:15 | DJN |
| Fluoride | 0.59 | mg/l | 0.10 | SM4500-F-C | 24 Apr 17 18:00 | |
| Sulfate | 10400 | mg/l | 5.00 | ASTM D516-07 | 5 May 17 9:17 | |
| Chloride | 108 | mg/l | 1.0 | SM4500-Cl-E | 2 May 17 11:40 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 26 Apr 17 11:16 | |
| Total Dissolved Solids | 14500 | mg/l | 10 | I1750-85 | 26 Apr 17 11:06 | |
| Calcium - Total | 444 | mg/l | 1.0 | 6010 | 24 Apr 17 11:34 | |
| Lithium - Total | 2.06 | mg/l | 0.10 | 6010 | 25 Apr 17 15:24 | KMD |
| Boron - Total | 0.81 | mg/l | 0.10 | 6010 | 24 Apr 17 17:00 | |
| Antimony - Total | < 0.001 | mg/l | 0.0010 | 6020 | 10 May 17 12:45 | |
| Arsenic - Total | < 0.005 ^ | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | |
| Barium - Total | 0.0089 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Beryllium - Total | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | |
| Cadmium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Chromium - Total | < 0.002 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Cobalt - Total | 0.0023 | mg/l | 0.0020 | 6020 | 10 May 17 12:45 | KMD |
| Lead - Total | < 0.001 ^ | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |
| Molybdenum - Total | 0.0041 | mg/l | 0.0020 | 6020 | 11 May 17 14:42 | KMD |
| Selenium - Total | 0.1264 | mg/l | 0.0020 | 6020 | 11 May 17 8:40 | KMD |
| Thallium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 10 May 17 12:45 | KMD |

* Holding time exceeded

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

Approved by:

/c 15M2417 Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





| Company: | MDU Heskett |
|--------------------|--|
| Event: | 2017 |
| Sample ID: | 104 |
| Sampling Personal: | patter Many |
| | and the second sec |

| Weather Conditions: | | Temp: | 39. | °F | Wind: | Lich | + | Precip | : Sun | ny / Partly C | loudy / Elo | |
|---------------------|--|----------|---------------|----------|-------|-------------|------------|----------------------|-------------|-----------------|---|----------|
| 1 | Well Info | rmation | J (| | | 7.0. | <i></i> | Sampling I | | | | |
| Well Locked? | Yes | Nô) | | | | Purgir | ng Method: | Bladder | 1 | T | ntrol Setting | IS |
| Well Labeled? | Xes? | No | | | | | ng Method: | Bladder | 1 | Purge: | 5 | sec. |
| Casing Straight? | Xes | No | | | | Dedicat | ed Equip?: | CTES No | 1 | Recover: | 55 | sec. |
| Grout Seal Intact? | (Yes) | No | Not Vi | sible | | Duplicate | Sample?: | Yes No? | - | PSI: | | |
| Repairs Necessary: | All and a state of the state of | | | | | Duplicate : | Sample ID: | | 1 | Pumping R | ate: 10/ |) mL/min |
| Casing | Diameter: | | 2" | | | | | | - | <u> </u> | <u>, , , , , , , , , , , , , , , , , , , </u> | |
| Water Level Befo | ore Purge: | | 13,21 | ft | | P | urge Date: | 212017 | Time Purg | ing Began: | 0838 | am/pm |
| Total W | ell Depth: | | - | ft | | 1 | urged Dry? | Yes No | Time F | Purged Dry: | | am/pm |
| We | ll Volume: | | | liters | | Sa | mple Date: | 21An/17 | Time of | f Sampling: | NAIS | (am/pm |
| Depth to Top | of Pump: | 2 | 2,20 | ft | | | | | | | | |
| Water Level Afte | r Sample: | Ţ | 3.50 | ft | | Bottle | СС | R: 1L Raw, 500mL Nit | tirc. 500mL | Nitric (filtere | d) 4-11 Nitr | ic |
| Measuremen | t Method: | Electric | Nater Level I | ndicator | | List: | | | | | | |

Field Measurements

| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | | | | | | | 1 | 1 | | ſ | |
|---|-------------|-------|-------|-------|------|------|-------|---------------------------------------|----------|----------|------|
| $\begin{array}{c c c c c c c c c c c c c c c c c c c $ | | | - | | Ha | { | 1 | - | 1 | | • |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | SEQ # | Time | | ±5% | | | | · · · · · · · · · · · · · · · · · · · | <u> </u> | literiou | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 1 | 6835 | 7.95 | 13055 | 7.09 | 3.24 | 8216 | 11,3 | 1344 | 500 | cle_ |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 2 | 0850 | 7,86 | 13667 | 7,01 | 2,22 | 68.7 | 9.56 | 13.44 | 1500 | de |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 3 | 0855 | 7.92 | 13713 | - | | 68.0 | 516 | 13,48 | 500 | Ch- |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 4 | 69.00 | 8,12 | 13723 | 7,00 | 1.61 | | 3.42 | 13,51 | 500 | chr |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5 | 0405 | 7.99 | 13779 | 7.00 | 1163 | 67.4 | 2,38 | 13.48 | 500 | de |
| 8 9 10 | 6 | 0910 | 8.11' | 13788 | | 1.58 | 117 3 | 2.50 | 13.48 | 500 | d_ |
| 8 1 | 7 | 0915 | 8,14 | 13821 | 7,00 | 1164 | bul | 2,31 | 13,48 | 500 | il- |
| | 8 | | •••• | ` | | | | | | | |
| | | | | | | | | | | | |
| | L | | | | | | | | | | |
| Stabilized: Xes) No Total Volume Removed: <u>450</u> // mL | Stabilized: | | | | | | | | | | |



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

| Project Name | | | Event: | | <u></u> | | | Wo | ork O | rder l | Number: | ~ ^ | - <i>C</i> i | |
|---|--|--------------|-----------------------------------|-------------|---------|---|----------------------------------|-------------------|-------------------------|----------------|-----------|----------------|--------------|---|
| | MDU Heskett | | April 2017 80-0999 | | | | | | | | | | | |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | | Carbon Copy: Attn: Address: | | | | Na | me o Ia | f San i <i>l l e</i> | npler(s): M | Swa | Lag | | |
| | Sampl | e Informatio | n (a care) | di gadi | | 4 | Bot | tle | Туре | | Fi | eld Para | imeters | Analysis |
| Lab Number WII46 | Sample ID / O Y | Date | 0915 | Sample Tuno | | | × 500mL Nitric × 500mL Nitric | Mitric (filtered) | | | Temp (°C) | 28 Spec. Cond. | 7,00 | Analysis Required MDU CCR List with TSS and Dissolved CCR Metals. |

| Relinquished By: | and the second | Sam | ple Condition: | 1 |
|------------------|--|--------------------|---|---|
| Name: | Date/Time | Lo <u>catio</u> n: | Temp (°C) | |
| 1 Jan Ning | 21AN17 1058 | Valk In #2 | χο μη, 2 TM562 <u>ΛΙΜ58</u> 8 | |
| 2 | | | | 1 |

| Recei | ved by: |
|-----------------|-------------------------|
| Name: | Date/Time |
| Charle Jomonian | <u>21 April 17 1058</u> |
| 0 | |

MIVTL

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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-0997 S1704320 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1150 S1704320-001

| MDU Sample Identification | MVTL Laboratory # | IML Laboratory # |
|---------------------------|-------------------|------------------|
| 104 | 17-W1150 | S1704320-001 |

I. RECEIPT

- All samples were received at the laboratory on 21 Apr 2017 at 1058.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.2°C.
- 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 26 Apr 2017.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-0997 S1704320 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1150 S1704320-001

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

laukette and

DATE:_ 75mm

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1150 Work Order #:82-0997 Account #: 002800 Date Sampled: 21 Apr 17 9:15 Date Received: 21 Apr 17 10:58 Sampled By: MVTL Field Services

Temp at Receipt: 7.2C ROI

Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Samantha Marshall

Project Name: MDU Heskett Sample Description: 104

Event and Year: April 2017

| | As Recei Result | ved | Method RL | Method Reference | Date Analyzed | | Analyst |
|----------------------|--------------------|-------------|--------------|---------------------|------------------|------|---------|
| pH - Field | 7.00 | units | NA | SM 4500 H+ B | 21 Apr 17 | 9:15 | DJN |
| Temperature - Field | 8.14 | Degrees C | NA | SM 2550B | 21 Apr 17 | 9:15 | DJN |
| Conductivity - Field | 13821 | umhos/cm | 1 | EPA 120.1 | 21 Apr 17 | 9:15 | DJN |
| Radium 226 | See Atta | ched Report | | | 9 May 17 | | OL |
| Radium 228 | | ched Report | | | 27 May 17 | | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte TJUNT K. Cantle

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.



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

Date: 5/30/2017

| CLIENT: | MVTL Laboratories, Inc. | CASE NARRATIVE |
|------------------------|-------------------------|------------------------|
| Project: Lab Order: | 201782-0997 S1704320 | Report ID: S1704320001 |
| | | |

Sample 17-W1150 104 was received on April 26, 2017.

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

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

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

Qualifiers by sample

LCSD-1746 - Radium 226 in Water -/Radium 226 - RPD outside accepted recovery limits

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, Ir 2616 E Broadway Ave Bismarck, ND 58501 | | | | | e Reported ort ID | 5/30/2017 S1704320001 |
|------------------|--|--------|-------|------|-------|----------------------|--------------------------|
| ProjectName: | 201782-0997 | | | | Wor | kOrder: | S1704320 |
| Lab ID: | S1704320-001 | | | | Coll | ectionDate: | 4/21/2017 9:15:00 AM |
| ClientSample ID: | 17-W1150 104 | | | | Date | Received: | 4/26/2017 12:10:00 PM |
| COC: | 201782-0997 | | | | Field | dSampler: | |
| | | | | | Mati | rix: | Water |
| Comments | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Metho | Date Analyzed/Init |

| Radionuclides - Total | | | | | | |
|--------------------------|-----|-------|-----|--------------|-----------------|----|
| Radium 226 | 0.2 | pCi/L | 0.2 | SM 7500 Ra-B | 05/09/2017 1004 | MB |
| Radium 226 Precision (±) | 0.1 | pCi/L | | SM 7500 Ra-B | 05/09/2017 1004 | MB |
| Radium 228 | 0.2 | pCi/L | 1 | Ga-Tech | 05/27/2017 1657 | MB |
| Radium 228 Precision (±) | 2.9 | pCi/L | | Ga-Tech | 05/27/2017 1657 | MB |

These results apply only to the samples tested.

Qualifiers: B Analyte detected in the associated Method Blank

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

-Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

Page 1 of 1



nter-Mountain Labs

| R-MOUNTAIN | LABS Inter-Mountain Labs 1673 Terra Av | venue, Sheridan, Wyoming 82801 ph: | (307) 672-8945 | | |
|------------|--|------------------------------------|--------------------------|---------------------|------|
| | | LYTICAL QC SUMMARY R | | | |
| LIENT: | MVTL Laboratories, Inc. | | Date: | 5/30/2017 | |
| ork Orde | , | | Demant ID: | S1704220004 | |
| oject: | 201782-0997 | | Report ID: | S1704320001 | |
| - | n 228 by Ga/Tech | Sample Type MBLK | Units: pCi/L | | |
| г | MB-438 (05/26/17 19:32) | RunNo: 146224 | PrepDate: 05/17/17 14:00 | BatchID 13153 | |
| | Analyte | Result | RL Spike Ref Samp | | Qual |
| L | Total Radium 228 | ND | 1 | | |
| Radiun | n 228 by Ga/Tech | Sample Type LCS | Units: pCi/L | | |
| Γ | LCS-438 (05/26/17 22:35) | RunNo: 146224 | PrepDate: 05/17/17 14:00 | BatchID 13153 | |
| | Analyte | Result | RL Spike Ref Samp | | Qual |
| L | Total Radium 228 | 43 | 1 40.1 | 107 65.9 - 132 | |
| Radiun | n 228 by Ga/Tech | Sample Type MS | Units: pCi/L | 107 00.0 - 102 | |
| г | MS-438 (05/27/17 04:42) | RunNo: 146224 | PrepDate: 05/17/17 14:00 | BatchID 13153 | |
| | Analyte | Result | RL Spike Ref Samp | %REC % Rec Limits | Qual |
| L | Total Radium 228 | 39 | 1 40.1 ND | 96.0 50 - 139 | |
| Radiun | n 228 by Ga/Tech | Sample Type MSD | Units: pCi/L | | |
| ſ | MSD-438 (05/27/17 07:46) | RunNo: 146224 | PrepDate: 05/17/17 14:00 | BatchID 13153 | |
| | Analyte | Result | RL Conc %RPD | %REC % RPD Limits | Qual |
| - | Total Radium 228 | 44 | 1 39 14.2 | 111 20 | |
| Radiun | n 226 in Water - | Sample Type MBLK | Units: pCi/L | | |
| | MB-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 | BatchID 13143 | |
| | Analyte | Result | RL Spike Ref Samp | %REC % Rec Limits | Qual |
| | Radium 226 | ND | 0.2 | | |
| Radiun | n 226 in Water - | Sample Type LCS | Units: pCi/L | | |
| | LCS-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 | BatchID 13143 | |
| | Analyte | Result | RL Spike Ref Samp | %REC % Rec Limits | Qual |
| | Radium 226 | 5.1 | 0.2 5.89 | 86.3 67.1 - 122 | |
| Radiun | n 226 in Water - | Sample Type LCSD | Units: pCi/L | | |
| | LCSD-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 | BatchID 13143 | |
| | Analyte | Result | RL Conc %RPD | %REC % RPD Limits (| Qual |
| _ | Radium 226 | 7.0 | 0.2 5.1 32.1 | 119 20 | R |
| Radiun | n 226 in Water - | Sample Type MS | Units: pCi/L | | |
| | S1704319-001AMS (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 | BatchID 13143 | |
| L | Analyte | Result | RL Spike Ref Samp | %REC % Rec Limits | Qual |
| | Radium 226 | 12.3 | 0.2 11.8 ND | 105 65 - 131 | |
| | | | | | |

| Qualifiers: | в | Analyte detected in the associated Method Blank | E | Value above quantit |
|-------------|---|---|---|----------------------|
| | G | Analyzed at IML Gillette laboratory | Н | Holding times for pr |
| | J | Analyte detected below quantitation limits | L | Analyzed by anothe |

Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

Х Matrix Effect ititation range

preparation or analysis exceeded

Analyzed by another laboratory L

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



LABORATORIES, Inc.

2616 E Broadway Ave Bismarck, ND 58501

Chain of Custody Record

| Toll Free: (800) 279-6885 Fax: (701) 258-9724 | | | | | | 201782-0997 | | | | | | | | |
|---|-------------------------|--|--------|------------------|----------|-------------|-----|--------------------------|-----------|-------|-----------------------------|--|--|--|
| | ie and Address: | rax. (701) 200-9724 | | Account # | | | | | | | Phone #: | | | |
| | | | | Account | • | | | | | | 701-258-9720 | | | |
| | M | IVTL | | Contact: | | | | | | | Fax #: | | | |
| | | <u>Broadway</u> | | | Claud | dette | е | | | | For faxed report check box | | | |
| | | <u>k, ND 58501</u> | | Name of Sampler: | | | | | | | E-mail: ccarroll@mvtl.com | | | |
| Billing Addres | s (indicate if differen | it from above): | | | | | | | | | For e-mail report check box | | | |
| | | 0.00 | | Quote Nu | mber | | | | | | Date Submitted: | | | |
| | | <u>3ox 249</u> 1, MN 56073 | | Destant | (8.1 1 | | | | | | 24-Apr-17 | | | |
| | New OIII | 1, WIN 36073 | | Project Na | ame/Numb | er: | | | | | Purchase Order #: | | | |
| | | Sample Information | | <u> </u> | | 1 | | - 441 - | . | | BL5843 | | | |
| | | | 1 | T | | Bottle Type | | | | | Analysis | | | |
| <i>SI</i> 7043 | 20 | | | | | | | | | | | | | |
| | | | | | | | NO3 | ved | | | | | | |
| | | | | | | ted | H | ials | Jar | | | | | |
| IML Lab | | | Sample | Date | Time | Untreated | L O | p c | Glass Jar | er | | | | |
| Number | MVTL Lab Number | Client Sample ID | Туре | Sampled | Sampled | - S | Į | VOC Vials Umpreserved | Gla | Other | Analysis Required | | | |
| 001 | 17-W1150 | 104 | GW | 21-Apr-17 | 915 | | 4 | | | | Ra226 & Ra228 | | | |
| | | | | | | | | | | | | | | |
| | | ······································ | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | Ι | | | | | | | | |
| 10-10-10-00-00-00-00-00-00-00-00-00-00-0 | | | | | | | | | | | | | | |
| | | ······································ | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

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

| Transferred by: | Date: | Time: | Sample Condition: | Received by: | Date: | | Temp: |
|-----------------|-----------|-------|-------------------|--------------|---------|-------|-------|
| T. Olson | 24-Apr-17 | 1700 | | Kathy Brin | 4-26.17 | 12.10 | 10.3 |
| 2. | | | | | | | |



Phone: (701) 258-9720



Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|--|
| Event: | 2017 |
| Sample ID: |)04 |
| Sampling Personal: | Datten Marin |
| | and and a second and a second |

| | | | | | | | - | | | | | / | |
|---------------------|-------------|---|----------------|---------|-------|--|------------|--|-----------|-----------|---------------------------------------|---------------|--|
| Weather Conditions: | | Temp: | <u>39</u> • | | Wind: | Lich | f | Precip: Sunny / Partly Cloudy / Cloudy | | | | | |
| | Well Info | rmation | - • | | | | , | Sa | ampling I | nformatio | on | C | and the second sec |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Bla | dder | | Co | ntrol Setting | qs |
| Well Labeled? | Xes> | No | | | | Samplin | ng Method: | Bla | der | | Purge: | .5 | sec. |
| Casing Straight? | <u>Nes</u> | No | | | | Dedicate | ed Equip?: | <yes< td=""><td>No</td><td></td><td>Recover:</td><td>55</td><td>sec.</td></yes<> | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Vis | ble | | Duplicate | Sample?: | Yes | No> | | PSI: | | |
| Repairs Necessary: | | and the second se | | | | Duplicate \$ | Sample ID: | | | | Pumping R | ate: 101 |) mL/min |
| Casing | Diameter: | | 2" | | | | | | | 4 | ـــــــــــــــــــــــــــــــــــــ | | |
| Water Level Bef | ore Purge: | | 13,21 | ft | | P | urge Date: | 212 | 17 | Time Purg | ing Began: | 0838 | am/pm |
| Total W | Vell Depth: | | - Carello W-MA | ft | | | urged Dry? | | NO | Time F | Purged Dry: | | -am/pm |
| We | ell Volume: | | | liters | | Sa | mple Date: | 2140 | -17 | Time of | f Sampling: | Dals | (am/pm |
| Depth to Top | o of Pump: | 2 | 2.20 | ft | | | | | | | | | |
| Water Level Afte | er Sample: |] | 3.50 | ft | | Bottle CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric | | | | | ric | | |
| Measuremen | nt Method: | Electric | Water Level In | dicator | | List: | | | | | <u>`</u> | | |

Field Measurements

| (3 cons | ization ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. | |
|-------------------------|--|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid | |
| 1 | 0835 | 7.95 | 13055 | 7,09 | 3,24 | 82x6 | 11,3 | 13,44 | 500 | Cler | |
| 2 | 0850 | 7,86 | 13667 | 7,01 | 2,22 | 68.7 | 9,56 | 13.44 | 1500 | de | |
| 3 | 0855 | 7.92 | 13713 | 7,00 | 2,04 | 68.0 | 516 | 13,48 | 500 | Ch- | |
| 4 | 69.00 | 8,12 | 13723 | 7,00 | 1,61 | 67.6 | 3.42 | 13,51 | 500 | chr | |
| 5 | 0905 | 7.99 | 13779 | 7.00 | 1.63 | 67,4 | 2,38 | 13.48 | 500 | de | |
| 6 | 0910 | 8.11 | 13788 | 7.00 | 1.58 | 67.0 | 2.50 | 13.48 | 500 | d | |
| 7 | 0915 | 8,14 | 13821 | 7,00 | 1164 | 66.8 | 2,31 | 13,48 | 500 | ch | |
| 8 | - | 0 | | | | | | | | | |
| 9 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| Stabilized: Comments | Stabilized: Yes) No Comments: Total Volume Removed: 4501/2 | | | | | | | | | | |



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

Phone (701) 258-9720

Chain of Custody Record

| Project Name | : | | Event: | | | | W | ork O | rder l | Number: | | | • |
|---|---|--------------|--|------------|-------------------|-----|------|-------------|--------------|---------------------------|--------------|--------|-------------------|
| | MDU Heskett | | Portage of Exception Contractor | April 2017 | | | | | | HEB Y | Y | 82-1 | 0997 |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | | Carbon Copy: Attn: Address: | | | | N | ame o Pa | of San | npler(s): n <i>M I</i> | iesw | ag | |
| and the second | Sampl | e Informatio | n | | | Bot | ttle | Туре |) | Fi | eld Para | meters | Analysis |
| Lab Number | Sample ID j 0 Y | Date | Definition of the second secon | | + 1 liter Nilinia | 1 | | | | E Temp (°C) | 2821 1385 | Hd 00 | Analysis Required |

| Relinquished By: | Sample Condition: | | |
|------------------|-------------------|-------------------------------|-------------------------|
| Name: | Date/Time | Location: | Temp (°C) |
| 1 Dane Nie | 21Apr17 1058 | <u>€og In</u> ⊃ Walk In #2 | ROIT, 2 TM562/ TM588 |
| 2 | | | |

| Received | by: |
|-----------------|------------------|
| Name: | Date/Time |
| /trail Jimonson | 21 April 17 1058 |
| | |

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-0998 S1704321 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1151 through 17-W1157 S1704321-001 through S1704321-007

| MDU Sample Identification | MVTL Laboratory # | IML Laboratory # |
|---------------------------|-------------------|------------------|
| FB1 | 17-W1151 | S1704321-001 |
| DUP1 | 17-W1152 | S1704321-002 |
| 13 | 17-W1153 | S1704321-003 |
| 101 | 17-W1154 | S1704321-004 |
| 102 | 17-W1155 | S1704321-005 |
| 103 | 17-W1156 | S1704321-006 |
| 70 | 17-W1157 | S1704321-007 |

I. RECEIPT

- All samples were received at the laboratory on 21 Apr 2017 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 15.5°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 26 Apr 2017.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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

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

MIVIL

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



CASE NARRATIVE

www.mvtl.com

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-0998 S1704321 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1151 through 17-W1157 S1704321-001 through S1704321-007

IV. ANALYSIS

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

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

Claudette Gurll SIGNED:

DATE: 70017

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1151 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB1

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

Temp at Receipt: 15.5C

| As Received | Method | Method | Date | Analyst |
|---------------------|--------|----------------------------------|---------------------|---|
| Result | RL | Reference | Analyzed | |
| See Attached Report | | | 9 May 17 | OL |
| See Attached Report | | | 27 May 17 | OL |
| | Result | Result RL See Attached Report | Result RL Reference | Result RL Reference Analyzed See Attached Report 9 May 17 |

OL = Analysis performed by an Outside Laboratory.

Approved by:

7JUNIO 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

C

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.





1 of 1 Page:

Report Date: 6 Jun 17 Lab Number: 17-W1152 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Sample Description: Dup 1

400 N. 4th

Event and Year: April 2017

| | As Received Result | Method RL | Method Reference | Date Analyzed | Analyst |
|------------|-----------------------|--------------|---------------------|------------------|---------|
| Radium 226 | See Attached Report | | | 9 May 17 | OL |
| Radium 228 | See Attached Report | | | 27 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Cr Claudite K. Cantop 7JU17

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 con ! = Due to sample quantity + = Due to information # = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

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





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1153 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 8:55 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Samantha Marshall

Project Name: MDU Heskett Sample Description: 13

Event and Year: April 2017

| | As Recei Result | ved | Method RL | Method Reference | Date Analyzed | | Analyst |
|----------------------|--------------------|-------------|--------------|---------------------|------------------|------|---------|
| pH - Field | 6.96 | units | NA | SM 4500 H+ B | 19 Apr 17 | 8:55 | DJN |
| Temperature - Field | 8.01 | Degrees C | NA | SM 2550B | 19 Apr 17 | 8:55 | DJN |
| Conductivity - Field | 10457 | umhos/cm | 1 | EPA 120.1 | 19 Apr 17 | 8:55 | DJN |
| Radium 226 | See Atta | ched Report | | | 9 May 17 | | OL |
| Radium 228 | See Atta | ched Report | | | 28 May 17 | | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canrep 2 Jun

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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

(c





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1154 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 15:03 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Samantha Marshall

Project Name: MDU Heskett Sample Description: 101

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 6.74 | units | NA | SM 4500 H+ B | 19 Apr 17 15:03 | DJN |
| Temperature - Field | 8.97 | Degrees C | NA | SM 2550B | 19 Apr 17 15:03 | DJN |
| Conductivity - Field | 4733 | umhos/cm | 1 | EPA 120.1 | 19 Apr 17 15:03 | DJN |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | See Atta | ached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

CC 7 JUN17 Clauditte Approved by: K. Cantle

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 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.





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1155 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 11:38 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 102

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 6.88 | units | NA | SM 4500 H+ B | 19 Apr 17 11:38 | DJN |
| Temperature - Field | 8.07 | Degrees C | NA | SM 2550B | 19 Apr 17 11:38 | DJN |
| Conductivity - Field | 6813 | umhos/cm | 1 | EPA 120.1 | 19 Apr 17 11:38 | DJN |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | | ached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto 1JUNI

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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

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.





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1156 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 16:35 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 103

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|-------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 6.73 | units | NA | SM 4500 H+ B | 19 Apr 17 16:35 | DJN |
| Temperature - Field | 8.46 | Degrees C | NA | SM 2550B | 19 Apr 17 16:35 | DJN |
| Conductivity - Field | 4993 | umhos/cm | 1 | EPA 120.1 | 19 Apr 17 16:35 | DJN |
| Radium 226 | See Att | ached Report | | | 9 May 17 | OL |
| Radium 228 | | ached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

7 Juni7 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

6

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.





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1157 Work Order #:82-0998 Account #: 002800 Date Sampled: 19 Apr 17 13:23 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

400 N. 4th Bismarck ND 58501

Montana Dakota Utilities

Samantha Marshall

Project Name: MDU Heskett Sample Description: 70

Event and Year: April 2017

| | As Rece: Result | lved | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 7.02 | units | NA | SM 4500 H+ B | 19 Apr 17 13:23 | DJN |
| Temperature - Field | 8.60 | Degrees C | NA | SM 2550B | 19 Apr 17 13:23 | DJN |
| Conductivity - Field | 4313 | umhos/cm | 1 | EPA 120.1 | 19 Apr 17 13:23 | DJN |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | See Atta | ached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

7Jm17 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

C

CERTIFICATION. ND # ND 00010

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.



Your Environmental Monitoring Partner

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

Date: 5/30/2017

| CLIENT: | MVTL Laboratories, Inc. | CASE NARRATIVE |
|---------|-------------------------|------------------------|
| , | 2017820998 S1704321 | Report ID: S1704321001 |

Samples 17-W1151 FB1, 17-W1152 Dup 1, 17-W1153 13, 17-W1154 101, 17-W1155 102, 17-W1156 103, and 17-W1157 70 were received on April 26, 2017.

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

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

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

Qualifiers by sample

LCSD-1746 - Radium 226 in Water -/Radium 226 - RPD outside accepted recovery limits

Reviewed by:



05/27/2017 2000

MB



Radium 228 Precision (±)

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

Sample Analysis Report

| Company: | MVTL Laboratories, li 2616 E Broadway Av Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/20 S17043 | | |
|---|---|--------|-------|------|-----------------|--|-------------------|------------------|-----|
| ProjectName: Lab ID: ClientSample ID: COC: | 2017820998 S1704321-001 17-W1151 FB1 201782-0998 | | | | Co Da Fie | orkOrder: IlectionDate: teReceived: eldSampler: itrix: | | | |
| Comments | | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Metho | k | Date Analyzed/In | nit |
| Radionuclides - To | tal | | | | | | | | |
| Radium 226 | | 0.1 | pCi/L | | 0.2 | SM 7500 Ra | -В | 05/09/2017 1004 | MB |
| Radium 226 Precisio | n (±) | 0.04 | pCi/L | | | SM 7500 Ra | -В | 05/09/2017 1004 | MB |
| Radium 228 | | 0.9 | pCi/L | | 1 | Ga-Tech | | 05/27/2017 2000 | MB |

pCi/L

3.0

These results apply only to the samples tested.

Qualifiers:

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

< Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

RL - Reporting Limit

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

Ga-Tech

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

Page 1 of 7



Radium 228 Precision (±)

05/27/2017 2304

MB

Ga-Tech

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

Sample Analysis Report

2.9

| | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/2017 S1704321001 | |
|----------------------|--|--------|-------|------|-----|---------------------------|--------------------------|---------|
| ProjectName: | 2017820998 | | | | Wo | orkOrder: | S1704321 | |
| Lab ID: | S1704321-002 | | | | Co | llectionDate: | 4/19/2017 | |
| ClientSample ID: | 17-W1152 Dup 1 | | | | Da | teReceived: | 4/26/2017 12:10:00 | PM |
| COC: | 201782-0998 | | | | Fie | IdSampler: | | |
| | | | | | Ma | trix: | Water | |
| Comments | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Method | Date Analyz | ed/Init |
| Radionuclides - Tot | tal | | | | | | | |
| Radium 226 | | 0.2 | pCi/L | | 0.2 | SM 7500 Ra | -B 05/09/2017 10 | 04 MB |
| | | | | | | 011 7 700 7 | D 05/00/00/7 40 | |
| Radium 226 Precision | ו (±) | 0.1 | pCi/L | | | SM 7500 Ra | -B 05/09/2017 10 | 04 MB |

pCi/L

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

C Calculated Value

RL - Reporting Limit

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



Radium 228

Radium 228 Precision (±)

05/28/2017 207

05/28/2017 207

MB

MB

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

Sample Analysis Report

0.8

2.5

| Company: | MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/2017 S1704321001 | |
|---------------------|--|--------|-------|------|------|------------------------|--------------------------|---------|
| ProjectName: | 2017820998 | | | | Wo | orkOrder: | S1704321 | |
| Lab ID: | S1704321-003 | | | | Co | IlectionDate: | 4/19/2017 8:55:00 AN | 1 |
| ClientSample ID: | 17-W1153 13 | | | | Da | teReceived: | 4/26/2017 12:10:00 P | М |
| COC: | 201782-0998 | | | | | ldSampler: trix: | Water | |
| Comments | | | | | inte | | Trato. | |
| Analyses | | Result | Units | Qual | RL | Metho | Date Analyze | ed/Init |
| Radionuclides - To | tal | | | | | | | |
| Radium 226 | | 0.16 | pCi/L | | 0.2 | SM 7500 Ra | -B 05/09/2017 1004 | 4 MB |
| Radium 226 Precisio | n (±) | 0.1 | pCi/L | | | SM 7500 Ra | -B 05/09/2017 1004 | 4 MB |

pCi/L

pCi/L

These results apply only to the samples tested.

Qualifiers:

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

< Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

RL - Reporting Limit

- G Analyzed at IML Gillette laboratory
- J

1

Ga-Tech

Ga-Tech

- Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
- 0 Outside the Range of Dilutions
- Х Matrix Effect

Page 3 of 7



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

Sample Analysis Report

| | MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/2017 S1704321 | | |
|------------------------------------|--|-------------|----------------|------|-----|------------------------|-----------------------|--------------------------------|----------|
| ProjectName: | 2017820998 | | | | Wo | orkOrder: | S1704321 | | |
| Lab ID: | S1704321-004 | | | | Co | IlectionDate: | 4/19/2017 | 3:03:00 PM | |
| ClientSample ID: | 17-W1154 101 | | | | Da | teReceived: | 4/26/2017 | 12:10:00 PM | |
| COC: | 201782-0998 | | | | Fie | ldSampler: | | | |
| | | | | | Ма | trix: | Water | | |
| Comments | | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Method | l D | ate Analyzed/I | nit |
| Radionuclides - Tot | tal | | | | | | | | |
| Radium 226 | | 0.4 | pCi/L | | 0.2 | SM 7500 Ra | -B 05/ | /09/2017 1004 | MB |
| | | | | | | | | | |
| Radium 226 Precisior | ו (±) | 0.1 | pCi/L | | | SM 7500 Ra | -B 05/ | /09/2017 1004 | MB |
| Radium 226 Precisior Radium 228 | ו (±) | 0.1 -2.5 | pCi/L pCi/L | | 1 | SM 7500 Ra Ga-Tech | | /09/2017 1004 5/28/2017 511 | MB MB |

These results apply only to the samples tested.

Qualifiers:

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

< Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С

RL - Reporting Limit

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

Page 4 of 7



Radium 228 Precision (±)

05/28/2017 815

MB

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

Sample Analysis Report

2.8

| Company: | MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/2017 S1704321001 | |
|-----------------------------|--|--------|-------|------|-----|------------------------|--|-------|
| ProjectName: | 2017820998 | | | | | orkOrder: | S1704321 | |
| Lab ID: ClientSample ID: | S1704321-005 17-W1155 102 | | | | | teReceived: | 4/19/2017 11:38:00 AM 4/26/2017 12:10:00 PM | |
| COC: | 201782-0998 | | | | | eldSampler: atrix: | Water | |
| Comments | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Method | Date Analyzed | /Init |
| Radionuclides - To | tal | | | | | | | |
| Radium 226 | | 0.3 | pCi/L | | 0.2 | SM 7500 Ra | -B 05/09/2017 1241 | MB |
| Radium 226 Precisio | n (±) | 0.1 | pCi/L | | | SM 7500 Ra | -B 05/09/2017 1241 | MB |
| Radium 228 | | -1.6 | pCi/L | | 1 | Ga-Tech | 05/28/2017 815 | MB |

pCi/L

These results apply only to the samples tested.

Qualifiers:

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

-Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

C Calculated Value

RL - Reporting Limit

- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL

Ga-Tech

- O Outside the Range of Dilutions
- X Matrix Effect



Radium 228 Precision (±)

05/28/2017 1118

MB

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

Sample Analysis Report

2.9

| Company: | MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/2017 S1704321001 | |
|-------------------------|--|--------|-------|------|-----|----------------------------|----------------------------------|--------|
| ProjectName: Lab ID: | 2017820998 S1704321-006 | | | | | orkOrder: IlectionDate: | S1704321 4/19/2017 4:35:00 PM | |
| ClientSample ID: | 17-W1156 103 | | | | Da | teReceived: | 4/26/2017 12:10:00 PM | Л |
| COC: | 201782-0998 | | | | | eldSampler: atrix: | Water | |
| Comments | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Metho | Date Analyze | d/Init |
| Radionuclides - To | tal | | | | | | | |
| Radium 226 | | 0.15 | pCi/L | | 0.2 | SM 7500 Ra | -B 05/09/2017 1241 | MB |
| Radium 226 Precisio | n (±) | 0.1 | pCi/L | | | SM 7500 Ra | -B 05/09/2017 1241 | MB |
| Radium 228 | | -1.3 | pCi/L | | 1 | Ga-Tech | 05/28/2017 1118 | MB |

pCi/L

These results apply only to the samples tested.

Qualifiers:

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

-Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- RL Reporting Limit
 - C Calculated Value
 - G Analyzed at IML Gillette laboratory
 - J Analyte detected below quantitation limits
 - M Value exceeds Monthly Ave or MCL or is less than LCL

Ga-Tech

- O Outside the Range of Dilutions
- X Matrix Effect



Radium 226 Precision (±)

Radium 228 Precision (±)

Radium 228

05/09/2017 1241

05/28/2017 1422

05/28/2017 1422

MB

MB

MB

SM 7500 Ra-B

Ga-Tech

Ga-Tech

1

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

Sample Analysis Report

0.1

0.5

2.8

| Company: | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/30/201 S170432 | | |
|---|--|--------|-------|------|-----------------|---|---------------------|-----------------|-----|
| ProjectName: Lab ID: ClientSample ID: COC: | 2017820998 S1704321-007 17-W1157 70 201782-0998 | | | | Co Da Fie | orkOrder: IlectionDate: teReceived: IdSampler: atrix: | | | |
| Comments | | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Metho | d | Date Analyzed/I | nit |
| Radionuclides - To Radium 226 | tal | 0.1 | pCi/L | | 0.2 | SM 7500 Ra | -B 0 | 5/09/2017 1241 | MB |

pCi/L

pCi/L

pCi/L

These results apply only to the samples tested.

Qualifiers:

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

-Reviewed by: _____

Wade Nieuwsma, Assistant Laboratory Manager

.

RL - Reporting Limit

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

Page 7 of 7



| | | ue, Sheridan, Wyoming 82801 ph: ′TICAL QC SUMMARY R | |
|----------|----------------------------------|---|--|
| ENT: | MVTL Laboratories, Inc. | | Date: 5/30/2017 |
| rk Order | : S1704321 | | Report ID: S1704321001 |
| ject: | 2017820998 | | |
| Radium | 1 228 by Ga/Tech | Sample Type MBLK | Units: pCi/L |
| ſ | MB-438 (05/26/17 19:32) | RunNo: 146224 | PrepDate: 05/17/17 14:00 BatchID 13153 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |
| D. U | Total Radium 228 | ND | 1 |
| – | 1 228 by Ga/Tech | Sample Type LCS | Units: pCi/L |
| 1 | LCS-438 (05/26/17 22:35) | RunNo: 146224 | PrepDate: 05/17/17 14:00 BatchID 13153 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |
| | Total Radium 228 | 43 | 1 40.1 107 65.9 - 132 |
| Radium | 1 228 by Ga/Tech | Sample Type MS | Units: pCi/L |
| 1 | MS-438 (05/27/17 04:42) | RunNo: 146224 | PrepDate: 05/17/17 14:00 BatchID 13153 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |
| | Total Radium 228 | 39 | 1 40.1 ND 96.0 50 - 139 |
| Radium | 1 228 by Ga/Tech | Sample Type MSD | Units: pCi/L |
| 1 | MSD-438 (05/27/17 07:46) | RunNo: 146224 | PrepDate: 05/17/17 14:00 BatchID 13153 |
| L | Analyte | Result | RL Conc %RPD %REC % RPD Limits Q |
| | Total Radium 228 | 44 | 1 39 14.2 111 20 |
| Radium | 1 226 in Water - | Sample Type MBLK | Units: pCi/L |
| 1 | MB-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |
| | Radium 226 | ND | 0.2 |
| Radium | 1 226 in Water - | Sample Type LCS | Units: pCi/L |
| 1 | LCS-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |
| | Radium 226 | 5.1 | 0.2 5.89 86.3 67.1 - 122 |
| Radium | 226 in Water - | Sample Type LCSD | Units: pCi/L |
| I | LCSD-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| L | Analyte | Result | RL Conc %RPD %REC % RPD Limits Q |
| | Radium 226 | 7.0 | 0.2 5.1 32.1 119 20 |
| Radium | 226 in Water - | Sample Type MS | Units: pCi/L |
| 5 | S1704319-001AMS (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| | | | |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Q |

| Qualifiers: | в | Analyte detected in the associated Method Blank |
|-------------|---|---|
| | G | Analyzed at IML Gillette laboratory |

J

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

Page 1 of 1



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

Chain of Custody Record

| | | | | | | | | · · · · · · · · · · · · · · · · · · · | | | | |
|---------------------------------------|---------------------------------|---------------------|----------|------------|----------|-------------|--------------|---------------------------------------|----------------------------|--------------|----------------------------------|--|
| | Phone: (701) 2 800) 279-6885 | Fax: (701) 258-9724 | | | | 201782-0998 | | | | | 201782-0998 | |
| Company Nam | e and Address: | | | Account # | !: | | | | | | Phone #: | |
| | | | | | | | | | | 701-258-9720 | | |
| | <u>M</u> 2616 E I | | Contact: | | | | | | | Fax #: | | |
| | | N. CC | Claud | iette | 3 | | | | For faxed report check box | | | |
| Billing Address | s (indicate if differen | <u>(, ND 58501</u> | · | Name of S | sampler: | | | | | | E-mail: <u>ccarroll@mvtl.com</u> | |
| | o (malouto n'amoren | e from abovej. | | Quote Nu | mber | | | | | | For e-mail report check box | |
| | PO B | 30x 249 | | Quoto Mu | | | | | | | 24-Apr-17 | |
| | <u>New Ulm</u> | <u>, MN 56073</u> | | Project Na | ame/Numb | er: | ******* | | | | Purchase Order #: | |
| · · · · · · · · · · · · · · · · · · · | | | | | | | | | | | BL5841 | |
| | | Sample Information | | | | | B | ottle | Ty | be | Analysis | |
| 917043. | | | | | | | | | | | | |
| 5110.0 | | | | | | | 03 | ed | | | | |
| | | | | | | ed | 1000 ml HNO3 | als serv | ar | | | |
| IML Lab | | | Sample | Date | Time | Untreated | u n | C Vi | l ss | e. | | |
| Number | MVTL Lab Number | Client Sample ID | Туре | Sampled | Sampled | Unt | 100 | VOC Vials Umpreserved | Glass Jar | Other | Analysis Required | |
| <u></u> | 17-W1151 | FB1 | GW | 19-Apr-17 | | | 4 | | | | Ra226 & Ra228 | |
| 2 | 17-W1152 | Dup1 | GW | 19-Apr-17 | | | 4 | | | | Ra226 & Ra228 | |
| 003 | 17-W1153 | 13 | GW | 19-Apr-17 | 855 | | 4 | | | | Ra226 & Ra228 | |
| 004 | 17-W1154 | 101 | GW | 19-Apr-17 | 1503 | | 4 | | | | Ra226 & Ra228 | |
| 0.05 | 17-W1155 | 102 | GW | 19-Apr-17 | 1138 | | 4 | | | | Ra226 & Ra228 | |
| 206 | 17-W1156 | 103 | GW | 19-Apr-17 | 1635 | | 4 | | | | Ra226 & Ra228 | |
| 007 | 17-W1157 | 70 | GW | 19-Apr-17 | 1323 | | 4 | | | | Ra226 & Ra228 | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| Commonte: All | I reculse much he was | | | | | | | | | | | |

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

zcolers

| Transferred by: | Date: | Time: | Sample Condition: | Received by: | Date: | | Temp: |
|-----------------|-----------|-------|-------------------|--------------|---------|-------|-------|
| T. Olson | 24-Apr-17 | 1700 | | Kathy BOYD | 4.26.17 | 12:10 | 11.3 |
| 2. | | | | 1 | | | 12.9 |



Field Datasheet

Groundwater Assessment

Wind:

| Company: | MDU Heskett |
|--------------------|--------------|
| Event: | 2017 |
| Sample ID: | , 13 |
| Sampling Personal: | Derry rleyer |

Phone: (701) 258-9720

Weather Conditions:

Тетр: 40 °F

NOS-10

Sunny / Partly Cloudy / Cloudy

| Well Information | | | | | | | | |
|--------------------|-------------|----------|--------------------|-------|--|--|--|--|
| Well Locked? | Yes | (Ng) | | | | | | |
| Well Labeled? | Tes | No | | | | | | |
| Casing Straight? | Tes | No | | | | | | |
| Grout Seal Intact? | Yes | NO | Not Visible | | | | | |
| Repairs Necessary: | | \sim | | | | | | |
| Casing | Diameter: | | - 2" | | | | | |
| Water Level Bef | ore Purge: | 2 | 8,76 | ft | | | | |
| Total V | Vell Depth: | - | | ft | | | | |
| We | ell Volume: | | | iters | | | | |
| Depth to To | p of Pump: | | | ft | | | | |
| Water Level Aft | er Sample: | | 29,23 | ft | | | | |
| Measuremer | nt Method: | Electric | Water Level Indica | tor | | | | |

| | Sa | mpling | Informatio | on | | | |
|----------------------|-------------|----------|----------------------------|-----------------------|----------------|-------|--|
| Purging Method: | Blad | der | | Co | ontrol Setting | s | |
| Sampling Method: | Blad | der | | Purge: | 5 | sec. | |
| Dedicated Equip?: | Tes | No | | Recover: | 22 | sec. | |
| Duplicate Sample?: | Yes | No | | PSI: | 20 | | |
| Duplicate Sample ID: | Duy 1 | | | Pumping Rate: 180 mL/ | | | |
| | ť | | | | | | |
| Purge Date: | 19Apr 17 | - | Time Purg | ing Began: | OBOS | @m/pm | |
| Well Purged Dry? | Yes | No | Time F | Purged Dry: | <i>~</i> | am/pm | |
| Sample Date: | IgAr1 | > | Time of Sampling: 0855 and | | | | |
| | | | | | | | |
| Bottle C | CR: 1L Raw, | 500mL Ni | itirc, 500mL | Nitric (filtere | ed), 4-1L Nitr | ic | |
| List: | | | | · | | | |

Precip:

Field Measurements

| | lization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|------------|-----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | OBIO | 7.70 | 10365 | 6.95 | 4.01 | 218,5 | 3.89 | 29.15 | 522,0 | Clear |
| 2 | 0815 | 7.78 | 10353 | 6.95 | 3.90 | 220.2 | 3.96 | 29,20 | 500.0 | Clear |
| 3 | 0820 | 7.77 | 10357 | 6.95 | 3.94 | 220.9 | 1.90 | 29,27 | 500.0 | Clear |
| 4 | 0825 | 7.BI | 10345 | 6,95 | 3,96 | 221.4 | 2,23 | 29,30 | 520,0 | Clear |
| 5 | 0830 | 7.89 | 10355 | 6.96 | 4.06 | 204,0 | 10.0 | 29,25 | 500,0 | Cler |
| 6 | 0835 | 7.91 | 10374 | 6.96 | 4.22 | 154.9 | 11.9 | 29.24 | 500,0 | clear |
| 7 | 0840 | 7.91 | 10395 | 6.96 | 4.30 | 98.7 | 12.4 | 29,25 | 500.0 | clear |
| 8 | 0845 | 7.97 | 10412 | 6.96 | 4.25 | 77.B | 9.36 | 29.24 | 500.0 | Clear |
| 9 | 0850 | 8.03 | 10424 | 6.96 | 4.26 | 69.4 | 9.52 | 29.25 | 5.0.0 | Clear |
| 10 | 0855 | 8,01 | 10457 | 6.96 | 4.35 | 62.1 | 9,74 | 29.24 | 500.0 | Clex |
| Stabilized | (Tes) | No | | | | To | otal Volume | Removed: | 5000.0 | mL |

Comments:

 \bigcirc





Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | , 101, |
| Sampling Personal: | Jan Kleyon |

Phone: (701) 258-9720

505-10 45 °F Wind: Sunny / Partly Cloudy Cloudy Weather Conditions: Temp: Precip: Well Information **Sampling Information** No Well Locked? Yes **Purging Method:** Bladder **Control Settings** Yes Well Labeled? No Sampling Method: Bladder Purge: 5 sec. Nes 55 Dedicated Equip?: Casing Straight? No (res) No Recover: sec. 25 Grout Seal Intact? Duplicate Sample?: No Ýeş PSI: No Not Visible Yes Repairs Necessary: Duplicate Sample ID: Pumping Rate: /00 mL/min Casing Diameter: 2" 36.54 Time Purging Began: 1422 Water Level Before Purge: Purge Date: 19 Der (7ft am/pm Time Purged Dry: Well Purged Dry? Total Well Depth: ft Yes No am/pm Time of Sampling: 9A17 1503 Well Volume: Sample Date: am/pm liters Depth to Top of Pump: ft 40,32 Water Level After Sample: ft Bottle CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric List: Measurement Method: Electric Water Level Indicator

Field Measurements

| Stabili: (3 conse | | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Levei (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|----------------------|------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1427 | 9,00 | 4766 | 6,80 | 4.46 | 69,7 | 8,48 | 37.35 | 500.0 | Cler |
| 2 | 1437 | <i>હ.</i> ૧૦ | 4751 | 6.76 | 1.26 | [1,7 | 8.65 | 38,25 | t000,0 | Clear |
| 3 | 1447 | 8,91 | 4739 | 6.75 | 1.06 | 76 | 9,00 | 39.08 | 1000,0 | Clea |
| 4 | 1453 | 9.02 | 4736 | 6,75 | 1.06 | 11.8 | 8,30 | 39,15 | 500,0 | Clear |
| 5 | 1458 | 8.96 | 4734 | 6.75 | 1.02 | 16.0 | 7,92 | 39.20 | 500,0 | clear |
| 6 | 1503 | 8.97 | 4733 | 6.74 | 1.07 | 19.6 | 7.81 | 39.25 | 500,0 | Clear |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | Yes | No | | | | To | otal Volume | Removed: | 4,000.0 | mL |



Field Datasheet

Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 102 |
| Sampling Personal: | Jen stor |
| | 1 |

Phone: (701) 258-9720

Weather Conditions:

45 °F Temp:

Wind: 505-10

Sunny (Partly Cloudy / Cloudy

| | Well Info | ormation | | |
|--------------------|-------------|----------|-----------------|---------|
| Well Locked? | Yes | No | | |
| Well Labeled? | Yes | No | | |
| Casing Straight? | Tês | No | | |
| Grout Seal Intact? | Yes | No | Not Visi | ble |
| Repairs Necessary: | | | | |
| Casing | Diameter: | | 2" | |
| Water Level Bet | ore Purge: | | IS.HB | ft |
| Total V | Vell Depth: | | | ft |
| We | ell Volume: | | | liters |
| Depth to To | p of Pump: | | <i></i> | ft |
| Water Level Aft | er Sample: | | 18,15 | ft |
| Measuremer | nt Method: | Electric | Water Level Ind | dicator |

| | | Sa | mpling | Informatio | on | | |
|-------------|------------|------------|----------|-------------|-----------------|---------------------|--------|
| Purgir | ng Method: | Blad | der | | Co | ontrol Setting | gs |
| Samplir | ng Method: | Blad | der | | Purge: | 5 | sec. |
| Dedicat | ed Equip?: | Yes | No | | Recover: | 55 | sec. |
| Duplicate | Sample?: | Yes | No | | PSI: | IS | |
| Duplicate : | Sample ID: | | | | Pumping R | ate: 100 | mL/min |
| | | | | | | | |
| P | urge Date: | 19A1-1- | 7- | Time Purg | ing Began: | 1053 | ana/pm |
| Well P | urged Dry? | Ýes | No> | Time F | Purged Dry: | Augusta and a state | am/pm |
| Sa | mple Date: | 19A-1 | 7 | Time of | f Sampling: | 1138 | @m/pm |
| | | 1 | | | | | |
| Bottle | CC | R: 1L Raw, | 500mL Ni | tirc, 500mL | Nitric (filtere | ed), 4-1L Nit | ric |
| List: | | | | | | | |

Precip:

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|--------------------|--------------------|--------------|----------------|-------------------------------------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1058 | 8.18 | B031 | 6.80 | 1.B3 | 46.6 | 17.9 | 16.35 | 500,0 | Clen |
| 2 | 1108 | 8,19 | 7563 | 6.78 | 0.96 | 32.4 | 2,70 | 16.78 | 1000.0 | cler |
| 3 | HOBINS | 8.16 | 7268 | 6.79 | 0,98 | 30,5 | 1.29 | 16.92 | 500.0 | Cles |
| 4 | 1118 | 8,19 | 7220 | 6,79 | 0,97 | 27.7 | 1.05 | 17.08 | 500,0 | Clem |
| 5 | 1123 | 8.29 | 7129 | 6.80 | 0.95 | 21.1 | 0,71 | 17.20 | 500,0 | Clen |
| 6 | 1128 | B.27 | 7001 | 6.61 | 1.36 | 17.1 | DISZ | 17.25 | 500.0 | Clear |
| 7 | 1123 | 8.33 | 6774 | 6.84 | 1.45 | 13.0 | 0.52 | 17.31 | 500.0 | Clur |
| 8 | 1128 | 8.27 | 6775 | 6.86 | 1.70 | 10.4 | 0,33 | 17.40 | 50.0 | Clear |
| 9 | 1133 | 8,16 | 6774 | 6.87 | 1.76 | 7.7 | 0.32 | 17.50 | 500,0 | Clear |
| 10 | 1138 | Biot | 6813 | 6.80 | 1.8 | 4.5 | 0:36 | 17.52 | 500,0 | Clear |
| Stabilized: | (Yes) | No | • | Total Volume Removed: క్ రిరింగ్ mL | | | | | | |
| Comments | | | - | | | | | | | - |



Field Datasheet

Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 103 |
| Sampling Personal: | Jeny May ~ |
| | |

Phone: (701) 258-9720

Weather Conditions:

Temp: 45 °F

Wind: NOS-10

Sunny / Partly Cloudy Cloudy

| Well Information | | | | | | | | |
|--------------------|-------------|----------|-----------------|---------|--|--|--|--|
| Well Locked? | Yes | No | | | | | | |
| Well Labeled? | des | No | | | | | | |
| Casing Straight? | Yes | No | | | | | | |
| Grout Seal Intact? | Yes | No | Not Visi | ble | | | | |
| Repairs Necessary: | | | | | | | | |
| Casing | Diameter: | 2" | | | | | | |
| Water Level Bef | ore Purge: | | 31.52 | ft | | | | |
| Total V | Vell Depth: | | | ft | | | | |
| We | ell Volume: | | | liters | | | | |
| Depth to To | o of Pump: | | e | ft | | | | |
| Water Level Aft | er Sample: | | 33.00 | ft | | | | |
| Measuremer | nt Method: | Electric | Water Level Inc | dicator | | | | |

| | | Sa | mpling l | nformatio | on | | |
|--------------------|-----|------------|-----------|------------|-----------------|---------------|-------|
| Purging Metho | od: | Blad | der | | Co | ontrol Settin | gs |
| Sampling Metho | od: | Blad | der | | Purge: | S | sec. |
| Dedicated Equip | »?: | Tes | No | | Recover: | 55 | sec. |
| Duplicate Sample | ?: | Yes | No | | PSI: | 20 | |
| Duplicate Sample I | D: | <u> </u> | - | | Pumping R | mL/min | |
| | | | | | | | |
| Purge Dat | te: | 19A-1 | 7 | Time Purg | ing Began: | 1615 | am/pm |
| Well Purged Dr | y? | Yes | No | Time F | Purged Dry: | | am/pm |
| Sample Dat | te: | 19Ar | 17 | Time of | Sampling: | 1635 | am/pm |
| | - | | , | | | | |
| Bottle | CCI | R: 1L Raw, | 500mL Nit | irc, 500mL | Nitric (filtere | ed), 4-1L Nit | tric |
| List: | | | | | | | |

Precip:

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|--------------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1620 | 8.49 | 4976 | 6.72 | 2,44 | 106.2 | 1.29 | 31.62 | Sayo | Clear |
| 2 | 1625 | 8,44 | 4990 | 6.73 | 2,51 | 114,2 | 1.66 | 31.65 | 500,0 | Clean |
| 3 | 1630 | 8.41 | 4996 | 6,73 | 2.41 | 123,0 | 1.56 | 31,72 | 500,0 | Clear |
| 4 | 1635 | 8,46 | 4993 | 6.73 | 2,30 | 128.8 | 1.43 | 31,82 | 500,0 | Clear |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | Yes | No | | | | То | otal Volume | Removed: | 2000,0 | mL |



Weather Conditions:

Field Datasheet

Groundwater Assessment

| Company: | MDU Heskett | | | | | | |
|--------------------|-------------|--|--|--|--|--|--|
| Event: | 2017 | | | | | | |
| Sample ID: | .70 | | | | | | |
| Sampling Personal: | Jerry Mayor | | | | | | |

Phone: (701) 258-9720

Temp: 45 °F Wind

Wind: Sostio

Sunny / Partly Cloudy / Cloudy

| Well Information | | | | | | | | |
|--------------------|-------------|----------|-----------------|---------|--|--|--|--|
| Well Locked? | Rés | NO | | | | | | |
| Well Labeled? | Yes | No | | | | | | |
| Casing Straight? | Yes | No | | | | | | |
| Grout Seal Intact? | tes | No | ble | | | | | |
| Repairs Necessary: | | | | | | | | |
| Casing | Diameter: | 2" | | | | | | |
| Water Level Bef | ore Purge: | | 19.22 | ft | | | | |
| Total V | Vell Depth: | | | | | | | |
| We | ell Volume: | | | liters | | | | |
| Depth to To | | ft | | | | | | |
| Water Level Aft | | 20,85 | ft | | | | | |
| Measuremer | nt Method: | Electric | Water Level Inc | dicator | | | | |

| | | Sa | mpling | Informatio | on | | |
|---|----------------------|--------|--------|------------------|---------------------|----------------|--------|
| Purgir | ng Method: | Blade | der | | Co | ontrol Setting | gs |
| Samplir | ng Method: | Blad | der | | Purge: | 5 | sec. |
| Dedicate | ed Equip?: | Yes | No | | Recover: | 55 | sec. |
| Duplicate Sample?: | | Yes | No | | PSI: | 20 | |
| Duplicate S | Duplicate Sample ID: | | · | | Pumping F | Rate: 100 | mL/min |
| | | | | | | | |
| Р | urge Date: | 19A117 | | Time Purg | Time Purging Began: | | am/pm |
| Well Pu | urged Dry? | Yes | NO | Time Purged Dry: | | | am/pm |
| Sample Date: | | 19A-17 | | Time o | f Sampling: | 1323 | am/pm |
| | | | | | | - | |
| Bottle CCR: 1L Raw, 500mL Nitirc, 500mL Nitric (filtered), 4-1L Nitric List: | | | | | | | |

Precip:

Field Measurements

| Stabili: (3 conse | | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|----------------------|------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1303 | 8.57 | 4270 | 7.03 | 1.33 | 92.0 | 0,20 | 19.63 | 500,0 | Clear |
| 2 | 1308 | 8.61 | 4302 | 7.02 | 0.82 | 93.0 | 0.23 | 20,05 | 500.0 | Clear |
| 3 | 1313 | 8,56 | 4312 | 7.02 | 0,79 | 93.4 | 0.67 | 20.19 | 500.0 | clear |
| 4 | 1308 | 8.58 | 4314 | 7.02 | 0,73 | 94.6 | 0.84 | 20.30 | 50.0 | Clear |
| 5 | 1323 | 8.60 | 4313 | 7.02 | 0,73 | 95.7 | 0.79 | 20,40 | 500.0 | Cles |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | - | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | Yes | No | _ | | | То | otal Volume | Removed: | 2500.0 | mL |



Chain of Custody Record

| Project Name | : | 2 (B) | Event: | | | | | Wo | rk O | rder N | lumber: | | | |
|---|-----------|---------------|------------|-------------|---------|---------------|---------------------------------|------------------|------|--------|-----------|-------------|----------|-------------------|
| MDU Heskett | | | April 2017 | | | 82-0948 | | | | | | | | |
| Report To:MDUAttn:Samantha MarshallAddress:400 N. 4th StBismarck, ND 58501phone:701-222-7829email:Image: Comparison of the second s | | | | | | | Name of Sampler(s): Jeryphyc | | | | | | | |
| | Samp | le Informatio | n | 12.6 | 对电子运行会计 | | Bot | tle T | Гуре | | Fi | eld Para | meters | Analysis |
| Lab Number | Sample ID | Date | Time | Sample Tuno | | 1 liter Nite- | | | | | Temp (°C) | Spec. Cond. | Ha | Analysis Required |
| W1151 | FBI | 19Apr17 | - | GW | | 4 | | | | | - | - | <u> </u> | |
| W1152 | Dupl | 19 Apr 17 | | Gi | | Ц | | | | | - | ~ | - | |
| W1153 | 13 | 19 Apr 17 | 0855 | Gw | | 4 | | | | | B.0(| | | |
| W1154 | 101 | (9Apr 17 | [503 | GW | | 4 | | | | | 8,97 | 4733 | | |
| W1155 | loz | 19Apr 17 | (138 | Gw | | 4 | | | | | 8.07 | 6813 | 6.88 | Rad 226 & Rad 228 |
| WILSO | 103 | 19 Apr 17 | 1635 | Gw | | 4 | | | | | 8.46 | 4993 | 6.73 | |
| W1157 | 70 | 19 Apr 17 | 1323 | Gw | | 4 | | | | _ | 8.60 | 4313 | 7.02 | |
| | | | | | | | | $\left \right $ | | + | | | | |
| | | | | | | | | | | | | | | |

| Relinquished By: | Sample Condition: | | | | |
|------------------|-------------------|---------------------|------------------------|--|--|
| Name: | Date/Time | Location: | Temp (°C) | | |
| to la illa | 21/4/17 | Og Ja Walk In #2 | (5.5 TM562 /(TM588) | | |
| 2 | 6740 | VVAIK III #2 | 1101302 /(1101308) | | |

| Received | d by: |
|---------------|--------------------|
| Name: | Date/Time |
| Ungeldimonson | 81 April 17 800 |

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-0999 S1704322 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1158 through 17-W1165 S1704322-001 through S1704322-007

| MDU Sample Identification | MVTL Laboratory # | IML Laboratory # |
|---------------------------|-------------------|------------------|
| FB2 | 17-W1158 | S1704322-001 |
| DUP2 | 17-W1159 | S1704322-002 |
| 2-90 | 17-W1160 | No sample |
| 3-90 | 17-W1161 | S1704322-003 |
| 33 | 17-W1162 | S1704322-004 |
| 44R | 17-W1163 | S1704322-005 |
| 80R | 17-W1164 | S1704322-006 |
| 105 | 17-W1165 | S1704322-007 |

I. RECEIPT

- All samples were received at the laboratory on 21 Apr 2017 at 0800.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
 - Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 15.5°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 26 Apr 2017.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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.

MINNESOTA VALLEY TESTING LABORATORIES, INC



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-0999 S1704322 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1158 through 17-W1165 S1704322-001 through S1704322-007

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

IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted on the individual analytical laboratory report or on the IML Case Narrative.
- Sample 2-90 (17-W1160) was lost in a laboratory accident and was recollected at a later date.

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:

7 Jun 17 DATE:

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1158 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: FB2

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

Temp at Receipt: 15.5C

| | As Received Result | Method RL | Method Reference | Date Analyzed | Analyst |
|------------|-----------------------|--------------|---------------------|------------------|---------|
| Radium 226 | See Attached Report | | | 9 May 17 | OL |
| Radium 228 | See Attached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

1 JUNIT Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CC

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1159 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Project Name: MDU Heskett Sample Description: Dup 2

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

Temp at Receipt: 15.5C

| | As Received Result | Method RL | Method Reference | Date Analyzed | Analyst |
|------------|-----------------------|--------------|---------------------|------------------|---------|
| Radium 226 | See Attached Report | | | 9 May 17 | OL |
| Radium 228 | See Attached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

(c Clauditte TIM K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1160 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 15:25 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

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

Project Name: MDU Heskett Sample Description: 2-90

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|-----------|--------------|---------------------|------------------|---------|
| pH - Field | 6.90 | units | NA | SM 4500 H+ B | 20 Apr 17 15:25 | JSM |
| Temperature - Field | 8.66 | Degrees C | NA | SM 2550B | 20 Apr 17 15:25 | JSM |
| Conductivity - Field | 7797 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 15:25 | JSM |

Approved by:

Cr 7 JUN 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1161 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 14:05 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Sample Description: 3-90

400 N. 4th

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 6.89 | units | NA | SM 4500 H+ B | 20 Apr 17 14:05 | JSM |
| Temperature - Field | 8.07 | Degrees C | NA | SM 2550B | 20 Apr 17 14:05 | JSM |
| Conductivity - Field | 4851 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 14:05 | JSM |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | See Atta | ached Report | | | 28 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

60 JUND Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1162 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 12:40 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 33

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|---|--------------------|--|---------------|---------------------------------------|--|---------|
| pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228 | | units Degrees C umhos/cm ached Report ached Report | NA NA 1 | SM 4500 H+ B SM 2550B EPA 120.1 | 20 Apr 17 12:40 20 Apr 17 12:40 20 Apr 17 12:40 9 May 17 29 May 17 | JSM |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte TJun 7 K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1163 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 7:43 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 44R

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|----------|
| pH - Field | 6.60 | units | NA | SM 4500 H+ B | 20 Apr 17 7 | 7:43 JSM |
| Temperature - Field | 7.93 | Degrees C | NA | SM 2550B | 20 Apr 17 7 | 7:43 JSM |
| Conductivity - Field | 9045 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 7 | 7:43 JSM |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | See Atta | ached Report | | | 29 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

75m17 Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

a





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1164 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 10:55 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 80R

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|----------------------|--------------------|--------------|--------------|---------------------|------------------|---------|
| pH - Field | 7.12 | units | NA | SM 4500 H+ B | 20 Apr 17 10:55 | JSM |
| Temperature - Field | 7.48 | Degrees C | NA | SM 2550B | 20 Apr 17 10:55 | JSM |
| Conductivity - Field | 5747 | umhos/cm | 1 | EPA 120.1 | 20 Apr 17 10:55 | JSM |
| Radium 226 | See Atta | ached Report | | | 9 May 17 | OL |
| Radium 228 | | ached Report | | | 29 May 17 | OL |

OL = Analysis performed by an Outside Laboratory.

Approved by:

Juni7 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

4





Page: 1 of 1

Report Date: 6 Jun 17 Lab Number: 17-W1165 Work Order #:82-0999 Account #: 002800 Date Sampled: 20 Apr 17 9:25 Date Received: 21 Apr 17 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 15.5C

Project Name: MDU Heskett Sample Description: 105

400 N. 4th

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Event and Year: April 2017

| | As Rece: Result | ived | Method RL | Method Reference | Date Analyzed | Analyst |
|---|--------------------|--|---------------|---------------------------------------|--|----------|
| pH - Field Temperature - Field Conductivity - Field Radium 226 Radium 228 | | units Degrees C umhos/cm ached Report ached Report | NA NA 1 | SM 4500 H+ B SM 2550B EPA 120.1 | 20 Apr 17 20 Apr 17 20 Apr 17 9 May 17 29 May 17 | 9:25 JSM |

OL = Analysis performed by an Outside Laboratory.

Approved by:

7 Juni7 Claudite K. Canrep

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.

CC



Your Environmental Monitoring Partner

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

Date: 6/5/2017

| CLIENT: | MVTL Laboratories, Inc. | CASE NARRATIVE |
|------------|-------------------------|-------------------------------|
| Project: | 201782-0999 | Report ID: S1704322002 |
| Lab Order: | S1704322 | (Replaces S1704322001) |

Samples 17-W1158 FB2, 17-W1159 Dup2, 17-W1161 3-90, 17-W1162 33, 17-W1163 44R, 17-W1164 80R, and 17-W1165 105 were received on April 26, 2017.

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

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

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

Qualifiers by sample

LCSD-1746 - Radium 226 in Water -/Radium 226 - RPD outside accepted recovery limits

Report S1704322002 replaces report S1704322001. Client requested sample id change on S1704322-003.

Reviewed by:

<

Page 1 of 1



Sample Analysis Report

| Analyses | | Result | Units | Qual | RI | Method | Date Analyzed/Init |
|------------------|--|--------|-------|------|-----------------|-----------|---|
| Comments | | | | | | | |
| | | | | | Matrix | ** ** | Water |
| COC: | 201782-0999 | | | | FieldS | ampler: | |
| ClientSample ID: | 17-W1158 FB2 | | | | DateR | eceived: | 4/26/2017 12:10:00 PM |
| Lab ID: | S1704322-001 | | | | Collec | tionDate: | 4/20/2017 |
| ProjectName: | 201782-0999 | | | | Work | Order: | S1704322 |
| | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | Date F Repor | | 6/5/2017 S1704322002 (Replaces S1704322001) |
| | | | | | | | |

| Analyses | Result | Units | Quai | ΠL | weinoa | Date Analyzeu/ | 1114 |
|--------------------------|--------|-------|------|-----|--------------|-----------------|------|
| Radionuclides - Total | | | | | | | |
| Radium 226 | 0.04 | pCi/L | I | 0.2 | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 226 Precision (±) | 0.04 | pCi/L | | | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 228 | -3.5 | pCi/L | | 1 | Ga-Tech | 05/28/2017 1726 | MB |
| Radium 228 Precision (±) | 3.3 | pCi/L | | | Ga-Tech | 05/28/2017 1726 | MB |
| | | | | | | | |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 7



Sample Analysis Report

| Comments | | | Matrix: | Water |
|------------------|--|------|----------------------------|---|
| | | | Matrix: | Water |
| | | | | |
| COC: | 201782-0999 | | FieldSampler: | |
| ClientSample ID: | 17-W1159 Dup2 | | DateReceived: | 4/26/2017 12:10:00 PM |
| Lab ID: | S1704322-002 | | CollectionDate: | 4/20/2017 |
| ProjectName: | 201782-0999 | | WorkOrder: | S1704322 |
| Company: | MVTL Laboratories, Ind 2616 E Broadway Ave. Bismarck, ND 58501 | | Date Reported Report ID | 6/5/2017 S1704322002 (Replaces S1704322001) |

| Result | Units | Qual | RL | Method | Date Analyzed/I | nit |
|--------|---------------------|---------------------------------------|---------------------------------------|---|---|---|
| | | | | | | |
| 0.1 | pCi/L | | 0.2 | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| 0.04 | pCi/L | | | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| -6.9 | pCi/L | | 1 | Ga-Tech | 05/28/2017 2029 | MB |
| 3.1 | pCi/L | | | Ga-Tech | 05/28/2017 2029 | MB |
| | 0.1 0.04 -6.9 | 0.1 pCi/L 0.04 pCi/L -6.9 pCi/L | 0.1 pCi/L 0.04 pCi/L -6.9 pCi/L | 0.1 pCi/L 0.2 0.04 pCi/L -6.9 pCi/L 1 | 0.1 pCi/L 0.2 SM 7500 Ra-B 0.04 pCi/L SM 7500 Ra-B -6.9 pCi/L 1 | 0.1 pCi/L 0.2 SM 7500 Ra-B 05/09/2017 1241 0.04 pCi/L SM 7500 Ra-B 05/09/2017 1241 -6.9 pCi/L 1 Ga-Tech 05/28/2017 2029 |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by:

Qualifiers:

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



Sample Analysis Report

| Analyses | | Result | Units | Qual | RL | Methoo | Date Analyzed/Init |
|------------------|-----------------------|--------|-------|------|-------|------------|------------------------|
| Comments | | | | | | | |
| | | | | | Matri | x: | Water |
| COC: | 201782-0999 | | | | Field | Sampler: | |
| ClientSample ID: | 17-W1161 3-90 | | | | Date | Received: | 4/26/2017 12:10:00 PM |
| Lab ID: | S1704322-003 | | | | Colle | ctionDate: | 4/20/2017 2:05:00 PM |
| ProjectName: | 201782-0999 | | | | Work | Order: | S1704322 |
| | Bismarck, ND 58501 | | | | | | (Replaces S1704322001) |
| | 2616 E Broadway Ave | | | | Repo | ort ID | S1704322002 |
| Company: | MVTL Laboratories, In | c. | | | Date | Reported | 6/5/2017 |

| Analyses | Result | Units | Quai | ĸL | Wethod | | m |
|--------------------------|--------|-------|------|-----|--------------|-----------------|----|
| Radionuclides - Total | | | | | | | |
| Radium 226 | 0.1 | pCi/L | | 0.2 | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 226 Precision (±) | 0.04 | pCi/L | | | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 228 | -1.9 | pCi/L | | 1 | Ga-Tech | 05/28/2017 2333 | MB |
| Radium 228 Precision (±) | 2.7 | pCi/L | | | Ga-Tech | 05/28/2017 2333 | MB |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by:

Qualifiers:

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



Your Environmental Monitoring Partner

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

Sample Analysis Report

| Analyses | | Result | Units | Qual | RL | Method | Date Analyzed/Init |
|------------------------|---|--------|-------|------|--------------|-------------------|-------------------------|
| Comments | | | | | | | |
| | | | | | Matri | x: | Water |
| COC: | 201782-0999 | | | | Field | Sampler: | |
| ClientSample ID | : 17-W1162 33 | | | | Datel | Received: | 4/26/2017 12:10:00 PM |
| Lab ID: | S1704322-004 | | | | Colle | ctionDate: | 4/20/2017 12:40:00 PM |
| ProjectName: | 201782-0999 | | | | Work | Order: | S1704322 |
| | Bismarck, ND 58501 | | | | Ropo | | (Replaces S1704322001) |
| Company: | MVTL Laboratories, In 2616 E Broadway Ave | | | | Date Repo | Reported rt ID | 6/5/2017 S1704322002 |

| , analyeee | 1000 | 00 | | mounou | | |
|--------------------------|------|-------|------|--------------|-----------------|----|
| Radionuclides - Total | | | | | | |
| Radium 226 | 0.1 | pCi/L | 0.2 | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 226 Precision (±) | 0.1 | pCi/L | | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 228 | 0.6 | pCi/L | 1 | Ga-Tech | 05/29/2017 236 | MB |
| Radium 228 Precision (±) | 2.5 | pCi/L | | Ga-Tech | 05/29/2017 236 | MB |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by: A

Qualifiers:

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



Sample Analysis Report

| | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | | Reported ort ID | 6/5/2017 S17043220 (Replaces | 002 S1704322001) |
|---------------------|--|--------|---------|------|-------|--------------------|------------------------------------|---------------------|
| ProjectName: | 201782-0999 | | | | Wor | kOrder: | S1704322 | |
| Lab ID: | S1704322-005 | | | | Coll | ectionDate: | 4/20/2017 | 7:43:00 AM |
| ClientSample ID: | 17-W1163 44R | | | | Date | Received: | 4/26/2017 | 12:10:00 PM |
| COC: | 201782-0999 | | | | Field | dSampler: | | |
| | | | | | Mati | ix: | Water | |
| Comments | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Metho | d Da | te Analyzed/Init |
| Radionuclides - Tot | al | | Units . | quui | | | | |

| Radium 226 | 0.3 | pCi/L | 0.2 | SM 7500 Ra-B | 05/09/2017 1241 | MB |
|--------------------------|------|-------|-----|--------------|-----------------|----|
| Radium 226 Precision (±) | 0.1 | pCi/L | | SM 7500 Ra-B | 05/09/2017 1241 | MB |
| Radium 228 | -2.0 | pCi/L | 1 | Ga-Tech | 05/29/2017 540 | MB |
| Radium 228 Precision (±) | 2.9 | pCi/L | | Ga-Tech | 05/29/2017 540 | MB |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by: A

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



Radium 228

Radium 228 Precision (±)

Your Environmental Monitoring Partner

05/29/2017 843

05/29/2017 843

MB

MB

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

Sample Analysis Report

-1.1

2.9

| Company: | MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 6/5/2017 S1704322002 (Replaces S1704322001 |) |
|---------------------|--|--------|-------|------|-----|------------------------|--|-----|
| ProjectName: | 201782-0999 | | | | | orkOrder: | S1704322 | |
| Lab ID: | S1704322-006 | | | | Co | llectionDate: | 4/20/2017 10:55:00 AM | |
| ClientSample ID | : 17-W1164 80R | | | | Da | teReceived: | 4/26/2017 12:10:00 PM | |
| COC: | 201782-0999 | | | | Fie | dSampler: | | |
| | | | | | Ма | trix: | Water | |
| Comments | | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Method | Date Analyzed/I | nit |
| Radionuclides - To | otal | | | | | | | |
| Radium 226 | | 0.1 | pCi/L | | 0.2 | SM 7500 Ra- | -B 05/09/2017 1452 | MB |
| Radium 226 Precisio | on (±) | 0.04 | pCi/L | | | SM 7500 Ra- | -B 05/09/2017 1452 | MB |

pCi/L

pCi/L

These results apply only to the samples tested.

RL - Reporting Limit

- Qualifiers: B
 - E Value above quantitation range

Analyte detected in the associated Method Blank

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

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

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

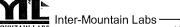
1

Ga-Tech

Ga-Tech

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

Page 6 of 7



Sample Analysis Report

| 1 2 | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 6/5/2017 S1704322002 (Replaces S1704322001) |
|---------------------|--|--------|-------|------|-----|------------------------|---|
| ProjectName: | 201782-0999 | | | | Wa | orkOrder: | S1704322 |
| Lab ID: | S1704322-007 | | | | Co | llectionDate: | 4/20/2017 9:25:00 AM |
| ClientSample ID: | 17-W1165 105 | | | | Da | teReceived: | 4/26/2017 12:10:00 PM |
| COC: | 201782-0999 | | | | Fie | dSampler: | |
| | | | | | Ma | trix: | Water |
| Comments | | | | | | | |
| Analyses | | Result | Units | Qual | RL | Method | d Date Analyzed/Init |
| Radionuclides - Tot | al | 0.16 | | | 0.0 | CM 7500 Da | D 05/00/0047 4450 M |

| Radium 226 | 0.16 | pCi/L | 0.2 | SM 7500 Ra-B | 05/09/2017 1452 | MB |
|--------------------------|------|-------|-----|--------------|-----------------|----|
| Radium 226 Precision (±) | 0.1 | pCi/L | | SM 7500 Ra-B | 05/09/2017 1452 | MB |
| Radium 228 | -0.3 | pCi/L | 1 | Ga-Tech | 05/29/2017 1147 | MB |
| Radium 228 Precision (±) | 2.8 | pCi/L | | Ga-Tech | 05/29/2017 1147 | MB |

These results apply only to the samples tested.

RL - Reporting Limit

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

Reviewed by:

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



| 001 | |
|---------------------------|--|
| | |
| | |
| ID 13153 | |
| % Rec Limits | Qual |
| | |
| | |
| ID 13153 | |
| % Rec Limits | Qual |
| 65.9 - 132 | |
| | |
| ID 13153 | |
| % Rec Limits | Qual |
| 50 - 139 | |
| | |
| ID 13153 | |
| % RPD Limits | Qual |
| 9 111 9 111 9 | D 13153 % Rec Limits D 13153 % Rec Limits 65.9 - 132 D 13153 % Rec Limits 50 - 139 D 13153 |

44

1

39

14.2

111

20

Total Radium 228

Qualifiers:

Analyte detected in the associated Method Blank

G Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

в

E Value above quantitation range

H Holding times for preparation or analysis exceeded

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits



Your Environmental Monitoring Partner

| R-MOUNTAIN L | ABS Inter-Mountain Labs 1673 Terra Aver | ue, Sheridan, Wyoming 82801 ph: | (307) 672-8945 |
|--------------|---|---------------------------------|--|
| | ANAL | YTICAL QC SUMMARY R | EPORT |
| IENT: | MVTL Laboratories, Inc. | | Date: 5/30/2017 |
| ork Order | : S1704322 | | Report ID: S1704322001 |
| oject: | 201782-0999 | | |
| Radium | 1 226 in Water - | Sample Type MBLK | Units: pCi/L |
| | MB-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qual |
| _ | Radium 226 | ND | 0.2 |
| | MB-1747 (05/09/17 14:52) | RunNo: 145696 | PrepDate: 05/03/17 0:00 BatchID 13144 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qual |
| | Radium 226 | ND | 0.2 |
| Radium | n 226 in Water - | Sample Type LCS | Units: pCi/L |
| 1 | LCS-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qua |
| | Radium 226 | 5.1 | 0.2 5.89 86.3 67.1 - 122 |
| | LCS-1747 (05/09/17 14:52) | RunNo: 145696 | PrepDate: 05/03/17 0:00 BatchID 13144 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qua |
| | Radium 226 | 5.9 | 0.2 6.41 91.2 67.1 - 122 |
| Radium | n 226 in Water - | Sample Type LCSD | Units: pCi/L |
| | LCSD-1746 (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| | Analyte | Result | RL Conc %RPD %REC % RPD Limits Qua |
| _ | Radium 226 | 7.0 | 0.2 5.1 32.1 119 20 R |
| | LCSD-1747 (05/09/17 14:52) | RunNo: 145696 | PrepDate: 05/03/17 0:00 BatchID 13144 |
| | Analyte | Result | RL Conc %RPD %REC % RPD Limits Qua |
| | Radium 226 | 6.0 | 0.2 5.9 1.78 92.9 20 |
| Radium | n 226 in Water - | Sample Type MS | Units: pCi/L |
| | S1704319-001AMS (05/09/17 10:04) | RunNo: 145695 | PrepDate: 05/01/17 0:00 BatchID 13143 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qua |
| | Radium 226 | 12.3 | 0.2 11.8 ND 105 65 - 131 |
| : | S1704322-006AMS (05/09/17 14:52) | RunNo: 145696 | PrepDate: 05/03/17 0:00 BatchID 13144 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qua |

Radium 226

Qualifiers:

Analyte detected in the associated Method Blank

Analyzed at IML Gillette laboratory

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X Matrix Effect

В

G

E Value above quantitation range

6.2

H Holding times for preparation or analysis exceeded

0.2

6.41

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

96.8

ND

65 - 131



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

Chain of Custody Record

Page 1 of 1 .

| Toll Free: (8 | Toll Free: (800) 279-6885 Fax: (701) 258-9724 | | | | | | | | | | 201782-0999 |
|---|---|--|----------------------------|--|-----------------------------|-----------|-----------------------|--------------------------|--------------|-----------------------------|---|
| Company Nam | ne and Address: | | Account #: Ph | | | | | Phone #: | | | |
| | | 1 / . . | | | | | | | 701-258-9720 | | |
| | | <u>VTL</u> | | Contact: | | | | | Fax #: | | |
| | | <u>Broadway</u> <, ND 58501 | | 11 50 | Clauc | lette | } | | | | For faxed report check box |
| Billing Addres | s (indicate if differen | | | Name of S | sampler: | | | | | | E-mail: <u>ccarroll@mvtl.com</u> |
| 5 | | | Quote Nui | mher | | | | | | For e-mail report check box | |
| | <u>PO E</u> | | duoto nu | noer | | | | | | 24-Apr-17 | |
| | <u>New Ulm</u> | | Project Na | me/Numb | er: | | | | | Purchase Order #: | |
| | | | | | | | | | | BL5842 | |
| | 1 | Sample Information | ···· | T | | | B | ottle | Тур | be | Analysis |
| S17043 | 22 | | | | | | | | | | |
| | | | | | | | 1000 ml HNO3 | VOC Vials Umpreserved | | | |
| | | | | | | ted | H | ials serv | Jar | | |
| IML Lab | | | Sample | Date | Time | Jntreated | J0 II | C V Ipre | Glass . | Jer | |
| Number | MVTL Lab Number | Client Sample ID | Туре | Sampled | Sampled | n U | 100 | <u>S n</u> | 5 | Other | Analysis Required |
| | 47384400 | | GW | 00 4 47 | | 1 1 | | | | | |
| | 17-W1158 | FB2 | GVV | 20-Apr-17 | | | 4 | | | | Ra226 & Ra228 |
| の1 02 | 17-W1158 17-W1159 | EB2 Dup2 | GW | 20-Apr-17 21-Apr-17 | | | 4 | | | | Ra226 & Ra228 Ra226 & Ra228 |
| 002 | | | | | 1525 | | | | | | |
| 002_ | 17-W1159 | Dup2 | GW | 21-Apr-17 | 1525 1405 | | 4 | | | | Ra226 & Ra228 |
| 002 003 004 | 17-W1159 xub 17-W1160 | Dup2 Feb-90 | GW GW | 21-Apr-17 22-Apr-17 | | | 4 | | | | Ra226 & Ra228 Ra226 & Ra228 |
| 002 003 004 005 | 17-W1159 × D 17-W1160 17-W1161 | Dup2 Feb-90 Mar-90 | GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 | 1405 | | 4 4 4 | | | | Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228 |
| 002 003 004 005 006 | 17-W1159 <u>x-D</u> 17-W1160 17-W1161 17-W1162 | Dup2 Feb-90 Mar-90 33 | GW GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 24-Apr-17 | 1405 1240 | | 4 4 4 4 | | | | Ra226 & Ra228 |
| 002 003 004 005 | 17-W1159 x-D 17-W1160 17-W1161 17-W1162 17-W1163 | Dup2 Feb-90 Mar-90 33 44R | GW GW GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 24-Apr-17 25-Apr-17 | 1405 1240 743 | | 4 4 4 4 4 | | | | Ra226 & Ra228 |
| 002 003 004 005 006 | 17-W1159 x-D 17-W1160 17-W1161 17-W1162 17-W1163 17-W1164 | Dup2 Feb-90 Mar-90 33 44R 80R | GW GW GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 24-Apr-17 25-Apr-17 26-Apr-17 | 1405 1240 743 1055 | | 4 4 4 4 4 | | | | Ra226 & Ra228 Ra226 & Ra228 |
| 002 003 004 005 006 | 17-W1159 x-D 17-W1160 17-W1161 17-W1162 17-W1163 17-W1164 | Dup2 Feb-90 Mar-90 33 44R 80R | GW GW GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 24-Apr-17 25-Apr-17 26-Apr-17 | 1405 1240 743 1055 | | 4 4 4 4 4 | | | | Ra226 & Ra228 Ra226 & Ra228 |
| 002 003 004 005 006 006 007 | 17-W1159 <u>x-D</u> 17-W1160 17-W1161 17-W1162 17-W1163 17-W1164 17-W1165 | Dup2 Feb-90 Mar-90 33 44R 80R | GW GW GW GW GW | 21-Apr-17 22-Apr-17 23-Apr-17 24-Apr-17 25-Apr-17 26-Apr-17 | 1405 1240 743 1055 | | 4 4 4 4 4 | | | | Ra226 & Ra228 Ra226 & Ra228 |

orted as a numerical value.

Zcoolers

| Transferred by: | Date: | Time: | Sample Condition: | Received by: | Date: | | Temp: |
|-----------------|-----------|-------|-------------------|--------------|---------|-------|-------|
| T. Olson | 24-Apr-17 | 1700 | | Kathy BoyD | 4.26.17 | 12:10 | 12.9 |
| 2. | | | | 2 | | | 124 |



Field Datasheet

Groundwater Assessment

| Company: | MDU Heske | ett |
|-----------------|------------|----------|
| Event: | 2017 | |
| Sample ID: | 2-90 | |
| Sampling Person | al: Darren | Niesnaag |
| | | |

| Weather Conditions: | | Temp: | 50 °F | | Wind: | Ligh | t | | Precip | Suni | ny / Partly C | | udy |
|---------------------|-------------|----------|--|---------|-------|--------------|-------------|------------|-----------|------------|-----------------|----------------|--------|
| | Well Info | rmation | | | | | • | Sa | | | | | |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Blad | der | | Co | ntrol Setting | s |
| Well Labeled? | Yes | No | | | | Samplir | ng Method: | Blad | der | | Purge: | 5 | sec. |
| Casing Straight? | XES | No | | | | Dedicat | ed Equip?: | (Tes) | No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Visi | ble | | Duplicate | Sample?: | Yes | (NO) | | PSI: | | |
| Repairs Necessary: | | | | | | Duplicate \$ | Sample ID: | | <u> </u> | | Pumping R | ate: | mL/min |
| Casing | Diameter: | | 2" | | | | | | | | | | |
| Water Level Befo | ore Purge: | 2 | 0.26 | ft | | P | Purge Date: | 20 AQ | 17 | Time Purg | ing Began: | 1445 | am/pm |
| Total W | /ell Depth: | | <u> </u> | ft | | Well Pu | urged Dry? | Yes | No | Time F | urged Dry: | ` ` | am/pm |
| We | II Volume: | | Sector Contraction of the Contra | liters | | Sa | mple Date: | 20Apr | 17 | Time of | Sampling: | 1525 | am/pm |
| Depth to Top | of Pump: | 20 | 2.35 | ft | | | | | (| | | _ | |
| Water Level Afte | er Sample: | | | ft | | Bottle | CC | R: 1L Raw, | 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nitri | C |
| Measuremen | t Method: | Electric | Water Level Ind | dicator | | List: | | | | | | | |

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1450 | 8,72 | 1100 | 6,90 | 4.79 | 55.3 | 1.36 | 20,53 | 500 | Clear |
| 2 | 1505 | 8,57 | 7856 | 6.90 | 3.02 | 60.6 | 0:73 | 20,74 | 1500 | dea |
| 3 | 1510 | 8.61 | 7840 | 6,90 | 3.31 | 62,4 | 0,55 | 20,65 | 500 | Clear |
| 4 | 1515 | 8,64 | 7833 | 6,91 | 3.36 | 62.5 | 0.24 | 20,67 | 500 | der |
| 5 | 1520 | 8.64 | 7806 | 6,90 | 3,30 | 6311 | 0.28 | 20,73 | 500 | ch |
| 6 | 1525 | 8.66 | 7797 | 6,90 | 3.16 | 63,2 | 0,28 | 20.78 | 500 | clen |
| 7 | | | | | | | | 9 | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | \frown | | | | | | | | | |
| Stabilized: Comments | | - No | | | | Τc | otal Volume | Removed: | 9,000 | mL |





| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 3-90 |
| Sampling Personal: | Jerry May a |
| | |

| Weather Conditions: | | Temp: | 45°F | | Wind: | N05-10 | Precip | Sun | ny / Rartly C | loudy / Clo | udy |
|---------------------|------------|----------|---------------------------------------|--------|-------|---|---------------------|-------------|-----------------|---------------|---------|
| | Well Info | rmation | | | | <u></u> | Sampling | | | | |
| Well Locked? | Yes | NO | | | | Purging Method: | Bladder | | Co | ntrol Setting | s |
| Well Labeled? | Yes | No | | | | Sampling Method: | Bladder | 1 | Purge: | 5 | sec. |
| Casing Straight? | Yes | No | ~ | | | Dedicated Equip?: | (Yfe§s No | | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not Visit | ole | | Duplicate Sample?: | Yes No | | PSI: | 10 | |
| Repairs Necessary: | | | | | | Duplicate Sample ID: | Dur 2 | | Pumping R | ate: 100 | mL/min |
| Casing | Diameter: | | 2" | | | | | | | | |
| Water Level Bef | ore Purge: | | 17.30 | ft | | Purge Date: | 20 A-17 | Time Purg | ing Began: | 1340 | am/pm |
| Total W | ell Depth: | | · · · · · · · · · · · · · · · · · · · | ft | | Well Purged Dry? | Yes No | Time F | Purged Dry: | (| am/pm |
| We | Il Volume: | | <u> </u> | liters | | Sample Date: | 20Av17 | Time o | f Sampling: | 1405 | am/pm) |
| Depth to Top | o of Pump: | | | ft | | i in the second s | | | | | |
| Water Level After | er Sample: | | 17,42 | ft | | Bottle CC | CR: 1L Raw, 500mL N | tirc, 500mL | Nitric (filtere | d), 4-1L Nitr | ic |
| Measuremen | t Method: | Electric | Nater Level Ind | icator | | List: | | | | | |

Field Measurements

| Stabili (3 cons | zation ecutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|--------------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1345 | 8.33 | 4668 | 6.90 | 2,58 | -45k | 2.26 | 17.37 | 500,0 | Cluz |
| 2 | 1350 | 8,23 | 4854 | 6,90 | 2,36 | -49.2 | 1.59 | 17,48 | 500,0 | Clear |
| 3 | 1355 | 8,12 | 4852 | 6,89 | 2.21 | -47.4 | 0.83 | 17.52 | 500.0 | clea |
| 4 | 1400 | 6.11 | 4854 | 6.69 | 2.16 | -43.6 | 0,79 | 17.48 | 500,0 | Clear |
| 5 | 1405 | 8.07 | 4851 | 6.89 | 2.17 | -41.3 | 0.77 | 17.40 | 500,0 | clear |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | (Yes) | No | | | | To | otal Volume | Removed: | 2500.0 | mL |





Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 33 |
| Sampling Personal: | Jen chen |
| | |

Sunny / Partly Cloudy Cloudy

| Weather Conditions: | | Temp: | 45 °F | - | Wind: | NOS- | 10 |
|---------------------|-------------|----------|----------------|---------|-------|-------------|-------|
| | Well Info | rmation | | | | | |
| Well Locked? | Yes | (No) | | | | Purgir | ng Me |
| Well Labeled? | (es) | No | | | | Samplir | ng Me |
| Casing Straight? | Tes | No | | | | Dedicat | ed Ec |
| Grout Seal Intact? | Yes | No | Not Vis | ible | | Duplicate | Sam |
| Repairs Necessary: | | | \sim | | | Duplicate : | Samp |
| Casing | Diameter: | | 2" | | | | |
| Water Level Bet | fore Purge: | 2 | 11.30 | ft | | P | urge |
| Total V | Vell Depth: | | ~~~ | ft | | Well P | urged |
| We | ell Volume: | | ~ | liters | | Sa | mple |
| Depth to To | p of Pump: | | | ft | | | |
| Water Level Aft | er Sample: | 4 | 1,51 | ft | | Bottle | |
| Measuremer | nt Method: | Electric | Water Level In | dicator | | List: | |

| | | Sa | ampling | Information | on | | |
|-------------|------------|-----------|-----------|--------------|-----------------|----------------|--------|
| Purgir | ng Method: | Blac | dder | | Co | ontrol Setting | IS |
| Samplir | ng Method: | Blac | dder | | Purge: | 5 | sec. |
| Dedicat | ed Equip?: | œ | No | | Recover: | 55 | sec. |
| Duplicate | Sample?: | Yes | Nó | | PSI: | 20 | |
| Duplicate S | Sample ID: | ******* | | | Pumping R | late: /00 | mL/min |
| | | | | _ | | | |
| P | urge Date: | ZO Afri | -17- | Time Purg | ging Began: | 1200 | am/pm |
| Well Pu | urged Dry? | Yes Nø | | Time F | Purged Dry: | | am/pm |
| Sa | mple Date: | ZOAN | 17 | Time o | f Sampling: | 1240 | am/@m |
| | | | | | | | |
| Bottle | CC | R: 1L Raw | , 500mL N | itirc, 500mL | Nitric (filtere | d), 4-1L Nitr | ic |
| List: | | | | | | | |

Precip:

Field Measurements

| | ization ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|---------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1205 | B.73 | 5322 | 6.64 | 1.14 | -20,2 | 5.59 | 41.50 | 500.0 | Clear |
| 2 | 1215 | B.77 | 5070 | 6,61 | 1.45 | 4.8 | 6,20 | 41.47 | 1000.0 | Cles |
| 3 | 1225 | B. He | 5005 | 6.59 | 1.61 | 11.6 | 2.13 | 41,56 | 100010 | Clear |
| 4 | 1230 | 8.71 | 4999 | 6.59 | 1.66 | 4.0 | 1.61 | 41.52 | 500.0 | Clear |
| 5 | 1235 | B. 72 | 4998 | 6.59 | 1.64 | -6.0 | 1.56 | 41.53 | 500.0 | Clea |
| 6 | 1240 | 8.76 | 4998 | 6.59 | 1.63 | - 11.3 | 1,52 | 41,54 | Sau, C | Clear |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: | (Yes | No | | | | Тс | tal Volume | Removed: | 4000.0 | mL |





| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 44R |
| Sampling Personal: | Jen ylen - |
| | |

Phone: (701) 258-9720

| Weather Conditions: | | Temp: | Ч _С °F | | Wind: | N@5-10 | | Precip: | Sunny / Partly | Cloudy / Clo | audy |
|---------------------|-------------|------------|-------------------|---------|-------|----------------------|-----------|------------|-------------------------|----------------|--------|
| | Well Info | ormation | | | | | Sa | ampling Ir | nformation | | |
| Well Locked? | Yes | (No) | | | | Purging Method: | Blac | dder | | Control Settin | gs |
| Well Labeled? | Xes | No | | | | Sampling Method: | Blac | dder | Purg | e: 5 | sec. |
| Casing Straight? | Ves | No | | | | Dedicated Equip?: | Yes | No | Recove | r: 55 | sec. |
| Grout Seal Intact? | (es | No | Not Visi | ble | | Duplicate Sample?: | Yes | (No | PS | 1: 20 | |
| Repairs Necessary: | | | | | | Duplicate Sample ID: | (Mail: | | Pumping | Rate: 100 | mL/min |
| Casing | Diameter: | | 2'' | | | | | | | | |
| Water Level Bef | ore Purge: | 29 | 5.05 | ft | | Purge Date: | 20 Strl |] | Time Purging Bega | 1: 0653 | am/pm |
| Total W | /ell Depth: | | | ft | | Well Purged Dry? | Yes | Nø | Time Purged Dr | /: | am/pm |
| We | Il Volume: | • | | liters | | Sample Date: | ZC:AVI | 7 | Time of Sampling | 1: 0743 | ám/pm |
| Depth to Top | o of Pump: | | | ft | | | | | | | |
| Water Level After | er Sample: | 2 | 5.11 | ft | | Bottle CC | R: 1L Raw | 500mL Niti | rc, 500mL Nitric (filte | red), 4-1L Nit | ric |
| Measuremen | t Method: | Electric V | Vater Level Inc | dicator | | List: | | | | | |

Field Measurements

| | lization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|------------|-----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|---|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 0658 | 7.73 | 9029 | 6.62 | 3,50 | 264.6 | 62.3 | 25,11 | 500.0 | Cha |
| 2 | 0716 | 7.76 | 9043 | 6,60 | 2.50 | 249:4 | 9,44 | 25,18 | 2000,0 | Clas- |
| 3 | 0728 | 7.62 | 9049 | 6.60 | 2.45 | 245.0 | 7.59 | 25,15 | 1000.0 | Char |
| 4 | 0733 | 7.82 | 9040 | 6.60 | 2,43 | 242.4 | 6.35 | 25,19 | 500.0 | Clear |
| 5 | 0738 | 7.69 | 9044 | 6,60 | 2,31 | 240,7 | 6.64 | 25.10 | 500 | Cles |
| 6 | 0743 | 7.93 | 9045 | 6.60 | 2.36 | 239.0 | 6.21 | 25.08 | 500.0 | Clear |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | ан с - Лан с - Сантан с - Сантан - Сантан - Сантан Сантан с Сантан - Сантан - Сантан - Сантан - Сантан - Сантан |
| 10 | | | | | | | | | | <u></u> |
| Stabilized | : (es | No | _ | | | To | tal Volume | Removed: | 5000.0 | mL |





| Company: | MDU Heskett |
|--------------------|---------------|
| Event: | 2017 |
| Sample ID: | BOR |
| Sampling Personal: | Jevery play a |
| | |

| Weather Conditions: | | Temp: | 45 | °F | Wind: | NOS- | 70 | | Precip | : Sun | ny / Partly (| Cloudy / Clo | oudy |
|---------------------|---------------|------------|------------|-------------|-------|-------------|------------|------------|-----------|-------------|-----------------|---------------------------------------|--------|
| | Well Info | rmation | | | | | | Sa | ampling I | nformatio | on | | |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Blac | lder | | Co | ntrol Setting | qs |
| Well Labeled? | Yes | No | | | | Samplin | ng Method: | Blac | lder | 1 | Purge: | - | sec. |
| Casing Straight? | Ves | No | | | | Dedicate | ed Equip?: | (es) | No | 1 | Recover: | 55 | sec. |
| Grout Seal Intact? | Yes | No | Not | /isible | | Duplicate | Sample?: | Yes | 00 | | PSI: | 15 | |
| Repairs Necessary: | \mathcal{O} | | | | | Duplicate S | Sample ID: | , | - | 1 | Pumping R | ate: /@ | mL/min |
| Casing | Diameter: | | 2" | | | | | | | - | · | | |
| Water Level Befo | ore Purge: | j. | 4.24 | ft | | P | urge Date: | 20 Aq. | -17 | Time Purg | ing Began: | 1015 | @m/pm |
| Total W | /ell Depth: | • | <u> </u> | ft | | Well Pu | urged Dry? | Yes | NO | | Purged Dry: | · · · · · · · · · · · · · · · · · · · | am/pm |
| We | ll Volume: | | · | liters | | Sar | mple Date: | 20.Av | .17 | Time of | f Sampling: | 1055 | am/pm |
| Depth to Top | of Pump: | | | ft | | | | | · | | | | |
| Water Level After | er Sample: | | 14,52 | ft | | Bottle | CCI | R: 1L Raw, | 500mL Nit | tirc, 500mL | Nitric (filtere | d). 4-1L Nit | ric |
| Measuremen | t Method: | Electric V | Nater Leve | I Indicator | | List: | | | | | | | |

Field Measurements

| Stabiliz (3 conse | | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|----------------------|------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1020 | 7,50 | 5749 | 7.13 | 3118 | 179.0 | 0.35 | 14.40 | 50.0 | Clear |
| 2 | 1025 | 7.42 | 5736 | 7.13 | 1,20 | 179.7 | 0,41 | 14,48 | 500,0 | Cles |
| 3 | 1030 | 7.47 | 5739 | 7,12 | 0.95 | 179.9 | 0.42 | 14.55 | 500.0 | Clear |
| 4 | 1035 | 7.44 | 5738 | 7,13 | 0,87 | 1699 | 0.48 | 14.58 | 500.0 | Cles |
| 5 | 1040 | 7.38 | 5742 | 7,12 | 0.84 | 143.8 | 1.13 | 14,56 | 500.0 | clus |
| 6 | 1045 | 7.3B | 5741 | 7,12 | 0.77 | 122,3 | 0.79 | 14,57 | 500,0 | cler |
| 7 | 1050 | 7.45 | 5743 | 7,12 | 0,74 | 116.5 | 0.84 | 14.59 | 500,0 | Clear |
| 8 | 1055 | 7.40 | 5742 | 7,12 | 0,74 | 111.3 | 0.98 | 14.57 | 5లు. <i>0</i> | Clear |
| 9 | | | | | | | | <u> </u> | | |
| 10 | | | | | 1 | | | | | |
| Stabilized: | Tes | No | - | | | To | tal Volume | Removed: | 4000.0 | mL |





| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 105 |
| Sampling Personal: | Sen May ~ |

Phone: (701) 258-9720

| Weather Conditions: | | Temp: | 45 | • °F | Wind: | No3- | 10 | | Precip | : Suni | ny / Partly C | | oudy |
|---------------------|------------|----------|-----------|--------------|-------|-----------|-------------|------------|-----------|------------|-----------------|----------------|--------|
| | Well Info | rmation | | | _ | | | Sa | mpling I | nformatio | on | | |
| Well Locked? | Yes | Nò | | | | Purgi | ng Method: | Blad | der | | Co | ontrol Setting | gs |
| 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 | No | t Visible | | Duplicate | Sample?: | Yes | No | | PSI: | 10 | |
| Repairs Necessary: | | | | | | Duplicate | Sample ID: | | an ar a | - | Pumping R | ate: /ల౦ | mL/min |
| Casing | Diameter: | | 2" | | | | | | | - | | | |
| Water Level Befo | ore Purge: | | 2.24 | ft | | F | Purge Date: | 20 4-1 | 7 | Time Purg | ing Began: | 6845 | (am/pm |
| Total W | ell Depth: | • | | ft | | Well P | urged Dry? | Yes | (No) | Time F | urged Dry: | \sim | am/pm |
| Wel | l Volume: | | | liters | | Sa | mple Date: | ZUANI | Y | Time of | f Sampling: | 0925 | am/pm |
| Depth to Top | of Pump: | | | ft | | | | | | | | | |
| Water Level Afte | r Sample: | | 2+12. | 55 ft | | Bottle | CC | R: 1L Raw, | 500mL Nit | irc, 500mL | Nitric (filtere | d), 4-1L Nit | ric |
| Measurement | Method: | Electric | Water Lev | el Indicator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------|----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 0850 | 6.99 | 6334 | 6.79 | 0.99 | 12/2,6 | 9,54 | 12.58 | 500.0 | Clea |
| 2 | 0900 | 7.24 | 6245 | 6,78 | 0.69 | 175.7 | 3.71 | 12.55 | 1000.0 | Clear |
| 3 | 0905 | 7.27 | 6556 | 6.77 | 0,68 | 172.0 | 4.23 | 12.56 | 500,0 | Clear |
| 4 | 0910 | 7.35 | 6775 | 6.76 | 0.67 | 171.0 | 4.53 | 12.58 | కంలిం | cha |
| 5 | 0915 | 7.28 | 6932 | 6.76 | 0.68 | 170,2 | 4.37 | 12.55 | 500,0 | Clea |
| 6 | 0920 | 7.32 | 7076 | 6.75 | 0168 | 169.7 | 4.16 | 12.57 | 560,0 | Clus |
| 7 | 0925 | 7.36 | 7168 | 6.75 | 0:60 | 169.3 | 4.17 | 12.56 | 500.0 | Clez/ |
| 8 | 6930 | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |

Jeny plu. Site: MDU Heskett Technician: Instrument /#1 650 MDS 08F100203 #2 650 MDS 04H14736 #3 556 MPS 12E102056 (Circle One): Pre Site Calibration Post Site Check Date: 19 Apr 17 0650 1640 Time: Time: mv Range +/рH Temp °C Pre Cal Post Cal Post Cal Range 50 pН Temp °C mv Reading -22.6 19.47 6.97 7.00 15:31 7.02 Buffer 7 6.95-7.05 0 +/- 50 Buffer 7 9.89 19.73 -196,5 10.00 Buffer 10 9.95-10.05 -180 +/- 50 Conductivity Conductivity Check 19.11 10225 10, 0035009 5002 16.30 Buffer 10000 ±10% Buffer 5000 Buffer 5000 ORP 7.95 241.5 250.5 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) 10,00 94.2% 104.8% 716.11 mg/L 20A117 1630 0650 Date: Time: Time: mv Range +/pН Post Cal Range Temp °C Pre Cal Post Cal Temp °C pH mv 50 Reading 8.72 7.02 -23,9 20,53 7.00 $7.\infty$ Buffer 7 6.95-7.05 0 +/- 50 Buffer 7 9.01 10.05 10,00 -198.7 Buffer 10 9.95-10.05 -180 +/- 50 Conductivity Conductivity Check 9.31 4998 10,134 10000 20,00 4989 Buffer 10000 ±10% Buffer 5000 Buffer 5000 ORP 8.37 258.0 250.5 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hq) 111.0% 7.52 94.3% 716.34 mg/L

MVTL Calibration Worksheet

MVTL Calibration Worksheet

| Site: MDU Hes | kett | | | _ | | Technician: | | | | _ | | |
|-----------------------------|---------|-------------|--------------|----------------|----------------|--------------------|-----|----------------------|--|----------|--|--|
| Instrument (Circle One): | #1 6 | 50 MDS 08F1 | 00203 | #2 65 | 50 MDS 04H1 | 4736 | | #3 556 MPS 12E102056 | | | | |
| | | Pr | e Site Calib | ration | | | 1 [| Pc | st Site Cheo | :k | | |
| Date: | ******* | Time: | | - | | | τίι | me: | | | | |
| рН | Temp °C | Pre Cal | Post Cal | Post Cal Range | mv | mv Range +/- 50 | | pН | Temp °C | Reading | | |
| Buffer 7 | | | | 6.95-7.05 | | 0 +/- 50 | | Buffer 7 | | | | |
| Buffer 10 | | | | 9.95-10.05 | | -180 +/- 50 | | | | 1 | | |
| Conductivity | | | | - | | Check | | Conductivity | | eno | | |
| Buffer 10000 | | | | ±10% | Buffer 5000 | | | Buffer 5000 | | | | |
| ORP | | | | _ | | | | | | | | |
| 231 mV @ 25C | | | | ±10 mV | | | | | | | | |
| DO | | | | Barometr | ic Pressure (r | nm Hg) | | | | | | |
| | | | | mg/L | | | | | | | | |
| Date: | | Time: | | - | | | Tir | me: | ······································ | | | |
| рН | Temp °C | Pre Cal | Post Cal | Post Cal Range | mv | mv Range +/- 50 | | pН | 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 | | | | _ | | | | | | | | |
| 231 mV @ 25C | | | | ±10 mV | | | | | | | | |
| DO | - | | | Barometr | ic Pressure (n | nm Hg) | | | | | | |
| | | | | mg/L | | | | | | | | |



Field Datasheet

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

| Sampling Pe | ersonnel: 177e _N N | Teswa. | iĝ | |
|-------------|----------------------------------|--------|----------------|--|
| WellID | Date | Time | Depth to Water | |

Company:

MDU Heskett

2017

| Well ID | Date | Time | Depth to Water | Comments |
|---------|---------|------|----------------|----------|
| MW1-90 | 20Apr17 | 1628 | 9.49 | |
| | | | • | |
| | | | | |
| ~~ | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |



Laboratories, Inc. 2616 E. Broadway

Bismarck, ND 58501 Phone (701) 258-9720

Chain of Custody Record

| Project Name | e: | Event: | Event: | | | | | | Work Order Number: | | | | | | |
|---|--|--|-----------------------------------|-----------------|--------|-------------------------------------|------------------|---|--------------------|---|--------------------------------------|---------|-------------------|--|--|
| 2 | MDU Heskett | | | April 2017 | | | 82-0999 | | | | | | | | |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | Attn: | Carbon Copy: Attn: Address: | | | | | Name of Sampler(s): Jereng Mener Davin Nieswazg | | | | | | | |
| | Sam | ple Informatio | on | | | | Bott | le Typ | e | Fi | ield Para | ameters | Analysis | | |
| Lab Number W1158 W1159 W1159 W1160 W1161 W1162 | Sample ID <u>FB2</u> Dy 2 -2-90 3-90 33 | 20 Apr 17 20 Apr 17 20 Apr 17 20 Apr 17 20 Apr 17 20 Apr 17 | emii | E E Sample Type | | -5 - 5 - 5 - 5 - 7 - 1 liter Nitric | | | | 12 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | - 2797 - 2797 - 4851 - 4998 | Ha | Analysis Required | | |
| WI163 | YYR | 201Apr, 17 | 0743 | Giv | | 4 | | | | 7.93 | 9045 | 6,59 | Rad 226 & Rad 228 | | |
| W1164 | BOR | 20 Apr 17 | 1055 | GW | | 4 | | | | 7.48 | 5747 | 7.12 | | | |
| WII6S | 105 | 20. Apr 17 | 0925 | Gw | | 4 | | | | 7,36 | 7168 | 6.75 | | | |
| | | | | | | | $\left \right $ | | | | | | | | |
| Comments: | * Lab | accide~ | t. 5a (c : | (mp) 25pr | z Will | be | r | e (0 | n11e | Cled | at | a l | ater | | |

| Relinquished By: | | San | nple Condition: | |
|------------------|-----------|----------------------|----------------------|---|
| Name: | Date/Time | Location: | Temp (°C) | |
| 1 Alm | ZIANT | Log In Walk In #2 | 15.5 TM562 (TM588 | (|
| 2 | | | | |

| Received | by: |
|----------------|-------------|
| Name: | Date/Time |
| Ungel amonison | al Apr 1700 |



ACIL

CASE NARRATIVE – AMENDED 6 JUL 17 (Work Order)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 1 201782-1038 Montana Dakota Utilities MDU Heskett CCR April 2017 17-W1259

| MDU Sample Identification | MVTL Laboratory # |
|---------------------------|-------------------|
| 2-90 | 17-W1259 |

I. RECEIPT

- All samples were received at the laboratory on 26 Apr17 at 1344.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.4°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
 - The recoveries for the selenium matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.

V. REPORTING

- Per email dated 31 May 17 from Terri Olson at Barr, the QC report was amended to include the MS source ID, MS data, MS/MSD percent recoveries for molybdenum.
- 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. 2017782-1038). Case narrative has been corrected to reflect the correct work order.

All laboratory data has been approved by MVTL Laboratories.

DATE: 7JUL 17

Claudette Carroll - MVTL Bismarck Laboratory Manager

Claudette Carroll

| From: | Terri A. Olson <tolson@barr.com></tolson@barr.com> |
|-----------------|--|
| Sent: | Wednesday, May 31, 2017 9:04 PM |
| To: | Claudette Carroll |
| Subject: | RE: Emailing - 201782-1038 MDU HESK CCR APR 17.pdf |
| Follow Up Flag: | Follow up |
| Flag Status: | Flagged |

Hi Claudette,

This lab report is missing the MS source IDs, MS data, MS % recoveries, and the MSD % recoveries for Mo.

Thank-you,

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

resourceful, naturally.

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

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

Sent: Tuesday, May 23, 2017 3:01 PM

To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Julie Crispin <jcrispin@mvtl.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Mary Hames <mhames@mvtl.com>; Steve Bowen <sbowen@mvtl.com>; Terri A. Olson <TOIson@barr.com>; Tonia D. O'Brien <tobrien@barr.com> Subject: Emailing - 201782-1038 MDU HESK CCR APR 17.pdf

Good afternoon,

Attached is a data package for the last sample from the April 2017 sampling done at MDU Heskett. Hard copies to follow to Sam and EDDs to follow from our IT department.

Have a good rest of your day! Claudette



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ccarroll@mvtl.com 701-258-9720 MVTL

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Page: 1 of 2

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MEMBER ACIL .

| Lab ID: 17-W1259 | | Pr | oject: MI | DU Heske | ett - CCR | ١ | Nork Or | der: 201 | 782-1038 | 3 | | | | | | | |
|------------------------|---------------------|-----------------|------------------------|------------------------|-----------------------|-----------------------------------|---------------------------|-----------------------------|------------------------------------|-------------------------------|-----------------------|-----------------|--------------------|---------------------------------|---------------------|--------------------------|-----------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Antimony - Total mg/l | 0.1000 | 106 | 80-120 | 0.100 | 17-W1259D | < 0.001 | 0.1178 | 118 | 75-125 | 0.1178 | 0.1194 | 119 | 1.3 | 20 | - | - | < 0.001 |
| Arsenic - Total mg/l | 0.1000 | 105 | 80-120 | 0.100 | 17-W1259D | < 0.002 | 0.1159 | 116 | 75-125 | 0.1159 | 0.1177 | 118 | 1.5 | 20 | _ | - | < 0.002 |
| Barium - Total mg/l | 0.1000 | 102 | 80-120 | 0.100 | 17-W1259D | 0.0100 | 0.1163 | 106 | 75-125 | 0.1163 | 0.1192 | 109 | 2.5 | 20 | - | - | < 0.002 |
| Beryllium - Total mg/l | 0.1000 | 108 | 80-120 | 0.100 | 17-W1259D | < 0.0005 | 0.1136 | 114 | 75-125 | 0.1136 | 0.1158 | 116 | 1.9 | 20 | - | _ | < 0.0005 |
| Boron - Total mg/l | 0.40 | 102 | 80-120 | 0.400 0.400 | 17-W1092 17-W1199 | < 0.1 3.97 | 0.40 4.33 | 100 90 | 75-125 75-125 | 0.40 4.33 | 0.40 4.33 | 100 90 | 0.0 0.0 | 20 20 | - | | < 0.1 < 0.1 |
| Cadmium - Total mg/l | 0.1000 | 109 | 80-120 | 0.100 | 17-W1259D | < 0.0005 | 0.1120 | 112 | 75-125 | 0.1120 | 0.1128 | 113 | 0.7 | 20 | - | - | < 0.0005 |
| Calcium - Total mg/l | 20.0 | 111 | 80-120 | 500 | 17W1256q | 450 | 975 | 105 | 75-125 | 975 | 955 | 101 | 2.1 | 20 | - | | < 1 < 1 |
| Chloride mg/l | 30.0 30.0 | 82 81 | 80-120 80-120 | 30.0 | 17-W1257 | < 1 | 24.9 | 83 | 80-120 | 24.9 | 27.0 | 90 | 8.1 | 20 | - | - | <1 <1 |
| Chromium - Total mg/l | 0.1000 | 104 | 80-120 | 0.100 | 17-W1259D | < 0.002 | 0.1108 | 111 | 75-125 | 0.1108 | 0.1136 | 114 | 2.5 | 20 | - | - | < 0.002 |
| Cobalt - Total mg/l | 0.1000 | 102 | 80-120 | 0.100 | 17-W1259D | < 0.002 | 0.1096 | 110 | 75-125 | 0.1096 | 0.1110 | 111 | 1.3 | 20 | - | - | < 0.002 |
| Fluoride mg/l | 0.50 0.50 | 104 106 | 90-110 90-110 | 0.500 | 17-W1268 | 1.11 | 1.61 | 100 | 80-120 | 1.61 | 1.61 | 100 | 0.0 | 20 | - | - | < 0.1 < 0.1 |
| Lead - Total mg/l | 0.1000 | 102 | 80-120 | 0.100 | 17-W1259D | < 0.0005 | 0.1036 | 104 | 75-125 | 0.1036 | 0.1048 | 105 | 1.2 | 20 | - | - | < 0.0005 |

Quality Control Report – Amended 7 Jun 17

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MEMBER ACIL -

Page: 2 of 2

| Lab ID: 17-W1259 | | Pr | oject: MI | DU Heske | ett - CCR | V | Vork Or | der: 201 | 782-1038 | 8 | | | | | | | |
|-----------------------------|---------------------|-----------------|------------------------|------------------------|-----------------------|-----------------------------------|---------------------------|-----------------------------|------------------------------------|-------------------------------|-----------------------|-----------------|--------------------|---------------------------------|---------------------|--------------------------|-----------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Lithium - Total mg/l | 0.40 | 105 | 80-120 | 0.400 | 17-W1319 | 0.06 | 0.50 | 110 | 75-125 | 0.50 | 0.50 | 110 | 0.0 | 20 | - | - | < 0.1 < 0.1 |
| Mercury - Total mg/l | 0.0020 | 100 | 85-115 | 0.002 0.002 | 17-W1259 17-W1278 | < 0.0002 < 0.0002 | | 100 95 | 70-130 70-130 | 0.0020 0.0019 | 0.0019 0.0019 | 95 95 | 5.1 0.0 | 20 20 | - | - | < 0.0002 |
| Molybdenum - Total mg/l | 0.1000 | 87 | 80-120 | 0.100 | 17-W1259Q | < 0.002 | 0.1090 | 109 | 75-125 | 0.1090 | 0.1100 | 110 | 0.9 | 20 | - | - | < 0.002 |
| pH units | - | - | - | | | - | - | | | 7.0 7.8 | 7.0 7.8 | | 0.0 0.0 | 20 20 | - | - | - |
| Selenium - Total mg/l | 0.1000 | 112 | 80-120 | 0.100 | 17-W1259D | 0.1609 | 0.2956 | 135 | 75-125 | 0.2956 | 0.3013 | 140 | 1.9 | 20 | - | - | < 0.002 |
| Sulfate mg/l | 100 | 83 | 80-120 | 1000 | 17-W1283 | 160 | 1020 | 86 | 80-120 | 1020 | 1010 | 85 | 1.0 | 20 | - | - | < 5 |
| Thallium - Total mg/l | 0.1000 | 101 | 80-120 | 0.100 | 17-W1259D | < 0.0005 | 0.1019 | 102 | 75-125 | 0.1019 | 0.1036 | 104 | 1.7 | 20 | - | - | < 0.0005 |
| Total Dissolved Solids mg/l | - | - | - | | - | | - | | - | 1200 2470 | 1070 2460 | | 11.5 0.4 | 20 20 | | | <10 <10 |

Quality Control Report – Amended 7 Jun 17

Approved by: <u>C. GMTP</u> T JUN 17





Page: 1 of 1

CERTIFICATE of ANALYSIS - CCR

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

Project Name: MDU Heskett Sample Description: 2-90

Event and Year: April 2017

Report Date: 22 May 17 Lab Number: 17-W1259 Work Order #:82-1038 Account #: 002800 Date Sampled: 26 Apr 17 12:00 Date Received: 26 Apr 17 13:44 Sampled By: MVTL Field Services

Temp at Receipt: 7.4C ROI

| | As Receive Result | ed | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | | EPA 200.2 | 26 Apr 17 | CC |
| pH - Field | 6.91 | units | NA | SM 4500 H+ B | 26 Apr 17 12:00 | DJN |
| рН | * 7.0 | units | 0.1 | SM4500 H+ B | 27 Apr 17 17:00 | SVS |
| Temperature - Field | 7.91 | Degrees C | NA | SM 2550B | 26 Apr 17 12:00 | DJN |
| Conductivity - Field | 7790 | umhos/cm | 1 | EPA 120.1 | 26 Apr 17 12:00 | DJN |
| Fluoride | 1.02 | mg/l | 0.10 | SM4500-F-C | 27 Apr 17 17:00 | SVS |
| Sulfate | 4080 | mg/l | 5.00 | ASTM D516-07 | 12 May 17 15:42 | EMS |
| Chloride | 78.0 | mg/l | 1.0 | SM4500-Cl-E | 4 May 17 16:08 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 2 May 17 12:53 | EV |
| Total Dissolved Solids | 7340 | mg/l | 10 | I1750-85 | 28 Apr 17 13:42 | SVS |
| Calcium - Total | 500 | mg/l | 1.0 | 6010 | 1 May 17 16:05 | SZ |
| Lithium - Total | 1.14 | mg/l | 0.10 | 6010 | 5 May 17 15:19 | KMD |
| Boron - Total | 0.40 | mg/l | 0.10 | 6010 | 4 May 17 13:21 | KMD |
| Antimony - Total | < 0.001 | mg/l | 0.0010 | 6020 | 16 May 17 18:04 | CC |
| Arsenic - Total | < 0.002 | mg/l | 0.0020 | 6020 | 16 May 17 18:04 | CC |
| Barium - Total | 0.0103 | mg/l | 0.0020 | 6020 | 16 May 17 18:04 | CC |
| Beryllium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 16 May 17 18:04 | CC |
| Cadmium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 16 May 17 18:04 | CC |
| Chromium - Total | < 0.002 | mg/l | 0.0020 | 6020 | 16 May 17 18:04 | CC |
| Cobalt - Total | < 0.002 | mg/l | 0.0020 | 6020 | 16 May 17 18:04 | CC |
| Lead - Total | 0.0006 | mg/l | 0.0005 | 6020 | 16 May 17 18:04 | CC |
| Molybdenum - Total | < 0.002 | mg/l | 0.0020 | 6020 | 17 May 17 10:25 | CC |
| Selenium - Total | 0.1582 | mg/l | 0.0020 | 6020 | 16 May 17 18:04 | CC |
| Thallium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 16 May 17 18:04 | CC |

* Holding time exceeded

Approved by:

1C 23 May 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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

MVTL Calibration Worksheet

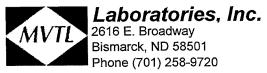
| Site: MDU He | skett | Technicia | n: Parka piesnaag |
|-------------------------------------|---|---|---|
| Instrument (Circle One): | #1 650 MDS 08F100203 | #2 650 MDS 04H14736 | #3 556 MPS 12E102056 |
| Date: 26 Ap7 | Pre Site Ca | libration | Post Site Check Time: 133 |
| pH Buffer 7 Buffer 10 | Temp °C Pre Cal Post C 19,53 6.96 7,0 19,59 10.02 0.0 | 0 6.95-7.05 -20,0 0 +/- 50 | |
| Conductivity Buffer 10000 ORP | 18.71 H. T. 1000 | $\frac{\text{Check}}{7} \pm 10\% \qquad \text{Buffer 5000} \qquad \frac{4974}{74}$ | Conductivity Buffer 5000 18,79 4961 |
| 231 mV @ 25C | 8,73 230,8 231, | Barometric Pressure (mm Hg) | |
| Date: | 14,46 /0,43 9,52 Time: | mg/L 7/3,mv Range | |
| pH Buffer 7 Buffer 10 | Temp °C Pre Cal Post C | al Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 50 | pH Temp °C Reading Buffer 7 |
| Conductivity Buffer 10000 ORP | | | Conductivity Buffer 5000 |
| 231 mV @ 25C DO | | ±10 mV Barometric Pressure (mm Hg) mg/L | |

| 2616 E. Broadway Ave, Bis Phone: (701) 258-9 | marck, ND | | Field Grou | d Da ndwater | | | | Company: Event: Sample ID Sampling I | | MDU Hesk 2017 2-9,0 2 |) | whay | |
|---|-------------|----------|---------------|-----------------|-------|-------------|--|---|-------------|--------------------------------|-----------------|---------------|--------|
| Weather Conditions: | | Temp: | 40 . | F | Wind: | N/10-1 | $\langle \boldsymbol{\varsigma} \rangle$ | | Precip: | Sunn | y / Partly C | loudy / Clo | udy |
| 1 | Well Info | rmation | | | | 101 | 9 | S | ampling I | nformatio | 'n | | |
| Well Locked? | Yes | No | | | | Purgin | g Method: | Bla | dder | | Co | ntrol Setting | js |
| Well Labeled? | Tes | No | | | | Samplin | g Method: | Bla | dder |] [| Purge: | 5 | sec. |
| Casing Straight? | Nes | No | | | | Dedicate | d Equip?: | Hes | No |] [| Recover: | 70 | sec. |
| Grout Seal Intact? | Yes | No | Not Vi | sible | | Duplicate S | Sample?: | Yes | No | | PSI: | | |
| Repairs Necessary: | | | | | | Duplicate S | ample ID: | | | | Pumping R | ate: | mL/min |
| Casing | Diameter: | | 2" | | | | | | | | | / | |
| Water Level Befo | ore Purge: | 2 | Dc 36 | ft | | Ρι | urge Date: | 26A | 0/17 | Time Purgi | ng Began: | 140 | /am/pm |
| Total W | /ell Depth: | | | ft | | Well Pu | rged Dry? | Yes | (No) | Time P | urged Dry: | | am/pm |
| We | II Volume: | • | | liters | | San | nple Date | 2610 | 17 | Time of | Sampling: | 1200 | ampm |
| Depth to Top | of Pump: | | <u></u> | ft | | | | , , , | | | | U | 0 |
| Water Level After | | | | ft | | Bottle | С | CR: 1L Raw | , 500mL Nit | irc, 500mL N | Nitric (filtere | d), 4-1L Nit | ric |
| Measuremen | t Method: | Electric | Water Level | ndicator | | List: | | | | | | | |

Field Measurements

| Stabili (3 cons | ization ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|--|---------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1145 | 7,72 | 7828 | 6,91 | 3,24 | 59.64 | 0132 | 20.60 | 500 | dear |
| 2 | 1150 | 7,54 | 7822 | 6,91 | 3,18 | 57,9 | 018 | 20.60 | 500 | ch |
| 3 | 1155 | 7,77 | 7834 | 6,91 | 3,04 | 5613 | 0,12 | 22.68 | 500 | con |
| 4 | 1200 | 7.91 | 7790 | 6,91 | 3.12 | 55.6 | 0,18 | 20,68 | 580 | ch |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | \square | | | | | | | L | | L |
| Stabilized, Yes No Total Volume Removed: 2000 mL | | | | | | | | | | |

Commer(ts:



Chain of Custody Record

| Project Name: | , | Event: | | Work Order Number: | | | | | <u></u> | | |
|--|-------------------------|--|------------|------------------------------|---------|----|-----------|---------------|----------|---|--|
| MDU H | eskett | | April 2017 | 82-1038 | | | | | | | |
| Report To:MDUAttn:Samantha MAddress:400 N. 4th SBismarck, Nphone:701-222-782email: | t ጋ 58501 9 | Carbon Copy: Attn: Address: | | | | | | | Nieswaag | | |
| | Sample Information | on | | Bo | ttle Ty | ре | Fie | eld Para | meters | Analysis | |
| Lab Number Sam W1859 2-9 | ple ID D ^{ate} | Time Sample Tur- | | × 1 litter × 500mL Nitric | | | Temp (°C) | 2 Spec. Cond. | Ha | Analysis Required MDU CCR List with TSS and Dissolved CCR Metals. | |

Comments:

| Relinguished By: | · [| Sar | nple Condition: | Receive | ed by: |
|------------------|-------------------|----------------------|---------------------------|---------|-----------|
| Name: | Date/Time | Location: | Temp (°C) | 🤈 Name: | Date/Time |
| 1 Donu Ning | 26.Apr 17 1344 | Log In Walk In #2 | R NJ 7.4 (TM562)/TM588 | Tealth | 26Apr2016 |
| 2 | | | | | |

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CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 1 of 2 201782-1039 S1705014 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1260 S1705014-001

| MDU Sample Identification | MVTL Laboratory # | IML Laboratory # |
|---------------------------|-------------------|------------------|
| 2-90 | 17-W1260 | S1705014-001 |

I. RECEIPT

- All samples were received at the laboratory on 26 Apr 2017 at 1344.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 7.4°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 1 May 2017.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

II. HOLDING TIMES

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

III. METHODS

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

IV. ANALYSIS

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

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

MIVTL

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CASE NARRATIVE

www.mvtl.com

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IML Laboratory Identifications: Page 2 of 2 201782-1039 S1705014 Montana Dakota Utilities MDU Heskett Ash Site CCR April 2017 17-W1260 S1705014-001

V. REPORTING

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

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

laudette Canit

DATE: 26 May 17

Claudette Carroll - MVTL Bismarck Laboratory Manager





Analyst

DJN

DJN

DJN

OL

OL

Page: 1 of 1

Report Date: 26 May 17 Lab Number: 17-W1260 Work Order #:82-1039 Account #: 002800 Date Sampled: 26 Apr 17 12:00 Date Received: 26 Apr 17 13:44 Sampled By: MVTL Field Services

Temp at Receipt: 7.4C ROI

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

Project Name: MDU Heskett Sample Description: 2-90

Event and Year: April 2017 As Received Method Method Date Result RL Reference Analyzed pH - Field SM 4500 H+ B 6.91 units NA 26 Apr 17 12:00 Temperature - Field 7.91 Degrees C NA SM 2550B 26 Apr 17 12:00 Conductivity - Field 7790 umhos/cm 1 EPA 120.1 26 Apr 17 12:00 Radium 226 See Attached Report 17 May 17 Radium 228 10 May 17

See Attached Report

OL = Analysis performed by an Outside Laboratory.

Approved by:

ZUMan 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

4

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.



Your Environmental Monitoring Partner

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

Date: 5/19/2017

| CLIENT: | MVTL Laboratories, Inc. | CASE NARRATIVE |
|------------|-------------------------|--------------------------------|
| Project: | 201782-1039 | Demont ID: \$1705014001 |
| Lab Order: | S1705014 | Report ID: S1705014001 |

Sample 17-W1260 2-90 was received on May 1, 2017.

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

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

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

Reviewed by:



MB

MB

MB

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

Sample Analysis Report

| | MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501 | | | | | te Reported port ID | 5/19/201 S170501 | | |
|---|--|--------|-------|------|-----|---|---------------------|---------------------------------------|-----|
| ProjectName: Lab ID: ClientSample ID: | 201782-1039 S1705014-001 17-W1260 2-90 | | | | Co | orkOrder: llectionDate: teReceived: | | 14 17 12:00:00 PM 7 10:27:00 AM | |
| COC: | 201782-1039 | | | | | eldSampler: atrix: | Water | | |
| Analyses | | Result | Units | Qual | RL | Metho | b | Date Analyzed/I | nit |
| Radionuclides - To Radium 226 | tal | 0.4 | pCi/L | | 0.2 | SM 7500 Ra | -B (| 05/17/2017 1029 | MB |

| Radium 226 | 0.4 | pCi/L | 0.2 | SM 7500 Ra-B | 05/17/2017 1029 | 1 |
|--------------------------|-----|-------|-----|--------------|-----------------|---|
| Radium 226 Precision (±) | 0.1 | pCi/L | | SM 7500 Ra-B | 05/17/2017 1029 | Ν |
| Radium 228 | 0.0 | pCi/L | 1 | Ga-Tech | 05/10/2017 1926 | N |
| Radium 228 Precision (±) | 1.3 | pCi/L | | Ga-Tech | 05/10/2017 1926 | ٩ |
| | | | | | | |

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by: <

Wade Nieuwsma, Assistant Laboratory Manager

RL - Reporting Limit

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



| MOUNTAIN | 1075 Tella Ave | nue, Sheridan, Wyoming 82801 ph: .YTICAL QC SUMMARY F | |
|----------|-----------------------------------|--|--|
| ENT: | MVTL Laboratories, Inc. | | Date: 5/19/2017 |
| rk Ordei | r: S1705014 | | Report ID: S1705014001 |
| ject: | 201782-1039 | | |
| Radiun | 1 228 by Ga/Tech | Sample Type MBLK | Units: pCi/L |
| | MB-433 (05/09/17 09:45) | RunNo: 145731 | PrepDate: 05/03/17 12:00 BatchID 13157 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Total Radium 228 | ND | 1 |
| Radiun | n 228 by Ga/Tech | Sample Type LCS | Units: pCi/L |
| | LCS-433 (05/09/17 12:49) | RunNo: 145731 | PrepDate: 05/03/17 12:00 BatchID 13157 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Total Radium 228 | 41 | 1 40.1 103 50 - 139 |
| Г | n 228 by Ga/Tech | Sample Type MS | Units: pCi/L |
| | MS-433 (05/09/17 18:56) | RunNo: 145731 Result | PrepDate: 05/03/17 12:00 BatchID 13157 |
| | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Total Radium 228 | 42 | 1 40.1 ND 106 65.9 - 132 |
| Г | n 228 by Ga/Tech | Sample Type MSD | Units: pCi/L |
| | MSD-433 (05/09/17 22:00) | RunNo: 145731 | PrepDate: 05/03/17 12:00 BatchID 13157 |
| L | Analyte | Result | RL Conc %RPD %REC % RPD Limits Qu |
| | Total Radium 228 | 45 | 1 42 5.31 111 20 |
| г | n 226 in Water - | Sample Type MBLK | Units: pCi/L |
| | MB-1749 (05/17/17 10:29) | RunNo: 145882 | PrepDate: 05/08/17 0:00 BatchID 13173 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Radium 226 | ND | 0.2 |
| Radium | 1 226 in Water - | Sample Type LCS | Units: pCi/L |
| | LCS-1749 (05/17/17 10:29) | RunNo: 145882 | PrepDate: 05/08/17 0:00 BatchID 13173 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Radium 226 | 6.4 | 0.2 6.41 100 67.1 - 122 |
| F | 1 226 in Water - | Sample Type LCSD | Units: pCi/L |
| | LCSD-1749 (05/17/17 10:29) | RunNo: 145882 | PrepDate: 05/08/17 0:00 BatchID 13173 |
| L | Analyte | Result | RL Conc %RPD %REC % RPD Limits Qu |
| | Radium 226 | 5.8 | 0.2 6.4 10.7 90.2 20 |
| Г | 1 226 in Water - | Sample Type MS | Units: pCi/L |
| | S1705059-003AMS (05/17/17 16:21) | RunNo: 145882 | PrepDate: 05/08/17 0:00 BatchID 13173 |
| L | Analyte | Result | RL Spike Ref Samp %REC % Rec Limits Qu |
| | Radium 226 | 12.7 | 0.2 12.8 0.3 97.1 65 - 131 |
| Radium | 226 in Water - | Sample Type MSD | Units: pCi/L |
| ! | S1705059-003AMSD (05/17/17 16:21) | RunNo: 145882 | PrepDate: 05/08/17 0:00 BatchID 13173 |
| | Analyte | Result | RL Conc %RPD %REC % RPD Limits Qu |
| | Radium 226 | 12.3 | 0.2 12.7 3.49 93.7 20 |

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

- Analyzed at IML Gillette laboratory Analyte detected below quantitation limits
- J ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits

х Matrix Effect

В

G

R

Qualifiers:

- Н Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory

0 Outside the Range of Dilutions

s Spike Recovery outside accepted recovery limits



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

Chain of Custody Record

Page 1_____of 1____

| | Phone: (701) 2 | | | | | | | | | | 201782-1039 | | | | |
|-----------------|--|--------------------|--------|------------|----------|--------------|-----|--------------------------|-----------|-------|-----------------------------|--|--|--|--|
| | Toll Free: (800) 279-6885 Fax: (701) 258-9724 mpany Name and Address: Account #: | | | | | | | | | | | | | | |
| Company Nam | e and Address: | | | Account # | ÷: | | | | | | Phone #: | | | | |
| | | | | | | | | | | | 701-258-9720 | | | | |
| | | VTL | | Contact: | | | | | | | Fax #: | | | | |
| | | <u>Broadway</u> | | | Claud | lette | 9 | | | | For faxed report check box | | | | |
| Dilling Add | Bismarch | <u>k, ND 58501</u> | | Name of S | Sampler: | | | | | | E-mail: ccarroll@mvtl.com | | | | |
| Billing Address | s (indicate if differen | t from above): | | L | | | | | | | For e-mail report check box | | | | |
| | D0 D | | | Quote Nu | mber | | | | | | Date Submitted: | | | | |
| | | Box 249 | | | | | | | | | 27-Apr-17 | | | | |
| | New UIM | <u>, MN 56073</u> | | Project Na | me/Numbe | er: | | | | | Purchase Order #: | | | | |
| | | | | L | | , | | | | | BL5849 | | | | |
| | | Sample Information | | | | | B | ottle | Ty | pe | Analysis | | | | |
| 0 | | | | | | | | | | | | | | | |
| 51705014 | T. | | | | | | 33 | q | | | | | | | |
| | | | | | | 9 | N Y | s | L . | | | | | | |
| IML Lab | | | 0 | | | ate | I I | Vial ese | Ja | | | | | | |
| Number | MVTL Lab Number | | Sample | Date | Time | Untreated | 00 | VOC Vials Umpreserved | Glass Jar | Other | | | | | |
| | | Client Sample ID | Туре | Sampled | Sampled | 5 | 5 | 5 2 | ত | ð | Analysis Required | | | | |
| 001 | 17-W1260 | 2-90 | GW | 26-Apr-17 | 1200 | | 4 | | | | Ra226 & Ra228 | | | | |
| | | | | | | | | | | | | | | | |
| | | 14 J | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | 1 | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |

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

| Transferred by: | Date: | Time: | Sample Condition: | Received by: | Date: | | Temp: |
|-----------------|-----------|-------|-------------------|--------------|--------|-------|---------|
| A. Simonson | 27-Apr-17 | 1700 | | Kathy Boun | 5.1.17 | 10:27 | 12. 2°C |
| 2. | | | | [| | | |

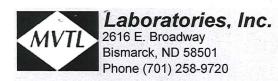
MVTL Calibration Worksheet

| Site: MDU Hes | skett | | Technician:) | Parka Pis | Sugar |
|---|--|--|---|---|---|
| Instrument (Circle One): | #1 650 MDS 08F100203 | #2 650 | 0 MDS 04H14736 | #3 55 | 66 MPS 12E102056 |
| Date: 26 Apr | Pre Site 17 Time: 1075 | Calibration | 5 | Time: 133 | ost Site Check |
| pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO | $ \begin{array}{c ccccccccccccccccccccccccccccccccccc$ | st Cal Post Cal Range 200 $6.95-7.05$ $9.95-10.05$ $9.95-10.05$ 005 $\pm 10\%$ $31/0$ $\pm 10 \text{ mV}$ Barometria 52 mg/L | mv Range +/- mv 50 -20.0 0 +/- 50 -194.5 -180 +/- 50 Check Buffer 5000 4974 c Pressure (mm Hg) 713.4 | pH Buffer 7 Conductivity Buffer 5000 | Temp °C Reading [9,02] 6,99 [8,79] 4961 |
| Date: | Time: | | | Time: | |
| pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C | Temp °C Pre Cal Po | Dest Cal Post Cal Range 6.95-7.05 9.95-10.05 ±10% ±10 mV | mv Range +/- mv 50 0 +/- 50 -180 +/- 50 Check Buffer 5000 | pH Buffer 7 Conductivity Buffer 5000 | Temp °C Reading |
| DO | | Barometri mg/L | c Pressure (mm Hg) | | |

| 2616 E. Broadway Ave, Bism Phone: (701) 258-972 | | | _ | Id Da | | | | Company: Event: Sample ID: Sampling Pers | | MDU Hesk 2017 2-9,1 2 <i>2-9,1</i> | | whay | |
|--|------------|------------|-----------|--------------|-------|-------------|------------|---|----------|---|------------------|---------------|--------|
| Weather Conditions: | | Temp: | 40 | ۴ | Wind: | N/10- | 15 | | Precip: | Sunr | y / Partly C | loudy / Clo | oudy |
| V | Vell Info | rmation | - | | | ,., | | Sam | pling l | nformatio | on | | |
| Well Locked? | Yes | No | | | | Purgir | ng Method: | Bladde | er | | Cor | ntrol Setting | js |
| Well Labeled? | Jes | No | | | | Samplir | ng Method: | Bladde | er | | Purge: | 5 | sec. |
| Casing Straight? | Ces | No | | | | Dedicate | ed Equip?: | cres | No | | Recover: | 10 | sec. |
| Grout Seal Intact? | Yes | No | Not | Visible | | Duplicate | Sample?: | Yes 🧹 | No | | PSI: | | |
| Repairs Necessary: | | | | | | Duplicate S | Sample ID: | | -7 | | Pumping Ra | ate: 100 | mL/min |
| Casing D | Diameter: | | 2" | | | | | | | | | / | |
| Water Level Befor | re Purge: | 2 | 0036 | ft | | P | urge Date: | 26A01 | 17 | Time Purg | ing Began: | 1140 | /am/pm |
| Total We | ell Depth: | ۰. | | ft | | Well Pu | urged Dry? | Yes' (| No | Time P | urged Dry: | | am/pm |
| Well | Volume: | | | liters | | Sai | mple Date: | 26April | 17 | Time of | Sampling: | 1200 | ampm |
| Depth to Top | of Pump: | | | ft | | | | | | | | £ | |
| Water Level After | Sample: | | | ft | | Bottle | C | CR: 1L Raw, 50 | 00mL Nit | irc, 500mL I | Nitric (filtered | d), 4-1L Nit | ric |
| Measurement | Method: | Electric W | ater Leve | el Indicator | | List: | | | | | | | |

Field Measurements

| | ization secutive) | Temp (°C) | Spec. Cond. | рН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------------------|----------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 1145 | 7,72 | 7828 | 6,91 | 3,24 | 59. 6 | 0132 | 20.60 | 500 | deq- |
| 2 | 1150 | 7,54 | 7822 | 6,91 | 3,18 | 57,9 | 018 | 20.60 | 500 | chin |
| 3 | 1155 | 7,77 | 7834 | 691 | 3,04 | 5613 | 0,12 | 22.68 | 500 | con |
| 4 | 1200 | 7.91 | 7790 | 6,91 | 3.12 | 55.6 | 0,18 | 20,68 | 580 | ch |
| 5 | | | | | | | | | | |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| Stabilized: Comments | | No | | | | Тс | otal Volume | Removed: | 2000 | mL |



Chain of Custody Record

| Project Name | | | | | | | Work Order Number: | | | | | |
|---|--|---------|-----------------------------------|-------------|----------------|--|--------------------|----|-----------|-------------|----------|-------------------|
| | MDU Heskett | | April 2017 | | | | 00-100-1 | | | | | |
| Report To: Attn: Address: phone: email: | MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 | | Carbon Copy: Attn: Address: | | | Name of Sampler(s): Darren Niesmaas | | | | | | |
| Sample Information | | | | В | ott | Іе Тур | е | Fi | eld Para | meters | Analysis | |
| Lab Number | Sample ID | Date | Time | Sample Type | 1 ilier Nitric | | | | Temp (°C) | Spec. Cond. | Hd | Analysis Required |
| W1260 | 2-90 | 26Apr17 | 1200 | GW | 4 | | | | 7,91 | 7790 | 6,9/ | |
| | | | | | | | | | | | | Rad 226 & Rad 228 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

Comments:

| Relinquished By: | Relinquished By: | | | | | | |
|------------------|------------------|------------|-------------------------|--|--|--|--|
| Name: | Date/Time | Location: | Temp (°C) | | | | |
| 1 Daver Min | 26AP17 1344 | Walk In #2 | ROJ 7.7 (M562)/TM588 | | | | |
| 2 | | | | | | | |

| Received | d by: |
|----------|---------------------|
| / Name: | Date/Time |
| Jud Xh | 26 Apr 2017 1344 |
| | |





June 2, 2017

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

RE: Wells 104 and 105 - MDU Heskett Ash Site

Dear Ms. Marshall:

On May 25, 2017, MVTL Laboratories' Field Services division collected groundwater samples at the MDU Heskett site near Mandan, ND for the Heskett Coal Combustion Rule.

Samples were collected from wells 104 and 105. A duplicate sample was collected form well 105. The samples collected were placed on ice and transported back to the MVTL laboratory in Bismarck, ND for analysis.

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

Sincerely,

Anth

Jeremy Meyer MVTL Field Services



Repairs Necessary:



Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | , 104, |
| Sampling Personal: | Jerry Men e |
| | |

Weather Conditions: Temp: 5 Well Information Well Locked? No> Yes Yes Well Labeled? No Casing Straight? Yes No Grout Seal Intact? (Yes) No

Casing Diameter:

Total Well Depth: Well Volume:

Depth to Top of Pump:

Water Level After Sample: Measurement Method:

Water Level Before Purge:

| Temp: | 50 °F | Wind: | 505-10 | | Precip | : Sunny / Rartly (| Cloudy / Clo | udy |
|--------------------------------|------------------|-------|----------------------|------------|-----------|----------------------------|----------------|--------|
| rmation | ~ ~ | | | Sa | ampling I | nformation | | |
| 10 | | | Purging Method: | Blac | dder | Co | ontrol Setting | s |
| No | | | Sampling Method: | Blac | dder | Purge: | 5 | sec. |
| No | | | Dedicated Equip?: | Fes | No | Recover: | 55 | sec. |
| No | Not Visible | | Duplicate Sample?: | Yes | No | PSI: | К | |
| | | | Duplicate Sample ID: | ~ <u> </u> | •••• | Pumping F | Rate: 100 | mL/min |
| | 2" | | | | | | | |
| 3 | .54 ft | | Purge Date: | 25 Mm | 17 | Time Purging Began: | 0820 | @m/pm |
| | — ft | | Well Purged Dry? | Yes | (No) | Time Purged Dry: | | am/pm |
| ****** | liters | | Sample Date: | 25 phay | 17 | Time of Sampling: | OBYS | am/pm |
| بر میں ہے۔ مراجعہ میں پ | ft | | | , | | | | |
|) | 3 , 85 ft | | Bottle CC | CR: 1L Raw | 500mL Nit | irc, 500mL Nitric (filtere | ed), 4-1L Nitr | ic |
| Electric Water Level Indicator | | | List: | | | | | |

Field Measurements

| | zation ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|--------------------|--|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 0825 | [0,0] | 13781 | 6,89 | 9,04 | 261.7 | 3,87 | 13,65 | 500.0 | Clear |
| 2 | 0630 | 9,93 | 13914 | 6.84 | 9.64 | 264.7 | 2,15 | 13,65 | 500.0 | Clear |
| 3 | 0835 | 9.85 | 13918 | 6,83 | 9,81 | 265,7 | 466 | 13,87 | 500,0 | Clear |
| 4 | OBYO | 9.78 | 13928 | 6.82 | 10.13 | 264,4 | 1.27 | 13.95 | 500.0 | Clear |
| 5 | 0845 | 9,82 | 13896 | 6.83 | 10,26 | 264.0 | 1.10 | 13,88 | 500.0 | Clear |
| 6 | | | | | | | | | | |
| 7 | | | | | | | | | | |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | _ | | | | | | | | | |
| Stabilized: | (Xes) | Yes No Total Volume Removed: رړی ۲۰۵۰ mL | | | | | | | | |

Comments:





Groundwater Assessment

| Company: | MDU Heskett |
|--------------------|-------------|
| Event: | 2017 |
| Sample ID: | 105 , |
| Sampling Personal: | Jerry Meyer |
| | |

| Weather Conditions: | | Temp | : 60 °F | : | | |
|---------------------|-------------|----------|----------------|---------|--|--|
| | Well Info | rmation | | | | |
| Well Locked? | Yes | No> | | | | |
| Well Labeled? | Yes | No | | | | |
| Casing Straight? | Yes | No | | | | |
| Grout Seal Intact? | (Yes) | No | Not Vis | ible | | |
| Repairs Necessary: | <u> </u> | | | | | |
| Casing | Diameter: | 2" | | | | |
| Water Level Befo | ore Purge: | 12.46 | | | | |
| Total W | /ell Depth: | | | | | |
| We | ll Volume: | | | | | |
| Depth to Top | of Pump: | | | ft | | |
| Water Level Afte | r Sample: | l | 12,72 | ft | | |
| Measuremen | t Method: | Electric | Water Level In | dicator | | |

| Wind: | 5057 | 0 | | Precip | : Suni | iny / Partly Cloudy / Cloudy | | | | |
|-------|----------------------|------------|------------|----------|-------------|------------------------------|----------------|--------|--|--|
| | Sampling Information | | | | | | | | | |
| | Purgir | ng Method: | Blac | lder | | Co | ontrol Setting | gs | | |
| | Samplin | ng Method: | Blac | lder | | Purge: | 5 | sec. | | |
| | Dedicat | ed Equip?: | Yes | No | | Recover: | 55 | sec. | | |
| | Duplicate | Sample?: | Ves | No | | PSI: | 25 | | | |
| | Duplicate | Sample ID: | Dip | 1 | | Pumping R | ate: /00 | mL/min | | |
| | | | · (| | - | | c138 | | | |
| | P | urge Date: | 25 My | 17 | Time Purg | ing Began: | 6838 | am/pm | | |
| | Well P | urged Dry? | Yes | (No) | Time F | Purged Dry: | ~ | am/pm | | |
| | Sa | mple Date: | 25Mm | 17 | Time of | f Sampling: | 1013 | am/pm | | |
| | | | | | | | | | | |
| | Bottle | CC | R: 1L Raw, | 500mL Ni | tirc, 500mL | Nitric (filtere | ed), 4-1L Nit | ric | | |
| | List: | | | | | | | | | |

Field Measurements

| | zation ecutive) | Temp (°C) | Spec. Cond. | pН | DO (mg/L) | ORP (mV) | Turbidity (NTU) | Water Level (ft) | mL Removed | Discription: Clarity, Color, Odor, Ect. |
|-------------|--------------------|--------------|----------------|------|--------------|-------------|--------------------|---------------------|---------------|--|
| SEQ # | Time | | ±5% | ±0.1 | ±10% | ±20 mV | ±10% | 0.25 ft | | clear, slightly turbid, turbid |
| 1 | 09 43 | 8.97 | 5951 | 6.65 | 8,61 | 231.4 | 7.79 | 12.66 | 500.0 | Clear |
| 2 | 09 14B | 8,BZ | 5877 | 6.64 | 7.32 | 228.7 | 7.84 | 12.68 | 500.0 | Clie |
| 3 | 0953 | 8.64 | 5977 | 6:64 | 5.41 | 226.7 | 6.32 | 12.69 | 500,D | Clea |
| 4 | 0958 | 8.76 | 6469 | 6.64 | 6.28 | 220.9 | 4.54 | (2,83 | 500,D | Clear |
| 5 | 1003 | 8.68 | 6695 | 5.62 | 6.09 | 218.0 | 4,80 | 12.84 | 500,0 | Clee |
| 6 | 1008 | 8.92 | 6875 | 6.62 | 5.92 | 216.2 | 5.08 | 12.85 | 500,0 | Clier |
| 7 | 1013 | 9,16 | 6998 | 6162 | 6.11 | 213,3 | 4,88 | 12.03 | SOU,0 | Clien |
| 8 | | | | | | | | | | Anna 1999 - Anna 199 |
| 9 | | | | | | | | | | |
| 10 | \langle | | | | | | | | | |
| Stabilized: | (Yes) | No | | | | To | otal Volume | Removed: | 3500,0 | mL |

Comments:

MVTL Calibration Worksheet

| Site: MDU He | skett | 17 Jan 19 Jan 19 | | | | Technician: | Jer | 1th | | _ |
|--|---|------------------|-----------|----------------|-----------------|--------------------|-----|--------------|------------------|--------------|
| Instrument #1 650 MDS 08F100203 (Circle One): | | | | #2 6 | 50 MDS 04H14 | 736 | | #3 550 | 6 MPS 12E102 | 2056 |
| 4 | | Pre Sit | e Calibra | ition | | | | Ро | st Site Cheo | :k |
| Date: 25 May | ITTim | e: 🖓 🚱 ID | | | | | | Time: (030 | <u>ح</u> | |
| рН | | _ | ost Cal | Post Cal Range | mv | mv Range +/- 50 | | рН | Temp °C | Readin |
| Buffer 7 | | | .00 | 6.95-7.05 | -24.7 | 0 +/- 50 | | Buffer 7 | 16.01 | 701 |
| Buffer 10 | 15,46 9 | ,98 1 | 0.00 | 9.95-10.05 | -200.8 | -180 +/- 50 | | | | |
| Conductivity | | (| | | | Check | | Conductivity | | |
| Buffer 10000 | 14.89 90 | i96 10 | 0000 | ±10% | Buffer 5000 | 4954 | | Buffer 5000 | 15,31 | 5034 |
| ORP | | | | | | | | | | |
| 231 mV @ 25C | 15,40 20 | 42.4 2 | 44.0 | ±10 mV | | | | | | |
| DO | | | | Baromet | ric Pressure (m | ım Hg) | | | | |
| | 14.43 13 | 50.1% 9 | 9,2% | mg/L | 754.0 | , _C | | | | |
| Date: | Tim | e: | | | | | | Time: | | |
| рН | Temp °C P | re Cal F | ost Cal | Post Cal Range | mv | mv Range +/- 50 | | фҢ | Temp °C | Readin |
| Buffer 7 | | | | 6.95-7.05 | | 0 +/- 50 | | Buffer X | | |
| Buffer 10 | | | | 9.95-10.05 | | -180 +/- 50 | | | $\overline{}$ | |
| Conductivity | • <u>••</u> ••••••••••••••••••••••••••••••••• | | | * . | | Check | | Conductivity | \bigtriangleup | |
| Buffer 10000 | | | | ±10% | Buffer 5000 | | | Buffer 5000 | | |
| ORP | / | | | | | | | | | \mathbf{i} |
| 231 mV @ 25C | | | | ±10 mV | | | | | | |
| DO | | | | Baromet | ric Pressure (n | nm Hg) | | | | |
| | | | | | | | 1 | | | |

MINNESOTA VALLEY TESTING LABORATORIES, INC.



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



CASE NARRATIVE

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 1 201782-1382 Montana Dakota Utilities MDU Heskett CCR May 2017 17-W2011 through 17-W2014

| MDU Sample Identification | MVTL Laboratory # | | | | | |
|---------------------------|-------------------|--|--|--|--|--|
| 104 | 17-W2011 | | | | | |
| 105 | 17-W2012 | | | | | |
| Dup1 | 17-W2013 | | | | | |
| FB | 17-W2014 | | | | | |

I. RECEIPT

- All samples were received at the laboratory on 25 May 17 at 1340.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
 - Temperature of samples upon receipt was 8.7°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 laboratory report.
 - For some analytes, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
 - One lithium matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

Claukette Canip SIGNED:

DATE: 13 JUN 17

Claudette Carroll - MVTL Bismarck Laboratory Manager

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Quality Control Report

| Lab IDs: 17-W2011 to 17 | -W2014 | Pr | oject: MI | DU Hesk | ett - CCR | ١ | Work Or | der: 201 | 782-1382 | 2 | | | | | | | |
|-------------------------|---------------------|-----------------|------------------------|--|--|--------------------------------------|--------------------------------------|-----------------------------|--|-------------------------------|------------------------------|-------------------------|--------------------------|---------------------------------|---------------------|--------------------------|--------------------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Antimony - Total mg/l | 0.1000 | 109 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | <0.001 <0.001 <0.001 | 0.4300 0.4316 0.4176 | 108 108 104 | 75-125 75-125 75-125 | 0.4300 0.4316 0.4176 | 0.4312 0.4664 0.4192 | 108 117 105 | 0.3 7.8 0.4 | 20 20 20 | - | - | < 0.001 |
| Arsenic - Total mg/l | 0.1000 | 104 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | <0.002 0.0024 <0.002 | 0.4258 0.4398 0.4168 | 106 109 104 | 75-125 75-125 75-125 | 0.4258 0.4398 0.4168 | 0.4334 0.4662 0.4208 | 108 116 105 | 1.8 5.8 1.0 | 20 20 20 | - - | | < 0.002 |
| Barium - Total mg/l | 0.1000 | 103 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | 0.0208 0.0613 0.0404 | 0.3920 0.4506 0.4484 | 93 97 102 | 75-125 75-125 75-125 | 0.3920 0.4506 0.4484 | 0.4154 0.4830 0.4252 | 99 105 96 | 5.8 6.9 5.3 | 20 20 20 | | - - - | < 0.002 |
| Beryllium - Total mg/l | 0.1000 | 115 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | <0.0005 <0.0005 <0.0005 | | 114 117 118 | 75-125 75-125 75-125 | 0.4542 0.4678 0.4720 | 0.4654 0.4924 0.4548 | 116 123 114 | 2.4 5.1 3.7 | 20 20 20 | - | | < 0.000 |
| Boron - Total mg/l | 0.40 0.40 | 98 100 | 80-120 80-120 | 0.400 0.400 15.0 0.400 0.400 | 17-M1275 17-W1872 17-W1888 17-W2013 17-W2022 | 8.52 0.19 29.0 0.38 0.58 | 8.86 0.55 44.4 0.73 0.95 | 85 90 103 88 92 | 75-125 75-125 75-125 75-125 75-125 75-125 | 0.55 44.4 0.73 0.95 | 0.57 43.8 0.73 0.96 | 95 99 88 95 | 3.6 1.4 0.0 1.0 | 20 20 20 20 | | | < 0.1 < 0.1 < 0.1 |
| Cadmium - Total mg/l | 0.1000 | 114 | 80-120 | $0.400 \\ 0.400 \\ 0.400$ | 17W2013q 17W2022q 17W2025q | <0.0005 <0.0005 <0.0005 | 0.4238 0.4500 0.4346 | 106 112 109 | 75-125 75-125 75-125 | 0.4238 0.4500 0.4346 | 0.4266 0.4784 0.4260 | 107 120 106 | 0.7 6.1 2.0 | 20 20 20 | - | - - - | < 0.0005 |
| Calcium - Total mg/l | 20.0 20.0 | 114 109 | 80-120 80-120 | 100 500 100 100 | 17W1994q 17W2013q 17W2025q 17W2027q | 6.5 410 123 6.0 | 114 910 220 111 | 108 100 97 105 | 75-125 75-125 75-125 75-125 | 114 910 220 111 | 112 975 217 110 | 106 113 94 104 | 1.8 6.9 1.4 0.9 | 20 20 20 20 | - | | < 1 < 1 < 1 < 1 |
| Chloride mg/l | 30.0 30.0 | 89 93 | 80-120 80-120 | 60.0 | 17-W1990 | 31.2 | 98.6 | 112 | 80-120 | 98.6 | 97.3 | 110 | 1.3 | 20 | | - | < 1 < 1 |
| Chromium - Total mg/l | 0.1000 | 101 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | <0.002 <0.002 <0.002 | 0.3942 0.4006 0.3888 | 99 100 97 | 75-125 75-125 75-125 | 0.3942 0.4006 0.3888 | 0.3978 0.4322 0.3944 | 99 108 99 | 0.9 7.6 1.4 | 20 20 20 | | | < 0.002 |

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Quality Control Report

| Lab IDs: 17-W2011 to 17- | <u>Ŵ2014</u> | Pr | oject: MI | DU Heske | ett - CCR | , | Work Or | der: 201 | 782-1382 | 2 | | | | | | | |
|--------------------------|---------------------|-----------------|------------------------|---------------------------|----------------------------------|-----------------------------------|----------------------------|-----------------------------|------------------------------------|-------------------------------|----------------------------|-------------------|--------------------------|---------------------------------|---------------------|--------------------------|----------------------------------|
| Analyte | LCS Spike Amt | LCS Rec % | LCS % Rec Limits | Matrix Spike Amt | Matrix Spike ID | Matrix Spike Orig Result | Matrix Spike Result | Matrix Spike Rec % | Matrix Spike % Rec Limits | MSD/ Dup Orig Result | MSD/ Dup Result | MSD Rec % | MSD/ Dup RPD | MSD/ Dup RPD Limit (<) | Known Rec (%) | Known % Rec Limits | Method Blank |
| Cobalt - Total mg/l | 0.1000 | 101 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | <0.002 <0.002 <0.002 | 0.3878 0.3988 0.3852 | 97 100 96 | 75-125 75-125 75-125 | 0.3878 0.3988 0.3852 | 0.3886 0.4322 0.3888 | 97 108 97 | 0.2 8.0 0.9 | 20 20 20 | - | - | < 0.002 |
| Fluoride mg/l | 0.50 0.50 | 94 100 | 90-110 90-110 | 0.500 0.500 0.500 | 17-W1990 17-W1991 17-W2022 | 3.17 2.86 0.13 | 3.69 3.40 0.62 | 104 108 98 | 80-120 80-120 80-120 | 3.40 | 3.67 3.44 0.62 | 100 116 98 | 0.5 1.2 0.0 | 20 20 20 | | | < 0.1 < 0.1 < 0.1 |
| Lead - Total mg/l | 0.1000 | 103 | 80-120 | 0.400 0.400 0.400 | 17W2013q 17W2022q 17W2025q | < 0.0005 < 0.0005 < 0.0005 | 0.3674 0.3914 0.4180 | 92 98 104 | 75-125 75-125 75-125 | 0.3674 0.3914 0.4180 | 0.3916 0.4206 0.3938 | 98 105 98 | 6.4 7.2 6.0 | 20 20 20 | - | | < 0.0005 |
| Lithium - Total mg/l | 0.40 | 115 | 80-120 | 0.400 | 17-W2013 | 1.05 | 1.54 | 122 | 75-125 | 1.54 | 1.56 | 128 | 1.3 | 20 | - - - - | | < 0.1 < 0.1 < 0.1 < 0.1 |
| Mercury - Total mg/l | 0.0020 | 100 | 85-115 | 0.002 0.002 | 17-W1998 17-W2043 | < 0.0002 < 0.0002 | 0.0019 0.0020 | 95 100 | 70-130 70-130 | 0.0019 0.0020 | 0.0019 0.0020 | 95 100 | 0.0 0.0 | 20 20 | | - | < 0.0002 |
| Molybdenum - Total mg/l | 0.1000 | 110 | 80-120 | $0.400 \\ 0.400 \\ 0.400$ | 17W2013q 17W2022q 17W2025q | <0.002 <0.002 <0.002 | 0.4296 0.4342 0.4374 | 107 109 109 | 75-125 75-125 75-125 | 0.4296 0.4342 0.4374 | 0.4442 0.4600 0.4188 | 111 115 105 | 3.3 5.8 4.3 | 20 20 20 | | | < 0.002 |
| pH units | - - - | | | | - - - | | - | - | | 9.1 8.1 8.8 7.3 | 9.1 7.9 8.9 7.5 | - - - | 0.0 2.5 1.1 2.7 | 20 20 20 20 20 | | - - - | - - - |

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Page: 3 of 3

Quality Control Report Lab IDs: 17-W2011 to 17-W2014 Project: MDU Heskett - CCR Work Order: 201782-1382 Matrix Matrix MSD/ MSD/ Matrix LCS LCS LCS Matrix Matrix Spike Matrix Spike Spike Dup MSD/ MSD MSD/ Dup Known Known % Rec Spike Rec % Rec Spike Spike Orig Spike Rec % Rec Orig Dup Rec Dup RPD Rec Method Analyte % Limits ID Result % RPD Limit (<) (%) Limits Blank Amt Amt Result Result % Limits Result Selenium - Total mg/l 0.1000 117 80-120 0.400 17W2013q < 0.005 0.4822 121 75-125 0.4822 0.4676 117 3.1 20 < 0.002 --17W2022q < 0.005 75-125 0.4720 122 20 0.400 0.4720 118 0.4872 3.2 --0.400 17W2025q < 0.005 0.4786 120 75-125 0.4786 0.4490 112 6.4 20 --Sulfate mg/l 100 117 80-120 100 17-W1999 < 5 118 118 80-120 118 116 116 1.7 20 < 5 --100 116 80-120 100 17-W2014 1.60 121 80-120 121 119 0.0 20 < 5 119 121 --Thallium - Total mg/l 0.1000 104 80-120 17W2013q < 0.0005 0.3692 92 75-125 0.3692 0.3924 98 20 < 0.0005 0.400 6.1 -.... 0.400 17W2022q < 0.0005 0.3904 98 75-125 0.3904 0.4220 106 7.8 20 --20 0.400 17W2025q < 0.0005 0.4158 104 75-125 0.4158 0.4018 100 3.4 --Total Dissolved Solids mg/l 6740 6770 0.4 20 < 10 ------------

Approved by: ______ 1.3 The 7





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CERTIFICATE of ANALYSIS - CCR

Project Name: MDU Heskett Sample Description: 104

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 13 Jun 17 Lab Number: 17-W2011 Work Order #:82-1382 Account #: 002800 Date Sampled: 25 May 17 8:45 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 8.7C ROI

| | As Receive Result | ed | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|----------------------|-----------|--------------|---------------------|------------------|------------|
| Metal Digestion | | | | EPA 200.2 | 25 May 17 | SVS JSM |
| pH - Field | 6.83 | units | NA | SM 4500 H+ B | 25 May 17 8:45 | CC |
| pH | * 7.5 | units | 0.1 | SM4500 H+ B | 26 May 17 17:00 | |
| Temperature - Field | 9.82 | Degrees C | NA | SM 2550B | 25 May 17 8:45 | JSM |
| Conductivity - Field | 13896 | umhos/cm | 1 | EPA 120.1 | 25 May 17 8:45 | JSM |
| Fluoride | 0.50 | mg/l | 0.10 | SM4500-F-C | 26 May 17 17:00 | CC |
| Sulfate | 12200 | mg/l | 5.00 | ASTM D516-07 | 2 Jun 17 13:25 | EMS |
| Chloride | 111 | mg/l | 1.0 | SM4500-Cl-E | 9 Jun 17 8:22 | EMS |
| Mercury - Total | < 0.0002 | mg/l | 0.0002 | EPA 245.1 | 9 Jun 17 11:48 | EV |
| Total Dissolved Solids | 15200 | mg/l | 10 | I1750-85 | 30 May 17 16:18 | SVS |
| Calcium - Total | 460 | mg/l | 1.0 | 6010 | 5 Jun 17 12:10 | SZ |
| Lithium - Total | 2.12 | mg/l | 0.10 | 6010 | 31 May 17 15:06 | KMD |
| Boron - Total | 0.94 | mg/l | 0.10 | 6010 | 1 Jun 17 10:48 | KMD |
| Antimony - Total | < 0.001 | mg/l | 0.0010 | 6020 | 8 Jun 17 14:25 | KMD |
| Arsenic - Total | < 0.002 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Barium - Total | 0.0075 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Beryllium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Cadmium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Chromium - Total | < 0.002 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Cobalt - Total | 0.0023 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Lead - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Molybdenum - Total | < 0.002 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Selenium - Total | 0.1598 | mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Thallium - Total | < 0.0005 | mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |

* Holding time exceeded

Approved by:

CC 13JUN 17 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

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





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CERTIFICATE of ANALYSIS - CCR

Project Name: MDU Heskett Sample Description: 105

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 13 Jun 17 Lab Number: 17-W2012 Work Order #:82-1382 Account #: 002800 Date Sampled: 25 May 17 10:13 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 8.7C ROI

| | As Received Result | | Method RL | Method Reference | Date Analyzed | Analyst |
|---|--|---|---|---|---|------------|
| Metal Digestion pH - Field pH Temperature - Field Conductivity - Field Fluoride Sulfate Chloride Mercury - Total Total Dissolved Solids Calcium - Total Lithium - Total Boron - Total Antimony - Total Arsenic - Total Barium - Total Barium - Total Cadmium - Total Cobalt - Total Lead - Total Selenium - Total Selenium - Total | * 7.3 ur 9.16 De 6998 un 0.25 mg 5160 mg 375 mg 6520 mg 1.12 mg 0.37 mg < 0.001 mg < 0.001 mg < 0.002 mg < 0.0005 mg < 0.002 mg | nits nits egrees C mhos/cm g/l g/l g/l g/l g/l g/l g/l g/l g/l g/l | NA 0.1 NA 1 0.10 5.00 1.0 0.0002 10 0.10 0.10 0.0010 0.0020 0.0020 0.0005 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 0.0020 | EPA 200.2 SM 4500 H+ B SM4500 H+ B SM 2550B EPA 120.1 SM4500-F-C ASTM D516-07 SM4500-C1-E EPA 245.1 I1750-85 6010 6010 6020 | 25 May 17 25 May 17 10:13 26 May 17 10:13 25 May 17 10:13 25 May 17 10:13 26 May 17 10:13 26 May 17 13:25 9 Jun 17 13:25 9 Jun 17 8:22 9 Jun 17 11:48 30 May 17 16:18 5 Jun 17 11:48 30 May 17 16:18 5 Jun 17 12:10 31 May 17 15:06 1 Jun 17 10:48 8 Jun 17 14:25 8 Jun 17 14:25 | KMD KMD |

* Holding time exceeded

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

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Project Name: MDU Heskett Sample Description: Dup 1

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 13 Jun 17 Lab Number: 17-W2013 Work Order #:82-1382 Account #: 002800 Date Sampled: 25 May 17 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 8.7C ROI

| | As Received Result | Method RL | Method Reference | Date Analyzed | Analyst |
|------------------------|-----------------------|--------------|---------------------|------------------|---------|
| Metal Digestion | | | EPA 200.2 | 25 May 17 | SVS |
| Hq | * 7.3 units | 0.1 | SM4500 H+ B | 26 May 17 18:00 | CC |
| Fluoride | 0.25 mg/l | 0.10 | SM4500-F-C | 26 May 17 18:00 | CC |
| Sulfate | 4910 mg/l | 5.00 | ASTM D516-07 | 2 Jun 17 13:43 | EMS |
| Chloride | 378 mg/l | 1.0 | SM4500-Cl-E | 9 Jun 17 8:22 | EMS |
| Mercury - Total | < 0.0002 mg/l | 0.0002 | EPA 245.1 | 9 Jun 17 11:48 | EV |
| Total Dissolved Solids | 6740 mg/l | 10 | I1750-85 | 30 May 17 16:18 | SVS |
| Calcium - Total | 410 mg/l | 1.0 | 6010 | 5 Jun 17 12:10 | SZ |
| Lithium - Total | 1.05 mg/l | 0.10 | 6010 | 31 May 17 15:06 | KMD |
| Boron - Total | 0.38 mg/l | 0.10 | 6010 | 1 Jun 17 10:48 | KMD |
| Antimony - Total | < 0.001 mg/l | 0.0010 | 6020 | 8 Jun 17 14:25 | KMD |
| Arsenic - Total | < 0.002 mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Barium - Total | 0.0208 mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Beryllium - Total | < 0.0005 mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Cadmium - Total | < 0.0005 mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Chromium - Total | < 0.002 mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Cobalt - Total | < 0.002 mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Lead - Total | < 0.0005 mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| Molybdenum - Total | < 0.002 mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Selenium - Total | < 0.005 ^ mg/l | 0.0020 | 6020 | 8 Jun 17 14:25 | KMD |
| Thallium - Total | < 0.0005 mg/l | 0.0005 | 6020 | 8 Jun 17 14:25 | KMD |
| | | | | | |

* Holding time exceeded

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

Approved by:

13Jm 17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CC.

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CERTIFICATE of ANALYSIS - CCR

Project Name: MDU Heskett Sample Description: FB

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

Report Date: 13 Jun 17 Lab Number: 17-W2014 Work Order #:82-1382 Account #: 002800 Date Sampled: 25 May 17 Date Received: 25 May 17 13:40 Sampled By: MVTL Field Services

Temp at Receipt: 8.7C ROI

| | As Received Result | Method RL | Method Reference | Date Analyzed | Analyst |
|---|--|--|--|--|---|
| Metal Digestion pH Fluoride Sulfate Chloride Mercury - Total Total Dissolved Solids Calcium - Total Lithium - Total Boron - Total Antimony - Total Arsenic - Total | * 6.4 units < 0.1 mg/l < 5 mg/l < 1 mg/l < 0.0002 mg/l < 10 mg/l < 1 mg/l < 0.1 mg/l < 0.1 mg/l < 0.1 mg/l < 0.1 mg/l < 0.001 mg/l < 0.002 mg/l | 0.1 0.10 5.00 1.0 0.0002 10 1.0 0.10 0.10 0.0010 0.0020 | EPA 200.2 SM4500 H+ B SM4500-F-C ASTM D516-07 SM4500-C1-E EPA 245.1 I1750-85 6010 6010 6010 6020 6020 | 26 May 17 26 May 17 18:00 26 May 17 18:00 2 Jun 17 13:43 9 Jun 17 8:22 9 Jun 17 11:48 30 May 17 16:18 5 Jun 17 14:01 31 May 17 15:06 1 Jun 17 10:48 8 Jun 17 14:25 8 Jun 17 14:25 | CS CC CC EMS EWS SVS SZ KMD KMD KMD KMD |
| Barium - Total Beryllium - Total Cadmium - Total Chromium - Total Cobalt - Total Lead - Total Molybdenum - Total Selenium - Total Thallium - Total | <pre>< 0.002 mg/l < 0.005 mg/l < 0.005 mg/l < 0.002 mg/l < 0.002 mg/l < 0.002 mg/l < 0.0005 mg/l < 0.0005 mg/l < 0.005 mg/l < 0.005 mg/l < 0.005 mg/l</pre> | 0.0020 0.0005 0.0020 0.0020 0.0020 0.0005 0.0020 0.0020 0.0020 0.0020 | 6020 6020 6020 6020 6020 6020 6020 6020 | 8 Jun 17 14:25 8 Jun 17 14:25 | KMD KMD KMD KMD KMD KMD KMD KMD |

* Holding time exceeded

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

Approved by:

10 350017 K. Canto

Clauditte

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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