STATE OF COLORADO

Eschberger - DNR, Amy <amy.eschberger@state.co.us>

Boettcher Quarry Groundwater Results

Harkins, Sara <Sara_Harkins@golder.com> Wed, Sep 25, 2019 at 10:47 AM
To: "Eschberger - DNR, Amy" <amy.eschberger@state.co.us>
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Dear Ms. Eschberger,

On behalf of Holcim (US) Inc., Golder is pleased to submit the results of the 1st semi-annual 2019 groundwater sampling event at the Boettcher Limestone Quarry near La Porte, Colorado. We have also sent you a paper copy.

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2 attachments

image001.jpg
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19121576-001--1-L-0-First_Semi_Annual_GW_Event_Boettcher_Quary.pdf
8250K

September 25, 2019 Project No. 19121576

Ms. Amy Eschberger
Colorado Division of Reclamation Mining and Safety
Department of Natural Resources
1313 Sherman Street, Room 215
Denver, Colorado 80203

FIRST SEMI-ANNUAL EVENT 2019 GROUNDWATER SAMPLING AT THE BOETTCHER QUARRY

Dear Ms. Eschberger:

On behalf of Holcim (US) Inc., Golder Associates Inc. is pleased to submit analytical laboratory results for the first semi-annual 2019 groundwater sampling event at the Boettcher Limestone Quarry near La Porte, Colorado. Attached are Tables 1 through 7, summarizing the results, and a copy of the laboratory report (Attachment 1). Field sheets for the purging and sampling are presented in Attachment 2. In addition to sampling wells MW-1 through MW-7, a field duplicate at MW-1 (MW-20) and a field blank (MW-15) were collected. The locations of monitoring wells MW-1 through MW-7 are presented in Figure 1.

In December 2016, the Colorado Division of Reclamation Mining and Safety approved a revision to change the required groundwater monitoring frequency from quarterly to semi-annually (Revision TR07) based on evidence that the groundwater wells were not fully recharging between sampling events. Figure 2 presents a graph of the monitoring well water elevations measured during each sampling event from 2013 to present.

Upon receipt of the laboratory reports, Golder reviewed the results, and a general analytical data evaluation was performed. Results of this evaluation included the following:

- The samples were received by the laboratory at the appropriate temperature.
- The required analyses were performed.
- The analyses were conducted within their respective EPA-recommended hold times, apart from pH. Measurements for pH should be conducted within 15 minutes of sample collection; thus, the laboratory pH measurement will always be out of hold time. Additionally, alkalinity was accidentally omitted from the initial analysis and was therefore analyzed outside hold time. The laboratory pH and alkalinity measurements were consistent with past sampling events.

Based on the above review, the laboratory results are considered valid for the sampling event. The laboratory report in Attachment 1 contains duplicate results for some analytes because the laboratory initially utilized detection limits greater than the Interim Narrative Standard due to sample dilutions required because of sample matrix interferences. The practical quantitation limit for nickel for the sample collected from MW-1 was above the Interim Narrative Standard; however, the sample was not detected above the method detection limit which was

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below the Interim Narrative Standard. Reported concentrations are consistent with previous events and the analytes that exceeded the Interim Narrative Standard for this sampling event are listed by sampling location below:

- MW-1: Selenium, Uranium, Nitrate, Nitrate + Nitrite, Sulfate, and Gross Alpha
- MW-2: Barium, Boron, Iron, Manganese, and Chloride
- MW-3: Barium, Boron, Chloride, and Fluoride
- MW-4: Barium, Chloride, and Total Dissolved Solids
- MW-5: Iron, Manganese, and Sulfate
- MW-6: Barium, Iron, Manganese, Chloride, and Gross Alpha
- MW-7: Barium, Iron, Manganese, Chloride, and Gross Alpha

If you have any questions, please call the undersigned at (303) 980-0540.

Sincerely,

GOLDER ASSOCIATES INC.

Sara Harkins, PG
Senior Project Geochemist

Joanna Moreno
Practice Leader, Groundwater

Attachments: Table 1 – Summary of Monitoring Results for MW-1
Table 2 – Summary of Monitoring Results for MW-2
Table 3 – Summary of Monitoring Results for MW-3
Table 4 – Summary of Monitoring Results for MW-4
Table 5 – Summary of Monitoring Results for MW-5
Table 6 – Summary of Monitoring Results for MW-6
Table 7 – Summary of Monitoring Results for MW-7
Figure 1 – Location Map
Figure 2 – Groundwater Elevations vs. Time
Attachment 1 – ACZ Laboratory Report
Attachment 2 – Field Sheets

Tables

Table 1: Summary of Monitoring Results for MW-1

Date	Interim Narrative Standard	5/26/1999	7/21/1999	9/16/1999	11/10/1999	1/19/2000	3/13/2000	5/16/2000	7/10/2000	9/27/2010	3/31/2011	6/28/2011	8/31/2011	11/17/2011	3/27/2012	6/27/2012	9/13/2012	11/13/2012	3/19/2013	5/28/2013	8/26/2013	11/14/2013	2/18/2014
Metals																							
Arsenic, Dissolved (mg/L)	0.01	NA	< 0.005 U	0.002 B	0.0046	**0.02** B	**0.027**	0.01 B	**0.013** B	**0.015**	0.005 B	0.01 B	**0.011**	<0.01 U	< 0.01 U	0.003 B	0.001 B	0.002 B	0.002 B	< 0.005 U	0.002 B	< 0.005 U	0.001 B
Barium, Dissolved (mg/L)	2	< 0.05 U	0.013 B	< 0.05 U	< 0.05 U	0.02 B	< 0.05 U	< 0.05 U	0.014	< 0.08 U	0.04 B	0.005 B	< 0.08 U	<0.08 U	0.017 B	< 0.08 U	0.02 B	0.02 B	0.011 B	< 0.08 U	< 0.08 U	0.011 B	0.008 B
Boron, Dissolved (mg/L)	0.75	0.36	0.35	0.41	0.46	0.5	0.46	0.51	0.5	0.54	0.59	0.58	0.64	0.64	0.62	0.59	0.71	0.73	0.64	0.69	0.61	0.6	0.61
Chromium, Dissolved (mg/L)	0.1	< 0.3 U	< 0.1 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	<0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Copper, Dissolved (mg/L)	0.2	0.06 B	< 0.1 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	<0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.05 U
Iron, Dissolved (mg/L)	0.3	< 0.3 U	< 0.1 U	< 0.3 U	< 0.3 U	0.14 B	< 0.3 U	0.1 B	< 0.05	< 0.3 U	0.3	< 0.05 U	< 0.3 U	0.2 B	0.15	**1.4**	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.05 U
Lead, Dissolved (mg/L)	0.05	< 0.01 U	< 0.005 U	< 0.005 U	< 0.001 U	< 0.05 U	< 0.005 U	0.013	< 0.005	0.0019 B	0.0027 B	0.0052	0.0045	0.0007 B	< 0.003 U	0.0035	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Lithium, Dissolved (mg/L)	2.5	1.1	1.21	1	1	1.2	1.1	1.2	1.05	1.3	1.3	1.18	1.2	1.1	1.15	1.1	1.1	1.2	NA	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.08** B	0.05	**0.09** B	**0.1**	**0.06**	0.04 B	0.05 B	**0.053**	< 0.1 U	0.05 B	0.041	< 0.1 U	< 0.1 U	0.026 B	0.04 B	0.04 B	0.04 B	0.025	< 0.1 U	0.04 B	0.044	**0.054**
Selenium, Dissolved (mg/L)	0.02	**0.35**	**0.27**	**0.19**	**0.093**	**0.078**	**0.054**	**0.046**	**0.101**	**0.4928**	**0.2684**	**0.2656**	**0.2826**	**0.275**	**0.2328**	**0.2204**	**0.1995**	**0.1756**	**0.1826**	**0.2278**	**0.257**	**0.2616**	**0.2067**
Thallium, Dissolved (mg/L)	0.002	< 5 U	< 0.01 U	< 5 U	0.00014 B	< 0.005 U	< 0.001 U	< 0.003 U	0.0007 B	0.0016 B	**0.0025** B	0.0014 B	0.0017 B	<0.003 U	< 0.003 U	0.0007 B	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.0192	0.019	0.0205	0.0199	0.0193	**0.0364**	**0.0303**	**0.0397**	**0.0344**	**0.0403**	**0.0338**	**0.0367**	**0.0433**	**0.0371**	NA	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	< 0.3 U	< 0.1 U	< 0.3 U	< 0.3 U	0.07 B	< 0.3 U	< 0.3 U	< 0.05	0.13 B	< 0.3 U	< 0.05 U	< 0.3 U	<0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	0.02	< 0.3 U	< 0.3 U	< 0.05 U	0.01 B
Other																							
Chloride (mg/L)	250	20	18	36	22	31	28	25	25	< 300 U	< 300 U	< 300 U	40 B	36.4 B	50 B	< 250 U	< 250 U	< 250 U	86 B	< 250 U	55.5 B	< 250 U	< 250 U
Fluoride (mg/L)	2	0.7	0.7	0.6	0.6	0.8	0.7	0.6	0.5	0.4 B	0.5	0.4 B	0.4 B	0.6	0.6	0.6	0.6	0.7	0.6	0.5	0.5	0.5	0.5
Nitrate as N (mg/L)	10	**14.3**	**19.5**	**19.6**	**14**	9.4	NA	3.77	3.28	**96**	**88**	**70**	**81.6**	**81**	**76**	**89**	**85**	**78.5**	NA	NA	NA	NA	NA
Nitrite as N (mg/L)	1	0.07	0.16	< 1	0.56	0.03	NA	0.04 B	0.66	0.24	0.36	0.34	0.4	0.26	0.29	0.56	0.21	0.11	NA	NA	NA	NA	NA
Nitrate+Nitrite as N (mg/L)	10	**14.4**	**19.7**	**19.6**	**14.6**	9.5	NA B	3.81	3.94	**96**	**88**	**70**	**82**	**81**	**76**	**90**	**85**	**78.6**	NA	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8	7.3	7.4	7.6	8.1	7.5	7.5	7.6	8.1 H	8.1 H	8.0 H	8.0 H	8.0 H	8.0 H	8.1 H	8.2 H	8.2 H	8.1 H	8.0 H	8.0 H	7.8 H	7.9 H
Total Dissolved Solids, filterable residue (mg/L)	8595*	7,690.0	7,000.0	6,820.0	7,190.0	6,650.0	6,810.0	6,750.0	6,020.0	7,770	7,560	7,610	7,540	7,110	7,150	6,770	6,770	6,660	6,610	7,420	6,650 H	7,800 H	7,330
Sulfate (mg/L)	250	**5,210**	**4,780**	**4,470**	**5,180**	**4,530**	**4,370**	**4,410**	**4,000**	**4,840**	**4,540**	**4,820**	**4,620**	**4,306**	**4,056**	**4,090**	**4,041**	**3,991**	**3,980**	**4,610**	**4,230**	**5,150**	**4,980**
Gross Alpha (pCi/L)	15.0	**32**	**62**	**45**	**88**	0	**35**	2.7	4.9	**41 (±31)**	**53 (±31)**	**22 (±25)**	5.8 (±29)	**32 (±30)**	**48 (±30)**	**180 (±52)**	**24 (±23)**	-0.51 (±22)	NA	NA	NA	NA	NA
Gross Beta (pCi/L)	**	0	69	25	100	0.7	18	0	53	39 (±28)	36 (±28)	20 (±28)	23 (±32)	27 (±31)	8.1 (±25)	190 (±36)	25 (±29)	12 (±27)	NA	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																							
Field pH (s.u)	6.5 - 8.5	NA	NA	NA	NA	NA	NA	NA	NA	7.4	7.42	7.27	7.42	7.42	7.6	7.36	7.42	7.62	7.59	7.23	7.34	7.40	7.39
Field Conductivity (µS/cm)	none	NA	NA	NA	NA	NA	NA	NA	NA	904	860	7,390	7,960	6,580	7,830	37.21	6,170	7,740	7,620	8,210	7,800	8,888	8,180
Temperature (Degrees Celsius)	none	NA	NA	NA	NA	NA	NA	NA	NA	16.83	14.6	18.7	20.9	16.1	15.6	18.4	16.1	14.6	14.3	16.3	17.1	13.62	14
Supplementary Analytes (Not Historically analyzed)																							
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	279	305	309	312	311	333	334	285	337	334	334	330	320	357
Carbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	323	225	305	270	240	198	222	218	169	178	276	258	302	254
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	336	240	313	272	246	210	213	203	175	180	265	225	308	256
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	22	18	22.7	17	15	14.8	17	17	13	14.5	19	20	20.7	16.5
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	1,660	1,800	1,680	1,670	1,610	1,680	1,630	1,650	1,770	1,670	1,660	1,580	1,820	1,790
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 1: Summary of Monitoring Results for MW-1

Date	Interim Narrative Standard	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals																	
Arsenic, Dissolved (mg/L)	0.01	0.001 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.001 B	0.0018
Barium, Dissolved (mg/L)	2.0	0.004 B	0.006 B	0.007 B	0.009 B	< 0.08 U	< 0.08 U	< 0.08 U	0.03 B	< 0.08 U	< 0.08 U	0.007 B	< 0.08 U	< 0.08 U	< 0.08 U	<0.08 U	<0.2 U
Boron, Dissolved (mg/L)	0.75	0.57	0.56	0.58	0.59	0.55	0.57	0.52	0.6	0.51	0.51	0.56	0.61	0.61	0.65	0.62	0.7
Chromium, Dissolved (mg/L)	0.1	< 0.01 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	0.0028 U
Iron, Dissolved (mg/L)	0.3	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	<0.3 U	0.018 U
Lead, Dissolved (mg/L)	0.05	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.13	1.23
Manganese, Dissolved (mg/L)	0.05	0.033	0.045	0.041	**0.052**	< 0.1 U	0.04 B	< 0.1 U	0.04 B	< 0.1 U	< 0.1 U	0.04	< 0.1 U	< 0.1 U	< 0.1 U	0.022	0.05 B
Selenium, Dissolved (mg/L)	0.02	**0.2775**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.0904**	**0.0998**
Thallium, Dissolved (mg/L)	0.002	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.0300	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**0.035**	**0.0352**
Zinc, Dissolved (mg/L)	2.0	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.3 U	<0.3 U
Other																	
Chloride (mg/L)	250	< 250 U	< 250 U	< 250 U	68.9 B	154 B	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	47.5 B	32.2 B	41.3 BH	27.5 B	<200 U	<200 U
Fluoride (mg/L)	2.0	0.44	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.62	0.6
Nitrate as N (mg/L)	10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**15**	**17**
Nitrite as N (mg/L)	1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.06	0.17
Nitrate+Nitrite as N (mg/L)	10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**15.2**	**16.8**
Lab pH (s.u)	6.5 - 8.5	7.8 H	7.8 H	8 H	7.9 H	7.9 H	8 H	7.9 H	7.84	7.9 H	8.1 H	8.1 H	8.2 H	8 H	8.3 H	8.2	7.9 H
Total Dissolved Solids, filterable residue (mg/L)	8595*	6,910 H	6,950	7,900	7,380	8,210 ^	7,760 ^	8,020	7,660	8,450	8,040	7,460	7,010	7,070	7,240	6,910	6,670
Sulfate (mg/L)	250	**6,850**	**4,670**	**4,300**	**4,800**	**5,540**	**5,640**	**5,430**	**5,250**	**5,470**	**5,540**	**4,700**	**4,690**	**4,340** H	**4,530**	**5,090**	**5,040**
Gross Alpha (pCi/L)	15.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**40 (±31)**	**20 (±18)**
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	33 (±29)	28 (±22)
Field Parameters (Not Available pre-2010))																	
Field pH (s.u)	6.5 - 8.5	7.15	7.35	7.4	7.3	6.99	7.42	7.78	7.84	7.39	7.34	7.56	8.46	7.71	7.46	7.64	7.69
Field Conductivity (µS/cm)	none	9,650	8,560	8,600	5,330	8,050	9,130	7,000	6,580	7,650	8,610	8,280	8,380	7,520	8,480	7,900	6,740
Temperature (Degrees Celsius)	none	15.9	15.3	9.1	14.3	16	15.8	16.3	13.9	17	18	16.5	16.5	12.9	17	16.6	17.2
Supplementary Analytes (Not Historically analyzed)																	
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.8 U	<1 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.004 B	0.0021
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	333	310	325	NA	320	302	306	319	307	329	325	369	361	358	NA	376 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	3.1 B	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0003 U
Calcium, Dissolved (mg/L)	none	330	287	309	230	301	320	289	279	345	275	269	187	175	220	163	171
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0018	0.00349
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	<0.01 U
Magnesium, Dissolved (mg/L)	none	364	297	303	247	300	342	301	290	376	301	283	202	188	225	175	170
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.085	0.1 B
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.009 B	**<0.2** U
Potassium, Dissolved (mg/L)	none	18.9	19.4	21.8	15.6	19	20	18	18.6	22	16	20.5	13	12	16	12	13
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	1,910	1,570	1,510	1,770	1,670	1,740	1,770	1,720	1,570	1,710	1,640	1,710	1,660	1,650	1,760	1,730
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 2: Summary of Monitoring Results for MW-2

Date	Interim Narrative Standard	4/28/1999	7/21/1999	9/16/1999	11/10/1999	1/19/2000	3/13/2000	5/16/2000	7/10/2000	9/27/2010	3/31/2011	6/28/2011	8/31/2011	11/17/2011	3/27/2012	6/27/2012	9/13/2012	11/13/2012	3/19/2013	5/28/2013	8/26/2013	11/14/2013
Metals																						
Arsenic, Dissolved (mg/L)	0.01	NA	0.003 B	0.004 B	**0.0567**	**0.05** B	**0.045**	**0.062**	**0.042**	**0.036**	**0.021**	**0.03**	**0.036**	< 0.01 U	< 0.01 U	< 0.01 U	< 0.005 U	0.001 B	0.002 B	0.001 B	0.002 B	0.001 B
Barium, Dissolved (mg/L)	2	0.4	0.42	0.41	0.41	0.4	0.42	0.41	0.398	**2.09**	1.33	1.09	0.96	1.09	1.42	1.55	1.72	1.26	1.3	1.07	1.23	1.22
Boron, Dissolved (mg/L)	0.75	0.73	0.74	0.72	0.74	0.69	0.73	0.74	0.67	0.7	0.64	0.69	**0.78**	0.64	0.73	0.72	0.70	**0.79**	0.71	**0.76**	0.70	0.74
Chromium, Dissolved (mg/L)	0.1	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Copper, Dissolved (mg/L)	0.2	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U
Iron, Dissolved (mg/L)	0.3	< 0.3 U	< 0.3 U	0.27 B	0.11 B	0.16 B	0.2 B	**0.5**	0.07	< 0.3 U	0.1 B	0.15	< 0.3 U	0.3 B	**0.91**	**0.8**	**0.7**	0.16	**1.1**	0.2 B	**0.9**	**1.3**
Lead, Dissolved (mg/L)	0.05	< 0.005 U	< 0.005 U	0.001 B	< 0.005 U	< 0.005 U	< 0.005 U	0.005 B	0.002 B	< 0.003 U	< 0.003 U	0.0011 B	0.0006 B	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Lithium, Dissolved (mg/L)	2.5	1	1	1	1	1	1.1	1	0.91	1.3	1.2	1.12	1.1	1.1	1.16	1.2	1.2	1.36	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.49**	**0.44**	**0.4**	**0.33**	**0.33**	**0.33**	**0.33**	**0.329**	**0.08** B	**0.12**	**0.139**	**0.1**	**0.12**	**0.102**	**0.06** B	**0.06** B	**0.114**	**0.121**	**0.09**	**0.11**	**0.127**
Selenium, Dissolved (mg/L)	0.02	< 0.005 U	0.002 B	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	0.0006 B	0.0015	0.0006 B	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	0.0008 B	0.0007 B	0.0011	0.0032	< 0.001 U	0.0006 B
Thallium, Dissolved (mg/L)	0.002	< 0.01 U	< 0.01 U	< 5 U	< 0.0003 U	< 0.005 U	< 0.001 U	< 0.003 U	< 0.003 U	< 0.003 U	0.0007 B	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.00465	0.005	0.0041	0.0037	0.0042	0.0048	0.0033	0.0025 B	< 0.003 U	0.0011 B	0.0009 B	0.0012 B	0.0012 B	0.0012 B	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U
Other																						
Chloride (mg/L)	250	**2,890**	**2,260**	**2,670**	**2,700**	**2,240**	**2,880**	**3,100**	**2730**	**3,050**	**3,100**	**3,090**	**3,240**	**3,017**	**3,052**	**3,079**	**3,188**	**2,968**	**3,227**	**3,220**	**2,960**	**3,080**
Fluoride (mg/L)	2	1.7	1.8	1.7	1.5	1.8	1.7	**2.1**	1.8	1.7	1.5	1.5	1.4	1.6	1.5	1.6	1.5	1.7	1.7	1.6	1.6	1.5
Nitrate as N (mg/L)	10	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	0.03	NA	< 0.1 U	< 0.1 U	0.14	0.07 B	0.06 B	0.03 B	< 0.1 U	0.04 B	0.04 B	0.03 B	0.04 B	NA	NA	NA	NA
Nitrite as N (mg/L)	1	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	NA	NA	NA
Nitrate+Nitrite as N (mg/L)	10	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	0.03 B	NA	< 0.1 U	< 0.1 U	0.14	0.07 B	0.06 B	0.03 B	< 0.1 U	0.04 B	0.04 B	0.03 B	0.04 B	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8.2	8.2	8.1	8	8.5	7.9	8	8.1	**8.6** H	8.2 H	8.4 H	8.3 H	8.2 H	8.3 H	8.3 H	**8.6** H	8.3 H	8.3 H	8.3 H	8.2 H	8.1 H
Total Dissolved Solids, filterable residue (mg/L)	7084*	5,680.0	5,640.0	5,680.0	5,700.0	5,600.0	5,740.0	5,600.0	5,700.0	6,270	6,390	6,350	6,320	6,140	6,340	6,120	6,270	6,180	6,300	6,400	6,210 H	6,150 H
Sulfate (mg/L)	250	140	160	190	210	240	220	220	220	< 300 U	60 B	90 B	< 100 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U
Gross Alpha (pCi/L)	15	NA	**44**	0	**140**	0.9	0	1	8.4	15 (±26)	9.8 (±25)	**18 (±24)**	0 (±26)	**38 (±38)**	-1.1 (±21)	5.1 (±12)	-6.2 (±13)	-12 (±21)	NA	NA	NA	NA
Gross Beta (pCi/L)	**	NA	81	52	80	52	19	26	0	4.5 (±30)	42 (±31)	12 (±29)	0 (±27)	73 (±44)	8.5 (±29)	82 (±30)	21 (±26)	11 (±28)	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																						
Field pH (s.u)	6.5 - 8.5	NA	NA	NA	NA	NA	NA	NA	NA	8.71	7.84	7.98	7.54	7.91	8.2	7.61	9.58	8.11	7.6	7.74	7.61	7.61
Field Conductivity (µS/cm)	none	NA	NA	NA	NA	NA	NA	NA	NA	1,169	1,088	10,160	10,350	10,500	10,630	11	10,640	10,520	6,840	1,130	10,840	11,220
Temperature (Degrees Celsius)	none	NA	NA	NA	NA	NA	NA	NA	NA	15.47	16	21.4	22.4	12.5	14.5	14.6	19.4	13.9	12.2	20.8	18.7	12.58
Supplementary Analytes (Not Historically analyzed)																						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	993	965	978	953	914	995	968	964	978	955	963	979	1020
Carbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	108	< 20 U	37	22	57	< 20 U	21	< 20 U	23	29	22	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	14	14	14.4	16	15	15.5	14	16	16.3	15.1	18	17	16.9
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	8	8	7.8	7	7	7.4	8	8	8	7.5	8	7	7.4
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	7 B	8 B	7.4	4 B	6 B	6.6	7 B	7 B	10.8 B	7.0	7	6 B	6.1
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	2,480	2,430	2,470	2,410	2,260	2,410	2,420	2,420	2,310	2,550	2,500	2,540	2,490
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 2: Summary of Monitoring Results for MW-2

Date	Interim Narrative Standard	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals																		
Arsenic, Dissolved (mg/L)	0.01	0.004 B	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.004 B	0.0063
Barium, Dissolved (mg/L)	2.0	1.74	**2.28**	**2.57**	1.71	**2.03**	**2.65**	**2.04**	1.90	2.0	1.93	**2.23**	1.88	**2.61**	**2.77**	**3.32**	**3.22**	**3.19**
Boron, Dissolved (mg/L)	0.75	0.7	0.75	0.75	0.74	0.73	0.72	0.75	0.68	**0.79**	0.68	0.73	0.71	**0.77**	0.72	**0.78**	0.75	**0.8**
Chromium, Dissolved (mg/L)	0.1	< 0.01 U	< 0.01 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	< 0.05 U	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.005 B	<0.002 U
Iron, Dissolved (mg/L)	0.3	**1.51**	**2.5**	**1.16**	**0.82**	**0.38**	**0.6**	**0.7**	**0.4**	**0.4** B	0.2 B	**1.2**	0.28	**0.5**	0.3	0.3	**0.4**	**0.4**
Lead, Dissolved (mg/L)	0.05	< 0.003 U	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.16	1.31
Manganese, Dissolved (mg/L)	0.05	**0.099**	**0.097**	**0.105**	**0.103**	**0.075**	0.05 B	**0.07** B	**0.08** B	**0.08** B	0.05 B	**0.10**	**0.06**	0.05 B	< 0.1 U	**0.06** B	0.04 B	**0.07** B
Selenium, Dissolved (mg/L)	0.02	< 0.001 U	0.0007 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	0.0004
Thallium, Dissolved (mg/L)	0.002	< 0.003 U	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0028 B	0.0028
Zinc, Dissolved (mg/L)	2.0	< 0.05 U	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.3 U	<0.3 U
Other																		
Chloride (mg/L)	250	**3,180**	**3,240**	**2,930**	**2,980**	**2,990**	**3,150**	**3,100**	**3,040**	**3,240**	**3,120**	**3,110**	**3,010**	**3,170**	**3,070**	**3,030**	**3,530**	**3,340**
Fluoride (mg/L)	2	1.5	1.48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.3	1.6
Nitrate as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.08 B	<0.1 U
Nitrite as N (mg/L)	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	<0.05 U
Nitrate+Nitrite as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.08 B	<0.1 U
Lab pH (s.u)	6.5 - 8.5	8.0 H	8.0 H	8.0 H	8.3 H	8.0 H	8.0 H	8.3 H	8.2 H	8.3	8.1 H	8.4 H	8.4 H	8.2 H	8.0 H	8.0 H	8.2 H	8 H
Total Dissolved Solids, filterable residue (mg/L)	7084*	5,720	6,040 H	5,730	6,180	6,230	6,000 ^	5,520 ^	6,020	6,230	6,080	6,010	6,300	6,160	6,400	6,270 H	6,280	6,310
Sulfate (mg/L)	250	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 125 U	< 250 U	< 125 U	< 250 U	< 200 U	22 B	<100 U	<100 U
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**20 (±18)**	0.14 (±18)
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25 (±21)	-3.9 (±30)
Field Parameters (Not Available pre-2010))																		
Field pH (s.u)	6.5 - 8.5	7.6	7.32	6.95	7.6	7.56	7.38	7.53	7.99	8.28	7.51	7.63	7.53	8.02	8.06	7.93	7.53	8.15
Field Conductivity (µS/cm)	none	10,440	11,040	11,310	11,100	11,440	9,630	11,050	6,750	8,770	10,020	10,890	10,510	10,360	10,570	11,060	11,000	11,080
Temperature (Degrees Celsius)	none	12.9	16.7	15.7	7.5	11.7	17.3	17.6	14.9	16.8	15.6	17.1	14.3	18.5	12.2	18.1	13.9	18.6
Supplementary Analytes (Not Historically analyzed)																		
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.8 U	<1 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	0.0023
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	1,060	1,100	1,080	1,100	NA	1,070	1,040	1,050	1,040	1,100	1,000	1,010	1,070	1,030	1,080	NA	1,090 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	40.9	40.7	< 20 U	< 20 U	< 20 U	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	0.00011 B
Calcium, Dissolved (mg/L)	none	17.6	18.2	17.9	17.4	17.5	17.3	17.3	17.2	18	16.9	17.5	16.6	16.7	16.6	16.8	18.6	17.3
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	0.00009 B
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	0.004 B
Magnesium, Dissolved (mg/L)	none	7.3	6.9	6.6	7.4	7.4	7.0	8.0	7.0	8.0 B	7.0	8.0	6.6	7.0	7.0	7.0	7.0	6
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	0.0013 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02 U	<0.001 U
Potassium, Dissolved (mg/L)	none	6.2	6.5	6.1	6	6.4	7.0	7.0	6.0	8.0	6.0	6.0	6.7	6.0	6.0	6.0	9.0	6
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	2,440	2,440	2,330	2,260	2,390	2,270	2,370	2,260	2,560	2,350	2,230	2,430	2,430	2,270	2,360	2,460	2,420
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 3: Summary of Monitoring Results for MW-3

Date	Interim Narrative Standard	4/28/1999	7/21/1999	9/16/1999	11/10/1999	1/19/2000	3/13/2000	5/16/2000	7/10/2000	9/27/2010	3/31/2011	6/30/2011	8/31/2011	11/17/2011	3/27/2012	6/27/2012	9/13/2012	11/13/2012	3/19/2013	5/28/2013	8/26/2013	11/14/2013
Metals																						
Arsenic, Dissolved (mg/L)	0.01	NA	0.005	0.005	**0.0362**	**0.03** B	**0.025**	**0.036**	**0.025**	**0.019**	0.01	**0.011**	**0.02**	< 0.004 U	< 0.01 U	0.0011 B	< 0.005 U	0.0005 B	0.0008 B	< 0.005 U	0.001 B	< 0.002 U
Barium, Dissolved (mg/L)	2	0.177	0.172	0.218	0.213	0.249	0.261	0.287	0.307	**2.4**	**2.95**	**2.23**	**2.73**	**2.25**	**2.51**	**2.08**	**2.52**	**2.23**	**2.5**	**2.20**	**2.41**	**2.25**
Boron, Dissolved (mg/L)	0.75	0.63	0.53	0.62	0.58	0.62	0.62	0.6	0.6	**0.77**	0.75	0.74	**0.8**	**0.78**	**0.77**	**0.76**	**0.76**	**0.85**	**0.79**	**0.84**	0.75	**0.76**
Chromium, Dissolved (mg/L)	0.1	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.05 U	0.003 B	0.001 B	< 0.01 U	0.004 B	< 0.004 U	< 0.01 U	< 0.002 U	< 0.01 U	< 0.01 U	< 0.004 U	< 0.01 U	< 0.01 U	< 0.004 U
Copper, Dissolved (mg/L)	0.2	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.05 U	< 0.1 U	< 0.1 U	< 0.3 U	< 0.1 U	< 0.1 U	< 0.05 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U
Iron, Dissolved (mg/L)	0.3	0.02 B	0.03 B	0.12	0.03 B	0.03 B	0.05 B	0.17	0.02 B	0.04 B	0.27	< 0.3 U	< 0.1 U	0.1	0.22	**0.32**	< 0.3 U	0.1	0.11	< 0.3 U	< 0.3 U	0.14
Lead, Dissolved (mg/L)	0.05	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	0.0031	< 0.003 U	< 0.001 U	0.0007 B	0.0002 *B	0.0004 B	< 0.001 U	< 0.003 U	0.0007	< 0.003 U	0.0003 B	< 0.001 U	< 0.003 U	< 0.003 U	< 0.001 U
Lithium, Dissolved (mg/L)	2.5	0.71	0.65	0.6	0.7	0.75	0.74	0.7	0.67	0.8	0.74	0.8	0.71	0.64	0.72	0.7	0.7	0.83	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.19**	0.05	**0.06**	0.05 B	0.05	0.05	**0.07**	**0.06**	0.04 B	0.05	0.03 B	0.04 B	0.03 B	0.021 B	0.034	< 0.1 U	0.047	0.026	< 0.1	< 0.1 U	0.031
Selenium, Dissolved (mg/L)	0.02	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	0.0006	0.0012	< 0.001 U	0.0005	< 0.005 U	0.0065	0.0007	< 0.001 U	0.0005 B	0.0006	0.0043	< 0.001 U	0.0003 B
Thallium, Dissolved (mg/L)	0.002	< 0.01 U	< 0.01 U	< 2 U	< 0.0003 U	< 0.005 U	< 0.0005 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.003 U	< 0.001 U	< 0.001 U	< 0.003 U	< 0.0005 U	< 0.003 U	< 0.003 U	< 0.001 U	< 0.003 U	< 0.003 U	< 0.001 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.00871	0.007	0.0065	0.0058	0.0058	0.0015	0.0008 B	0.001 B	0.0006 B	0.0012	0.0006 B	0.0011	0.0005 B	0.0005 B	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.05 U	< 0.1 U	< 0.1 U	< 0.3 U	< 0.1 U	< 0.1 U	< 0.05 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U	< 0.3 U	< 0.3 U	< 0.05 U
Other																						
Chloride (mg/L)	250	**1,480**	**1,350**	**1,310**	**1,450**	**1,360**	**1,480**	**1,400**	**1,460**	**1,550**	**1,530**	**1,550**	**1,620**	**1,530**	**1,565**	**1,505**	**1,681**	**1,721**	**1,665**	**1,620**	**1,570**	**1,610**
Fluoride (mg/L)	2	**2.4**	**2.8**	**3** B	**2.2**	**3** B	**2.6**	**2.8**	**2.6**	**2.4**	**2.3**	**2.2**	**2.4**	**2.4**	**2.3**	**2.5**	**2.3**	**2.4**	**2.3**	**2.4**	**2.4**	**2.3**
Nitrate as N (mg/L)	10	< 0.1 U	< 0.1 U	0.02	< 0.1 U	< 0.1 U	NA	< 0.1 U	0.17	< 0.1 U	0.37	0.79	0.03 B	< 0.1 U	< 0.1 U	0.02 B	0.17	0.09 B	NA	NA	NA	NA
Nitrite as N (mg/L)	1	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	NA	NA	NA
Nitrate+Nitrite as N (mg/L)	10	< 0.1 U	< 0.1 U	0.02 B	< 1 U	< 0.1 U	NA	< 0.1 U	0.17	< 0.1 U	0.37	0.79	0.03 B	< 0.1 U	< 0.1 U	0.02 B	0.17	0.09 B	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8.5	**8.9**	**8.6**	8.4	**8.6**	8.2	8.2	8.4	**8.6** H	8.4 H	**8.6** H	8.5 H	8.2 H	8.4 H	8.4 H	8.5 H	8.5 H	8.5 H	8.4 H	8.5 H	8.4 H
Total Dissolved Solids, filterable residue (mg/L)	4620*	3,780.0	3,740.0	3,690.0	3,720.0	3,660.0	3,680.0	3,620.0	3,680.0	3,930	3,940	4,000	3,940	3,860	4,000	3,790	4,000	3,950	3,990	4,000	4,000	3,880 H
Sulfate (mg/L)	250	140	110	100	100	90	90	90	90	< 100 U	< 100 U	< 300 U	< 50 U	< 125 U	< 125 U	30.1 B	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U
Gross Alpha (pCi/L)	15	NA	**54**	0	**77**	15	8.4	6.2	9.6	5.7 (±13)	**33 (±20)**	5.7 (±17)	15 (±18)	**20 (±18)**	8 (±13)	**66 (±27)**	0.85 (±14)	-8.2 (±8.6)	NA	NA	NA	NA
Gross Beta (pCi/L)	**	NA	25	0	64	19	6.7	32	4.7	3.2 (±17)	25 (±21)	7.2 (±18)	5 (±19)	5.4 (±18)	13 (±18)	110 (±24)	15 (±17)	-4.9 (±18)	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																						
Field pH (s.u)	6.5 - 8.5	NA	NA	NA	NA	NA	NA	NA	NA	8.01	8.06	NA	8.46	7.98	8.36	7.95	8.14	8.34	8.24	8.31	8.25	8.15
Field Conductivity (µS/cm)	none	NA	NA	NA	NA	NA	NA	NA	NA	6186	675	NA	6,660	5,240	6,710	7	6,270	6,980	6,840	7,010	6,920	7,093
Temperature (Degrees Celsius)	none	NA	NA	NA	NA	NA	NA	NA	NA	17.55	16	NA	30.4	13.8	17.7	22.2	20.4	13.6	14.3	19.1	23.9	14.35
Supplementary Analytes (Not Historically analyzed)																						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	1,110	1,130	1,100	1,090	1,100	1,160	1,130	1,130	1,130	1,140	1,130	1,130	1,170
Carbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	98	31	96	75	78	50	52	51	78	71	60	75	40
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	6.6	11.9	7	7.5	6.8	6.3	9.4	7	7.5	6.1	7	8	6.8
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	3	3.4	3 B	2.7	2.8	2.9	2.9	4 B	3.6	3.0	3	3 B	2.8
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	4.4	5.5	5.0 B	3.2	3.6	4.2	4.1	4.0 B	6.9	4.4	4.0	4.0 B	3.9
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	1,600	1,450	1,560	1,490	1,370	1,550	1,530	1,580	1,550	1,620	1,590	1,600	1,600
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 3: Summary of Monitoring Results for MW-3

Date	Interim Narrative Standard	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals																		
Arsenic, Dissolved (mg/L)	0.01	0.0009 B	0.0005 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.002 U	0.0009 B
Barium, Dissolved (mg/L)	2.0	**2.31**	**2.02**	**2.23**	**2.62**	**2.25**	**2.83**	**2.47**	**2.81**	**2.58**	**3.16**	**3.16**	**2.57**	**2.45**	**2.93**	**2.18**	**2.4**	**2.93**
Boron, Dissolved (mg/L)	0.75	0.74	**0.76**	**0.76**	**0.78**	**0.81**	0.74	**0.79**	0.74	**0.76**	0.74	**0.79**	**0.77**	0.75	0.74	**0.81**	**0.77**	**0.8**
Chromium, Dissolved (mg/L)	0.1	< 0.004 U	< 0.004 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	< 0.05 U	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U
Iron, Dissolved (mg/L)	0.3	0.19	0.30	0.29	0.29	**0.79**	0.19	0.26	0.21	0.2 B	0.2 B	0.17	0.29	0.11	0.14	**0.41**	0.18	<0.2 U
Lead, Dissolved (mg/L)	0.05	< 0.001 U	0.0002 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.69	0.86
Manganese, Dissolved (mg/L)	0.05	0.043	0.05	0.05	**0.061**	**0.054**	0.02 B	0.03 B	0.03 B	< 0.1 U	< 0.1 U	0.02 B	0.033	0.01 B	0.01 B	**0.06**	<0.05 U	0.02 B
Selenium, Dissolved (mg/L)	0.02	< 0.0005 U	0.0002 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005 U	0.0002 B
Thallium, Dissolved (mg/L)	0.002	< 0.001 U	< 0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0003 B	0.0008
Zinc, Dissolved (mg/L)	2.0	0.02 B	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U
Other																		
Chloride (mg/L)	250	**1,570**	**1,580**	**1,520**	**1,540**	**1,530**	**1,620**	**1,570**	**1,560**	**1,640**	**1,690**	**1,550**	**1,550**	**1,550**	**1,580**	**1,560**	**1,750**	**1,660**
Fluoride (mg/L)	2	**2.4**	**2.4**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.38**	**2.4**
Nitrate as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U
Nitrite as N (mg/L)	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	<0.05 U
Nitrate+Nitrite as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	<0.1 U
Lab pH (s.u)	6.5 - 8.5	8.4 H	8.3 H	8.3 H	8.4 H	8.2 H	8.3 H	8.4 H	8.3 H	8.4	8.3 H	8.5 H	8.4 H	8.5 H	8.3 H	8.3 H	8.4 H	8.4 H
Total Dissolved Solids, filterable residue (mg/L)	4620*	3,890	3,910 H	3,920	3,890	3,920	3,930 ^	3,910 ^	3,970	3,970	4,040	3,790	4,000	3,820	3,940	4,020 H	3,850	3,960
Sulfate (mg/L)	250	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U	< 125 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 40 U	< 40 U	<40 U	<40 U
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.15 (±7.4)	3.5
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.7 (±15)	1.6
Field Parameters (Not Available pre-2010))																		
Field pH (s.u)	6.5 - 8.5	8.12	7.78	7.94	7.9	7.78	7.78	7.83	8.02	8.4	8.05	7.52	7.77	NA	8.61	7.98	7.83	8.25
Field Conductivity (µS/cm)	none	6,610	7,140	7,220	6,800	7,140	6,120	7,010	5,820	4,850	6,290	6,710	7,030	NA	6,730	7,160	6,790	7,030
Temperature (Degrees Celsius)	none	14.8	17.1	17.0	9.0	14	19.7	18.5	17.3	11.4	18.6	20.7	20.7	NA	10.8	20.1	16	21.8
Supplementary Analytes (Not Historically analyzed)																		
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.3 U	<0.5 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.004 U	0.0007 B
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	1,220	982	1,270	1,260	NA	1,200	1,170	1,230	1,210	1,300	1,170	1200	1160	1160	1250	NA	1,260 H
Carbonate as CaCO3 (mg/L)	none	37	57	< 20 U	41.6	NA	56.5	98.5	30.6	37.4	21.4	71.5	44.9	54.5	26.7	19.6 B	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.0005 U	<0.0003 U
Calcium, Dissolved (mg/L)	none	6.7	7.2	6.7	7.7	8.7	7	7.6	6.9	6.7	7.4	7.8	7.3	6.8	6.5	6.9	7.4	6.7
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.0003 U
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	<0.01 U
Magnesium, Dissolved (mg/L)	none	3	3.1	3.4	3.2	3.3	2.8	3.1	2.9	2.8	3.0 B	3.2	2.6	2.5	2.6	3.1	2.5	2.5
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.2 U	<0.2 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.08 U	<0.08 U
Potassium, Dissolved (mg/L)	none	4.0	3.8	4.0	4.1	4.0	5.3	4.0	4.0	4.1	4.0	4	4.4	3.5	4.0	3.4	3.6	3.9
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	1,570	1,610	1,500	1,490	1,430	1,480	1,450	1,480	1,540	1,510	1,470	1600	1430	1410	1490	1500	1,560
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	<0.05 U

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 4: Summary of Monitoring Results for MW-4

Date	Interim Narrative Standard	5/26/1999	7/21/1999	9/23/1999	11/10/1999	1/19/2000	3/13/2000	5/16/2000	7/10/2000	9/27/2010	3/31/2011	6/28/2011	8/31/2011	11/172011	3/27/2012	6/27/2012	9/13/2012	11/13/2012	3/19/2013	5/28/2013	8/26/2013	11/15/2013
Metals																						
Arsenic, Dissolved (mg/L)	0.01	NA	< 0.005 U	NA	0.0894	0.08	0.075	0.103	0.08	**0.068**	**0.04**	**0.055**	**0.076**	<0.02 U	< 0.02 U	0.0009 B	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Barium, Dissolved (mg/L)	2	0.14	0.29	0.461	0.55	0.69	0.81	0.92	0.972	**8.69**	**8.84**	**7.83** *	**8.93**	**7.94**	**8.73**	**8.41**	**8.91**	**8.67**	**9.22**	**8.74**	**9.13**	**8.8**
Boron, Dissolved (mg/L)	0.75	0.49	0.54	0.53	0.59	0.56	0.6	0.6	0.55	0.7	0.5 B	0.62 *	0.7	0.7	0.7	**0.8** B	0.5	0.72	0.7	0.7	0.6	0.7
Chromium, Dissolved (mg/L)	0.1	< 0.3 U	< 0.3 U	< 0.25 U	< 0.3 U	< 0.3 U	NA	< 0.3 U	< 0.05 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	0.0014 B	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Copper, Dissolved (mg/L)	0.2	< 0.3 U	< 0.3 U	0.11 B	< 0.3 U	< 0.3 U	NA	< 0.3 U	< 0.05 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 1 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Iron, Dissolved (mg/L)	0.3	< 0.3 U	< 0.3 U	1.13	0.07 B	0.05 B	0.17 B	0.44	0.04 B	0.3 B	0.3 B	0.28 *	**0.8**	< 0.5 U	**0.6**	**1.0**	< 0.5 U	**0.32** U	**0.8**	**0.5** U	**0.4** B	0.3 B
Lead, Dissolved (mg/L)	0.05	< 0.01 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	NA	0.009	< 0.01 U	< 0.005 U	< 0.005 U	0.002 B	0.001 B	< 0.005 U	< 0.005 U	< 0.01 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Lithium, Dissolved (mg/L)	2.5	0.9	1.2	1.3	1.4	1.5	1.6	1.5	1.51	2	1.9	2.25 *	1.8	1.6	1.8	1.9 B	1.9	2.38	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	0.21	0.89	0.977	0.94	0.87	0.81	0.75	0.703	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.5 U	< 0.3 U	0.018 B	< 0.3 U	< 0.3 U	< 0.3 U	< 0.3 U
Selenium, Dissolved (mg/L)	0.02	< 0.5 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.003 U	0.012	< 0.003 U	< 0.003 U	<0.003 U	0.007	0.0029	< 0.003 U	0.002 B	0.003 B	0.006	< 0.003 U	< 0.003 U
Thallium, Dissolved (mg/L)	0.002	< 5 U	< 0.01 U	< 5 U	< 0.0003 U	< 0.005 U	< 0.001 U	< 0.003 U	< 0.005 U	< 0.005 U	0.001 B	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.01 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.0235	0.019	0.0168	0.0138	0.015	< 0.005 U	0.001 B	< 0.005 U	0.002 B	< 0.005 U	< 0.005 U	< 0.01 U	< 0.005 U	< 0.005 U	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	1.07	1.03	1.71	< 0.3 U	< 3 U	< 0.3 U	< 0.3 U	0.01 B	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 1.0 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U	< 0.5 U
Other																						
Chloride (mg/L)	250	2,770	2,940	4,260	4,800	4,970	5,200	6,900	5,300	**6,300**	**6,200**	**6,200**	**6,500**	**6,282**	**6,063**	**6,105**	**6,566**	**6,077**	**6,744**	**6,490**	**6,470**	**6,750**
Fluoride (mg/L)	2	1	1.1	0.9	0.9	1.1	1.1	1.4	1.1	1.1	1.1	1	1.1	1.1	1.0	1.1	1.2	1.1	1.1	1.1	1.1	1.1
Nitrate as N (mg/L)	10	< 0.1 U	0.07	< 0.1 U	< 0.1 U	0.13	NA	< 0.1 U	0.73	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	< 0.1 U	1.83	0.04 B	0.04 B	0.04 B	NA	NA	NA	NA
Nitrite as N (mg/L)	1	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	< 0.05 U	< 0.05 U	< 0.05 U	0.01 B	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	NA	NA	NA
Nitrate+Nitrite as N (mg/L)	10	< 0.1 U	0.07 B	< 0.1 U	< 0.1 U	0.13	NA	< 0.1 U	0.73	< 0.1 U	0.02 B	< 0.1 U	< 0.1 U	< 0.1 U	1.83	0.04 B	0.04 B	0.04 B	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8.1	7.7	7.8	7.8	8.1	7.6	8	8	8.3 H	8.2 H	8.2	8.2 H	8.3 U	8.1 H	8.1 H	8.1 H	8.2 H	8.1 H	8.2 H	8.1 H	8.1 H
Total Dissolved Solids, filterable residue (mg/L)	10,212*	5,870.0	7,610.0	8,170.0	8,660.0	8,670.0	9,110.0	8,980.0	9,350.0	**11,000**	**11,100**	**11,100**	**10,900**	**11,100**	**11,200**	**10,800**	**11,100**	**10,800**	**11,100**	**11,000**	**10,900**	**10,300** H
Sulfate (mg/L)	250	970	600	460	390	3150	290	270	250	< 500 U	< 500 U	< 500 U	< 300 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U
Gross Alpha (pCi/L)	15	26	12	53	-4.3	57	4.7	0	65	-10 (±39)	73 (±47)	16 (±37)	40 (±52)	19 (±52)	-33 (±18)	260 (±76)	-0.11 (±17)	-15 (±30)	NA	NA	NA	NA
Gross Beta (pCi/L)	**	23	37	27	-24	18	20	4.7	8.6	-7.5 (±53)	80 (±49)	22 (±45)	51 (±57)	66 (±63)	38 (±51)	270 (±61)	53 (±53)	9.9 (±42)	NA	NA	NA	NA
Field Paramters (Not Avalible pre-2010))																						
Field pH (s.u)	6.5 - 8.5	NA	NA	NA	NA	NA	NA	NA	NA	7.95	7.85	7.68	7.97	7.92	8.23	7.48	7.84	8.05	7.53	7.36	7.73	6.57
Field Conductivity (µS/cm)	none	NA	NA	NA	NA	NA	NA	NA	NA	1,825	1,959	17,420	18,450	18,230	18,500	9	17,080	18,790	11,720	18,800	18,750	19,055
Temperature (Degrees Celsius)	none	NA	NA	NA	NA	NA	NA	NA	NA	17.7	15	19.9	23.4	14	14.6	18.6	22.0	12.3	12.1	16.7	18.8	11.46
Supplementary Analytes (Not Historically analyzed)																						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	585	565	569	562	573	597	580	576	571	573	567	590	576
Carbonate as CaCO3 (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	16 B	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	37	38	79	37	35	36	42	38	39.2	37	37	37	36
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	18	18	38	16	16	17	22	19	18.9	18	18	17	16
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	10 B	12 B	20 B	7.0 B	9.0 B	7.0 B	15 B	10 B	22	10 B	10 B	9.0 B	9 B
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	NA	NA	NA	NA	NA	NA	NA	NA	4,270	4,180	4,280	4,200	3,930	4,220	4,240	4,250	4,150	4,390	4,260	4,350	4070
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 4: Summary of Monitoring Results for MW-4

Date	Interim Narrative Standard	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals																		
Arsenic, Dissolved (mg/L)	0.01	< 0.01 U	< 0.01 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.01 U	0.0004 B
Barium, Dissolved (mg/L)	2.0	**8.58**	**9.64**	**8.01**	**8.56**	**8.77**	**8.76**	**8.81**	**8.80**	**8.66**	**8.79**	**8.91**	**8.61**	**8.95**	**8.60**	**9**	**8.9**	**8.42**
Boron, Dissolved (mg/L)	0.75	0.63	0.6	0.7	0.7	**0.8** B	0.6	0.7	0.6	0.7	0.6	0.6	0.61	0.7	0.6	**0.8**	0.6	0.7 B
Chromium, Dissolved (mg/L)	0.1	< 0.02 U	< 0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02 U	<0.002 U
Iron, Dissolved (mg/L)	0.3	**0.8**	0.2 B	**0.5**	0.3 B	< 1 U	0.3 B	0.1 B	**0.4** B	0.2 B	0.14	< 0.5 U	0.15	< 0.5 U	< 0.5 U	< 0.5 U	0.15	0.114 U
Lead, Dissolved (mg/L)	0.05	< 0.005 U	< 0.005 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.76	1.93
Manganese, Dissolved (mg/L)	0.05	< 0.1 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.5 U	< 0.3 U	< 0.1 U	< 0.3 U	< 0.3 U	< 0.03 U	< 0.3 U	< 0.03 U	< 0.3 U	< 0.3 U	< 0.3 U	0.008 B	0.0065 U
Selenium, Dissolved (mg/L)	0.02	< 0.003 U	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017	0.0014
Thallium, Dissolved (mg/L)	0.002	< 0.005 U	< 0.005 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005 U	0.0001 B
Zinc, Dissolved (mg/L)	2.0	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.5 U	<0.5 U
Other																		
Chloride (mg/L)	250	**7,080**	**6,450**	**5,600**	**6,260**	**6,650**	**6,410**	**6,630**	**6,880**	**6,530**	**6,290**	**6,350**	**5,960**	**6,390**	**6,170** H	**6,150**	**7,780**	**7,140**
Fluoride (mg/L)	2	1.1	1.13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.03	1.1
Nitrate as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	0.12
Nitrite as N (mg/L)	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.05 U	<0.05 U
Nitrate+Nitrite as N (mg/L)	10	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.1 U	0.12
Lab pH (s.u)	6.5 - 8.5	8 H	7.9 H	8.1 H	8.2 H	8 H	8.1 H	8.2 H	8.2 H	8.2	7.9 H	8.3 H	8.2 H	8.3 H	7.9 H	8.1 H	8.1	8 H
Total Dissolved Solids, filterable residue (mg/L)	10,212*	**10,800** H	**10,300** H	9,530	**10,900**	**10,600**	**10,600** ^	9,720 ^	**10,800**	**10,900**	10,100	**10,800**	**11,100**	**10,500**	**11,000**	**10,900**	**11,200**	**11,000**
Sulfate (mg/L)	250	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 500 U	< 250 U	< 250 U	< 250 U	< 250 U	< 200 UH	< 200 U	<200 U	<200 U
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.83 (±26)	-17 (±22)
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38 (±39)	-11 (±57)
Field Paramters (Not Avalible pre-2010))																		
Field pH (s.u)	6.5 - 8.5	7.27	7.25	7.52	7.56	7.54	9.09	7.49	8.26	8.2	7.74	7.31	7.65	8.05	7.81	7.89	7.63	7.96
Field Conductivity (µS/cm)	none	18,020	19,380	19,500	18,510	19,550	16,610	19,050	14,650	13,890	16,140	18,530	19,320	17,800	18,260	19,620	18,570	18,390
Temperature (Degrees Celsius)	none	12.1	14.9	14.5	11.7	12.5	17.5	16.6	13.1	11.6	16	18.3	16.1	14.7	12.4	16.8	14	15.6
Supplementary Analytes (Not Historically analyzed)																		
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<2 U	<3 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.006 B	<0.002 U
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	606	623	616	611	NA	604	599	615	606	664	613	619	612	592	602	NA	601 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	6.2 B	< 20 U	< 20 U	< 20 U	< 20 U	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	0.00007 B
Calcium, Dissolved (mg/L)	none	36.1	38	37	37	38	38	36.9	38	38	36	37	35.8	36	36	36	36	35
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.003 U	0.00015 B
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.004 B	0.009 B
Magnesium, Dissolved (mg/L)	none	16	17	18	18	21	17	18	17	17	16.4	18	16.1	16	16	17	17	15
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0002 B	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03 U	0.0002 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.03 U	<0.001 U
Potassium, Dissolved (mg/L)	none	9	9 B	9 B	10	12 B	9	9	10	11	9.1	9	9	10	9	8 B	10	8 B
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.005 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	4120	4360	4050	3950	4070	4040	4030	4050	4290	4020	4000	4160	4080	3950	4030	4130	4,030
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.02 U	<0.002 U

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 5: Summary of Monitoring Results for MW-5

Date	Interim Narrative Standard	3/19/2013	5/28/2013	8/26/2013	11/14/2013	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016
Metals																	
Arsenic, Dissolved (mg/L)	0.01	0.002 B	0.0004 B	0.005	< 0.002 U	0.0004 B	< 0.002 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Dissolved (mg/L)	2	0.015 B	0.014 B	0.015 B	0.014 B	0.015 B	0.006 B	0.008 B	0.011 B	0.012 B	0.009 B	< 0.03 U	0.015 B	0.017 B	0.013 B	0.006 B	0.013 B
Boron, Dissolved (mg/L)	0.75	0.37	0.33	0.25	0.32	0.33	0.36	0.33	0.36	0.36	0.26	0.3	0.29	0.33	0.26	0.26	0.29
Chromium, Dissolved (mg/L)	0.1	< 0.01 U	< 0.004 U	< 0.004 U	< 0.004 U	< 0.004 U	< 0.004 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Dissolved (mg/L)	0.2	< 0.05 U	< 0.1 U	< 0.1 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved (mg/L)	0.3	**17.5**	**15.6**	**85.4**	**1.39**	**9.56**	0.15	**0.7**	**8.11**	**19.6**	0.05	**0.6**	**20.3**	**7.11**	**0.58**	**11.6**	**33.5**
Lead, Dissolved (mg/L)	0.05	< 0.003 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.168**	**0.13**	**0.16**	**0.074**	**0.091**	**0.069**	**0.12**	**0.093**	**0.109**	**0.072**	< 0.3 B	**0.11**	**0.1**	**0.07**	**0.09**	**0.11**
Selenium, Dissolved (mg/L)	0.02	0.0008 B	**0.0593**	0.0013	0.0027	0.0005	**0.023**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Dissolved (mg/L)	0.002	< 0.003 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	0.01 B	< 0.1 U	< 0.1 U	< 0.05 U	< 0.05 U	< 0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other																	
Chloride (mg/L)	250	79.4 B	27.6 B	36.3 B	18.6	26.4 B	27.9 B	< 125 U	< 125 U	50.8 B	27 B	44.5 B	< 250 U	< 250 U	18.5 B	18.6 B	42.4 B
Fluoride (mg/L)	2	0.8	0.7	1.3	0.6	0.7	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	7.5 H	7.7 H	7.3 H	7.4 H	7.4 H	7.6 H	7.5 H	7.7 H	7.4 H	7.6 H	7.5 H	7.5 H	7.2	7.3 H	7.9 H	7.7 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	4,950	3,360	3,710	3,110	3,100	3,010 H	2,970	3,140	3,240	3,160 ^	3070 ^	3220	3540	3140	2850	3310
Sulfate (mg/L)	250	**3,273**	**2,050**	**2,200**	**1,690**	**1,770**	**1,870**	**1,630**	**1,690**	**1,900**	**1,860**	**1,720**	**1,940**	**2,250**	**1,920**	**1,770**	**1,940**
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																	
Field pH (s.u)	6.5 - 8.5	6.65	6.67	7	6.74	6.83	6.56	6.76	6.77	6.67	6.47	6.76	7.06	7.2	6.77	6.74	6.59
Field Conductivity (µS/cm)	none	2,631	3,735	3,774	3324	3,262	3,370	3,345	33,200	3,787	3,016	3,340	2,900	2,800	2,649	3,192	3,546
Temperature (Degrees Celsius)	none	12	14.3	15.8	11.34	12.3	13.9	13.8	10.5	11.1	15.1	14.4	13.9	10.7	14.1	16.1	12.8
Supplementary Analytes																	
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	225	320	205	343	380	410	378	377	NA	347	376	377	361	409	357	311
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	426	464	523	446	433	441	442	461	453	505	520	478	464	486	495	494
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	147	126	131	101	109	106	101	111	118	112	115	115	124	112	113	122
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	10.1	8.1	10.2	6.2	7.1	6.5	6.3	6.9	7.7	6	6	7.1	7.6	6	6.6	8.7
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	865	373	312	269	332	308	257	285	344	232	209	260	450	229	221	281
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results

Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 5: Summary of Monitoring Results for MW-5

Date	Interim Narrative Standard	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals						
Arsenic, Dissolved (mg/L)	0.01	NA	NA	NA	0.0019 B	0.0018
Barium, Dissolved (mg/L)	2	0.01 B	< 0.03 U	< 0.03 U	<0.03 U	0.02 B
Boron, Dissolved (mg/L)	0.75	0.36	0.36	0.35	0.33	0.35
Chromium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.004 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	NA	NA	NA	<0.1 U	<0.1 U
Iron, Dissolved (mg/L)	0.3	**2.15**	**10.3**	**0.97**	**32.8**	**7.67**
Lead, Dissolved (mg/L)	0.05	NA	NA	NA	<0.001 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	0.3	0.39
Manganese, Dissolved (mg/L)	0.05	**0.09**	**0.09**	**0.08**	**0.09**	**0.09** B
Selenium, Dissolved (mg/L)	0.02	NA	NA	NA	0.0017	0.0005
Thallium, Dissolved (mg/L)	0.002	NA	NA	NA	<0.001 U	0.0001 B
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	**0.0379**	0.0261
Zinc, Dissolved (mg/L)	2	NA	NA	NA	<0.1 U	<0.1 U
Other						
Chloride (mg/L)	250	45.4 B	25.8 BH	19.7 B	36.2 B	29.8 B
Fluoride (mg/L)	2	NA	NA	NA	0.72	0.6
Lab pH (s.u)	6.5 - 8.5	7.8 H	7.3 H	7.7 H	7.5	7.7 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	3,970	3,160	3,020 H	3,340	3,630
Sulfate (mg/L)	250	**2,540**	**1,820** H	**1,780**	**2,190**	**2,180**
Gross Alpha (pCi/L)	15	NA	NA	NA	8.6 (±11)	8.5 (±9.2)
Gross Beta (pCi/L)	**	NA	NA	NA	18 (±13)	8.2 (±13)
Field Parameters (Not Available pre-2010))						
Field pH (s.u)	6.5 - 8.5	7.23	7.04	6.81	6.85	7.06
Field Conductivity (µS/cm)	none	4,530,000	3,280	3,397	3,622	3,983
Temperature (Degrees Celsius)	none	15.4	12.8	16	13.6	15.2
Supplementary Analytes						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	<0.3 U	<0.5 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	<0.004 U	<0.002 U
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	<0.0005 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	348	375	401	NA	392 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	<0.0005 U	<0.0003 U
Calcium, Dissolved (mg/L)	none	429	461	425	490	402
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	0.0047	0.00595
Cyanide, Free (mg/L)	0.2	NA	NA	NA	<0.01 U	<0.01 U
Magnesium, Dissolved (mg/L)	none	128	119	109	121	113
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	<0.2 U	<0.2 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	0.05 B	0.04 B
Potassium, Dissolved (mg/L)	none	8.2	7.2	6.6	8.1	8.1
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	<0.05 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	614	322	329	317	501
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.05 U	<0.05 U

Notes:
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NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 6: Summary of Monitoring Results for MW-6

Date	Interim Narrative Standard	3/19/2013	5/28/2013	8/27/2013	11/14/2013	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016
Metals																	
Arsenic, Dissolved (mg/L)	0.01	0.002 B	< 0.01 U	< 0.01 U	< 0.01 U	0.004 B	0.007	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Dissolved (mg/L)	2	0.97	**3.22**	**3.56**	**4.12**	**5.95**	**3.32**	**3.46**	**4.37**	**7.37**	**7.47**	**8.74**	**8.12**	**8.34**	**8.26**	**8.42**	**8.25**
Boron, Dissolved (mg/L)	0.75	0.6	0.7	0.6	0.6	0.58	0.7	0.6	0.7	0.6 B	0.6	0.65	0.6	0.57	0.5	0.5	0.55
Chromium, Dissolved (mg/L)	0.1	< 0.01 U	< 0.02 U	0.018 B	< 0.02 U	< 0.02 U	< 0.01 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Dissolved (mg/L)	0.2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.3 U	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved (mg/L)	0.3	**1.0**	**1.3**	**0.6**	**0.6**	**0.6**	**2.1**	**1.9**	**1.3**	**2.5**	**4.1**	**3.9**	**5.2**	**5.3**	**5.5**	**5.4**	**5**
Lead, Dissolved (mg/L)	0.05	< 0.003 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.33**	**0.29** B	**0.2** B	**0.19**	**0.19**	**0.21** B	**0.2** B	**0.25** B	**0.3** B	**0.31**	**0.39**	**0.42**	**0.45**	**0.37**	**0.35**	**0.31**
Selenium, Dissolved (mg/L)	0.02	0.0048	0.007	0.0016	0.002 B	0.001 B	0.0033	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Dissolved (mg/L)	0.002	< 0.003 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.003 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	< 0.5 U	< 0.5 U	< 0.5 U	< 0.3 U	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other																	
Chloride (mg/L)	250	**5,090**	**5,680**	**6,080** U	**5,860**	**6,020**	**6,520**	**5,610**	**6,110**	**5,960**	**5,680**	**5,880**	**5,800**	**5,590**	**5,520**	**6,050**	**5620**
Fluoride (mg/L)	2	1.3	1.4	1.4	1.3	1.3	1.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8.1 H	8.2 H	8.2 H	8.2 H	8.2 H	7.9 H	8.0 H	8.1 H	7.7 H	7.8 H	7.8 H	7.7 H	7.78	7.4 H	7.6 H	7.7 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	9,110	10,200	9,340 H	10,100 H	10,900	8,800 H	9,350	10,400	10,600	10,300 ^	8,840 ^	10,200	9,780	10,800	10,400	10500
Sulfate (mg/L)	250	249.7	< 250 U	< 250 U	98.6 B	< 250 U	52.5 B	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																	
Field pH (s.u)	6.5 - 8.5	7.91	7.67	7.58	7.46	7.85	7.47	7.46	7.75	7.43	7.55	7.2	7.51	7.78	7.32	6.6	7.24
Field Conductivity (µS/cm)	none	9,340	16,470	17,850	18,064	17,460	18,250	18,670	17,940	18,880	16,370	18,670	13,820	14,380	16,600	17,790	17,570
Temperature (Degrees Celsius)	none	12.8	17	18.4	13.72	11.3	16.1	17.1	7.9	14.5	17.1	19.8	12.7	15.3	17.8	18.3	18.9
Supplementary Analytes																	
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	463	507	513	529	558	580	608	632	NA	656	673	702	691	736	716	715
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	58	44	33	34	32.2	40	41	45	51	49	57.9	63	68	67	69	66.1
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	21	20	18	17	16	16	17	18	22	17	18	17	18	16	19	17.3
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	14 B	12 B	12 B	11	10	11	10	10	13 B	10	10	10	11	9 B	10	10.7
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	3,600	3,920	3,860	4,000	3,960	4,060	3,770	3,710	3,840	3,930	3,850	3,840	4,100	3,770	3,780	3,960
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
^ = Second and third quarter 2015 reports presented calculated total dissolved solids results
Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 6: Summary of Monitoring Results for MW-6

Date	Interim Narrative Standard	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals						
Arsenic, Dissolved (mg/L)	0.01	NA	NA	NA	0.007 B	0.0074
Barium, Dissolved (mg/L)	2	**7.85**	**7.77**	**7.65**	**7.25**	**6.66**
Boron, Dissolved (mg/L)	0.75	0.7	**0.8**	0.6	0.6	0.6 B
Chromium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.02 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	NA	NA	NA	<0.02 U	<0.002 U
Iron, Dissolved (mg/L)	0.3	**1.7**	**3.4**	**3.0**	**2.9**	**2.2**
Lead, Dissolved (mg/L)	0.05	NA	NA	NA	<0.005 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	1.74	1.87
Manganese, Dissolved (mg/L)	0.05	**0.14** B	**0.07** B	**0.06** B	**0.09**	**0.0733** U
Selenium, Dissolved (mg/L)	0.02	NA	NA	NA	<0.003 U	0.0009
Thallium, Dissolved (mg/L)	0.002	NA	NA	NA	<0.005 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.004	0.0023
Zinc, Dissolved (mg/L)	2	NA	NA	NA	<0.5 U	<0.5 U
Other						
Chloride (mg/L)	250	**6,130**	**5,900**	**5,880**	**6,490**	**6,610** H
Fluoride (mg/L)	2	NA	NA	NA	1.09	1.2
Lab pH (s.u)	6.5 - 8.5	8.1 H	7.7 H	7.8 H	8 H	7.9 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	10,500	10,400	10,500	10,700	10,600
Sulfate (mg/L)	250	< 250 U	< 200 U	51 B	<200 U	<200 U
Gross Alpha (pCi/L)	15	NA	NA	NA	**47 (±36)**	**-33 (±24)**
Gross Beta (pCi/L)	**	NA	NA	NA	43 (±35)	56 (±47)
Field Parameters (Not Available pre-2010))						
Field pH (s.u)	6.5 - 8.5	7.79	7.86	7.76	7.34	7.76
Field Conductivity (µS/cm)	none	17,850	17,470	18,950	17,560	18,000
Temperature (Degrees Celsius)	none	16.6	11.3	17.7	11.1	17.9
Supplementary Analytes						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	<2 U	<3 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	<0.02 U	0.0014 B
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	<0.003 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	658	639	652	NA	685 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	<0.003 U	0.00006 B
Calcium, Dissolved (mg/L)	none	51	44	41	47	40
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	<0.003 U	0.00024 B
Cyanide, Free (mg/L)	0.2	NA	NA	NA	0.009 B	0.012
Magnesium, Dissolved (mg/L)	none	16	16	16	16	14
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	0.025 B	0.0208 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	0.007 B	0.0063 U
Potassium, Dissolved (mg/L)	none	9 B	9 B	8 B	10	9 B
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	<0.005 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	3,920	4,060	3,870	3,960	3,910
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.02 U	0.0005 U

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
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Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 7: Summary of Monitoring Results for MW-7

Date	Interim Narrative Standard	3/19/2013	5/29/2013	8/27/2013	11/14/2013	2/18/2014	5/21/2014	8/27/2014	11/11/2014	2/18/2015	5/27/2015	8/27/2015	11/9/2015	2/15/2016	5/31/2016	8/16/2016	11/9/2016
Metals																	
Arsenic, Dissolved (mg/L)	0.01	0.010	0.010 B	**0.011**	0.008 B	**0.015**	0.009 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium, Dissolved (mg/L)	2	0.16 B	0.14 B	0.33	**2.08**	1.78	**3.52**	**2.35**	**3.7**	**5.43**	**4.74**	**2.66**	**2.65**	**4.66**	**3.79**	1.24	**4.19**
Boron, Dissolved (mg/L)	0.75	0.6	**0.9**	**0.79**	0.75	0.75	0.7	**0.8**	**0.8**	0.7 B	0.6	0.73	0.7	**0.8**	0.6	0.5	0.63
Chromium, Dissolved (mg/L)	0.1	< 0.01 U	< 0.02 U	0.009 B	< 0.02 U	< 0.02 U	< 0.02 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Dissolved (mg/L)	0.2	< 0.5 U	< 0.5 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron, Dissolved (mg/L)	0.3	**1.6**	**3.4**	**1.5**	**2.9**	**2.9**	**2.8**	**4.4**	**3.8**	**4.6**	**5.8**	**4.7**	**4.6**	**6.3**	**5.9**	**2.3**	**3.26**
Lead, Dissolved (mg/L)	0.05	< 0.003 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese, Dissolved (mg/L)	0.05	**0.27**	**0.66**	**0.51**	**0.61**	**0.53**	**0.41**	**0.66**	**0.45**	**0.3** B	**0.38**	**0.37**	**0.36**	**0.3**	**0.3**	**0.26** B	**0.205**
Selenium, Dissolved (mg/L)	0.02	0.0025	0.006	< 0.003 U	0.002 B	0.001 B	0.001 B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium, Dissolved (mg/L)	0.002	< 0.003 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Dissolved (mg/L)	2	< 0.5 U	< 0.5 U	< 0.3 U	< 0.3 U	< 0.3 U	< 0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other																	
Chloride (mg/L)	250	**3,701**	**5,280**	**6,040**	**6,430**	**6,030**	**6,510**	**5,330**	**5,850**	**6,140**	**6,330**	**5,860**	**5,680**	**6,230**	**5,850**	**5,550**	**5,990**
Fluoride (mg/L)	2	1.3	1.0	1.1	1.1	1	1.04	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lab pH (s.u)	6.5 - 8.5	8.1 H	8.0 H	7.9 H	7.9 H	8.0 H	7.6 H	7.9 H	7.9 H	7.8 H	7.8 H	7.9 H	7.8 H	7.75	7.6 H	7.6 H	8 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	8,640	11,500	10,200 H	10,700 H	10,300	10,600 H	10,100	10,600	10,500	10,200 ^	8,800 ^	10,400	10,800	10,900	10,100	10,700
Sulfate (mg/L)	250	**1,589**	**1,240**	**510**	130 B	104 B	60.9 B	80.2 B	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	179 B	101 B
Gross Alpha (pCi/L)	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Gross Beta (pCi/L)	**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Field Parameters (Not Available pre-2010))																	
Field pH (s.u)	6.5 - 8.5	7.85	7.08	6.86	7.55	7.27	6.95	7.37	6.94	7.05	6.27	7.08	7.42	7.75	7.22	6.91	7.3
Field Conductivity (µS/cm)	none	13	19,280	19,810	19,358	18,640	18,880	18,970	18,440	8,770	16,170	18,020	14,000	13,820	16,530	17,520	18,050
Temperature (Degrees Celsius)	none	13.4	12.2	20.5	13	11.3	16.2	15.1	8	13.5	17.2	18.3	12.1	13.3	17.6	18.1	16.1
Supplementary Analytes																	
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Bicarbonate as CaCO3 (mg/L)	none	458	596	696	715	838	822	785	837	NA	765	853	828	821	828	844	836
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	NA	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U	< 20 U
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Calcium, Dissolved (mg/L)	none	105	142	103	72	67.8	58	56	51	50	47	52	53	54	50	54	47.1
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Free (mg/L)	0.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium, Dissolved (mg/L)	none	40	43	30	25	22	21	21	20	23	19	19	18	20	18	19	18
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium, Dissolved (mg/L)	none	11 B	13 B	12	11	10	10	11	9 B	13 B	9 B	9	10	11	10	10	8.8
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium, Dissolved (mg/L)	none	3,200	4,150	4,720	4,280	4,020	4,350	3,910	3,740	3,970	4,010	3,930	3,880	4,240	3,930	3,820	4,330
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
B = Estimated value, less than the practical quantitation limit for that analyte, but greater than the method detection limit
U = Analyte not detected, reported less than the practical quantitation limit
H = Analysis exceeded method hold time. pH is a field test with an immediate hold time.
NA = Analyte not analyzed
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Per Section 41.5 (C) (6) the of Regulation 41, the "Interim Narrative Standard" , is the minimum of Table 1- Table 4 of The Basic Standards for Groundwater (BSGW)
*TDS standard is 1.25 * Background, where background is the average of the 1999-2000 sampling
Values in **bold** indicate a value greater than the BSGW
**The regulatory standard for Gross Beta is provided in units of exposure, millirems per year (mrems/yr), which would require the measurement of specific nuclides (Tritium and Strontium) with known energy levels. Specific nuclides were not part of the approved constituent list.

Table 7: Summary of Monitoring Results for MW-7

Date	Interim Narrative Standard	5/31/2017	11/15/2017	6/6/2018	11/15/2018	6/12/2019
Metals						
Arsenic, Dissolved (mg/L)	0.01	NA	NA	NA	0.002 B	0.0031
Barium, Dissolved (mg/L)	2	**3.96**	**3.8**	**5.5**	**3.42**	**4.42**
Boron, Dissolved (mg/L)	0.75	0.7	**0.8**	0.7	0.7	0.7 B
Chromium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.02 U	<0.002 U
Copper, Dissolved (mg/L)	0.2	NA	NA	NA	<0.02 U	<0.002 U
Iron, Dissolved (mg/L)	0.3	**5.5**	**6.1**	**3.2**	**3.9**	**2**
Lead, Dissolved (mg/L)	0.05	NA	NA	NA	<0.005 U	<0.0005 U
Lithium, Dissolved (mg/L)	2.5	NA	NA	NA	1.84	2.02
Manganese, Dissolved (mg/L)	0.05	**0.19** B	**0.18** B	**0.14** B	**0.11** B	**0.2** B
Selenium, Dissolved (mg/L)	0.02	NA	NA	NA	<0.003 U	0.001
Thallium, Dissolved (mg/L)	0.002	NA	NA	NA	<0.005 U	<0.0005 U
Uranium, Dissolved (mg/L)	0.03	NA	NA	NA	0.005	0.004
Zinc, Dissolved (mg/L)	2	NA	NA	NA	<0.5 U	0.1 B
Other						
Chloride (mg/L)	250	**6,480**	**6,240**	**6,440**	**7,310**	**7,480** H
Fluoride (mg/L)	2	NA	NA	NA	0.88	1
Lab pH (s.u)	6.5 - 8.5	8 H	7.8 H	7.7 H	7.9 H	7.9 H
Total Dissolved Solids, filterable residue (mg/L)	1.25 x Background*	11,100	11,300	11,500 H	11,300	11,300
Sulfate (mg/L)	250	59 B	58 B	75 B	83.9 B	63.8 B
Gross Alpha (pCi/L)	15	NA	NA	NA	5.8 (±29)	23 (±41)
Gross Beta (pCi/L)	**	NA	NA	NA	34 (±42)	42 (±252)
Field Parameters (Not Available pre-2010))						
Field pH (s.u)	6.5 - 8.5	7.65	7.17	7.37	7.19	7.61
Field Conductivity (µS/cm)	none	19,350	18,550	20,050	19,200	19,110
Temperature (Degrees Celsius)	none	22.5	12.3	16.4	12.9	16.3
Supplementary Analytes						
Aluminum, Dissolved (mg/L)	5	NA	NA	NA	<2 U	<3 U
Antimony, Dissolved (mg/L)	0.006	NA	NA	NA	<0.02 U	0.0015 B
Beryllium, Dissolved (mg/L)	0.004	NA	NA	NA	<0.003 U	<0.0003 U
Bicarbonate as CaCO3 (mg/L)	none	745	700	714	NA	681 H
Carbonate as CaCO3 (mg/L)	none	< 20 U	< 20 U	< 20 U	NA	<20 UH
Cadmium, Dissolved (mg/L)	0.005	NA	NA	NA	<0.003 U	0.00007 B
Calcium, Dissolved (mg/L)	none	52	55	52	54	53
Cobalt, Dissolved (mg/L)	0.05	NA	NA	NA	<0.003 U	0.00025 B
Cyanide, Free (mg/L)	0.2	NA	NA	NA	0.005 B	0.012
Magnesium, Dissolved (mg/L)	none	19	20	20	19	18
Mercury, Dissolved (mg/L)	0.002	NA	NA	NA	<0.001 U	<0.001 U
Molybdenum, Dissolved (mg/L)	0.21	NA	NA	NA	0.022 B	0.0182 U
Nickel, Dissolved (mg/L)	0.1	NA	NA	NA	<0.03 U	<0.001 U
Potassium, Dissolved (mg/L)	none	11	9 B	9 B	11	11
Silver, Dissolved (mg/L)	0.05	NA	NA	NA	<0.005 U	<0.0005 U
Sodium, Dissolved (mg/L)	none	4,240	4,320	4,170	4,250	4,220
Vanadium, Dissolved (mg/L)	0.1	NA	NA	NA	<0.02 U	0.0008 U

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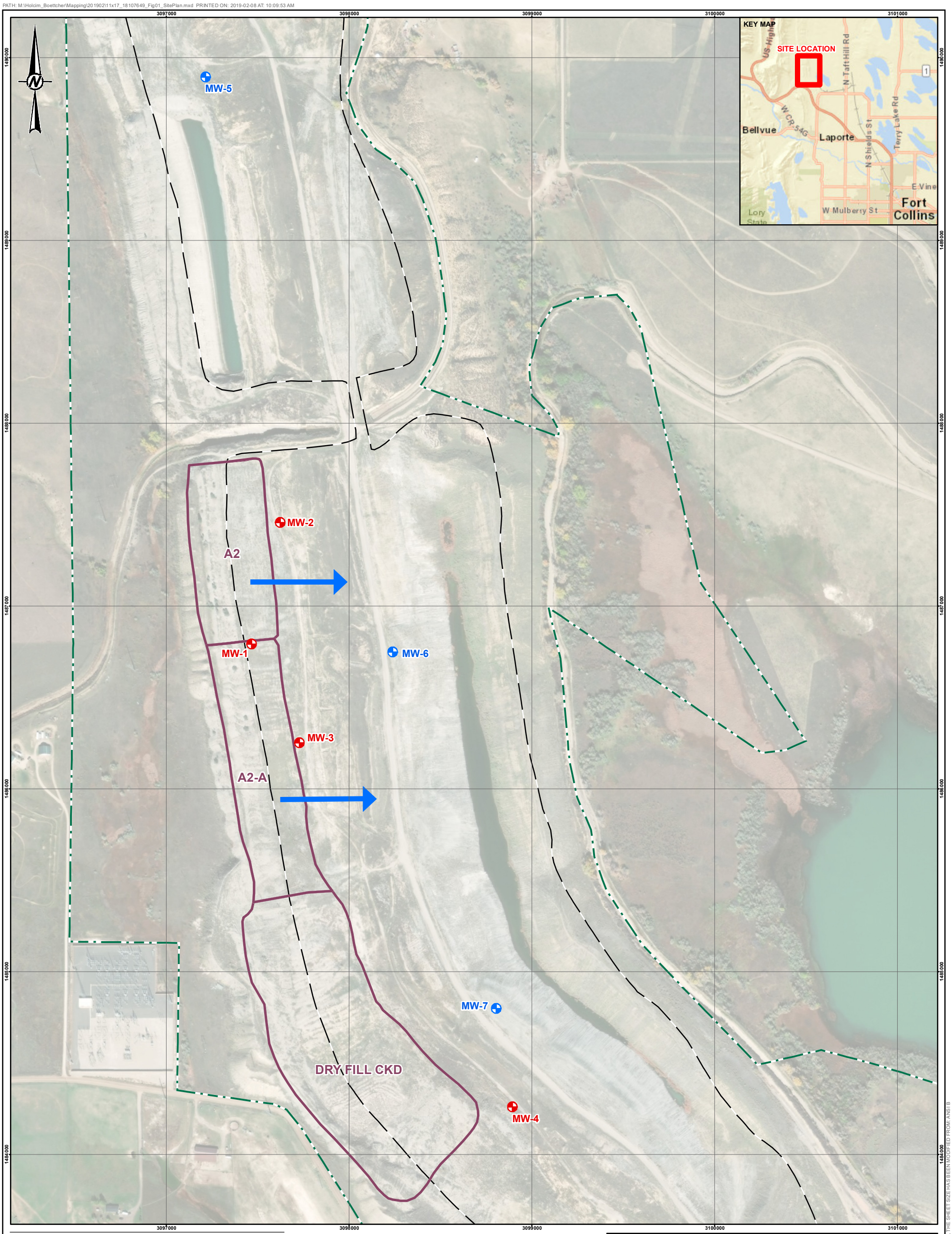
Figures



LEGEND

- MW-1 — PRE-2012 MONITORING WELL
- MW-6 — MONITORING WELL INSTALLED 2012
- APPROXIMATE CKD DISPOSAL AREA BOUNDARY
- AMENDED PERMIT BOUNDARY
- PROPERTY BOUNDARY
- APPROXIMATE GROUNDWATER FLOW DIRECTION

0 500 1,000
Feet

NOTES

1. PROPERTY AND PERMIT BOUNDARIES PROVIDED BY HOLCIM (US) INC.
2. COORDINATE SYSTEM: NAD83 STATE PLANE COLORADO NORTH (US FT).
3. AERIAL IMAGERY: ESRI BASEMAPS, DIGITAL GLOBE. IMAGERY CAPTURED OCTOBER 2017.

CLIENT
HOLCIM (US) INC.

PROJECT
BOETTCHER LIMESTONE QUARRY
LARIMER COUNTY, COLORADO

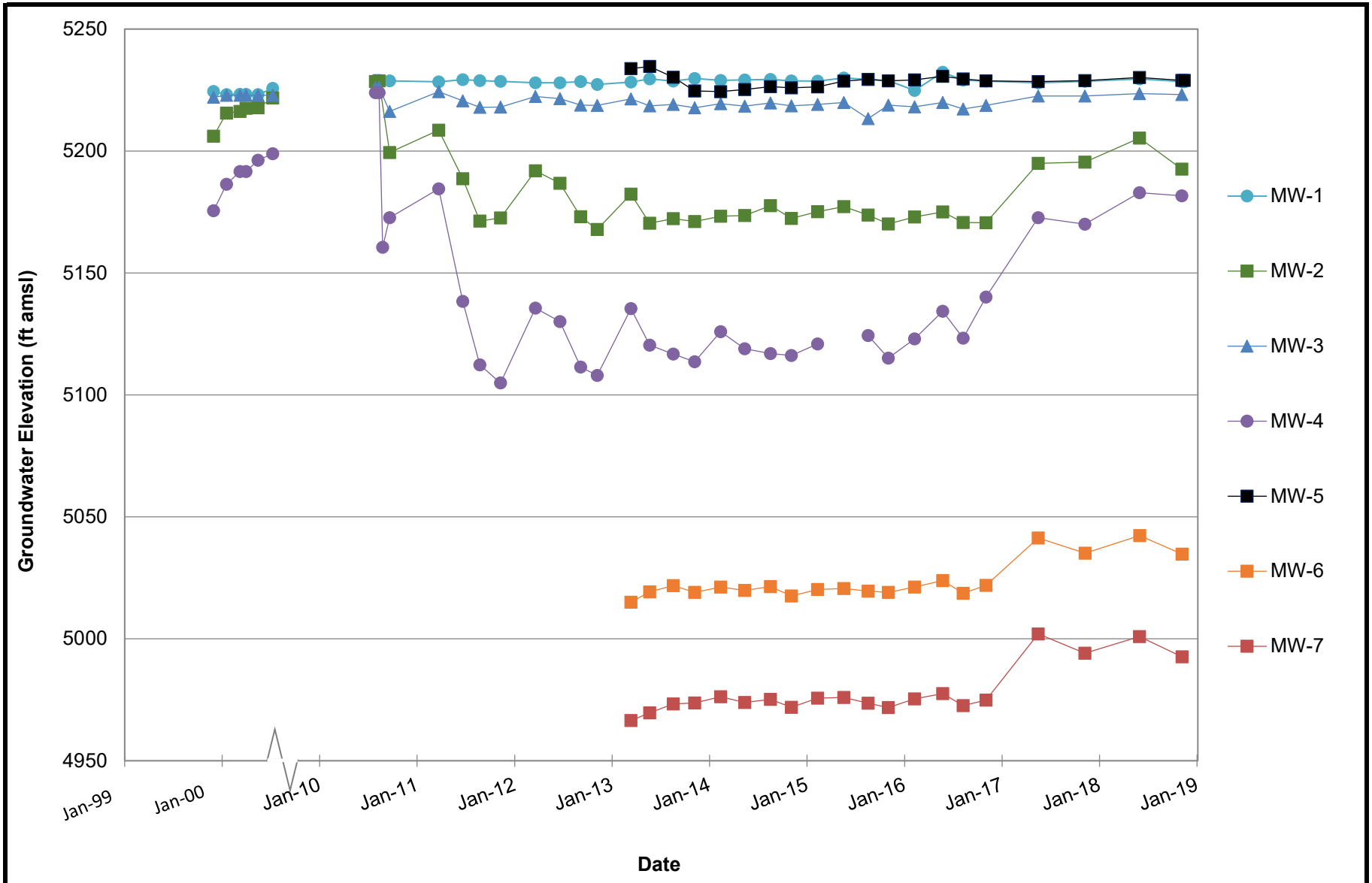
TITLE
SITE LOCATION PLAN

CONSULTANT
GOLDER

YYYY-MM-DD	2019-02-08
DESIGNED	SAH
PREPARED	KJC
REVIEWED	SAH
APPROVED	RSM

PROJECT NO.
18107649

FIGURE
1



Notes:

Unable to collect water level measurement at MW-4 on 5/20/2015

ft amsl: feet above mean sea level

Figure 2

Groundwater Elevations vs. Time

Holcim Boettcher Quarry

DRAFT **FOR DISCUSSION PURPOSES ONLY - ATTORNEY WORK PRODUCT, CONFIDENTIAL AND PRIVILEGED**

9/10/2019 1899205

Golder Associates

C:\Users\CoCarpenter\Golder Associates\P19121576,2019 Boettcher Quarry GW - 6 Deliverables\Letters\[Figure 2.xlsx]2

ATTACHMENT 1

ACZ Laboratory Report

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Revised Analytical Report

August 28, 2019

Report to:
Sara Harkins
Golder Associates
44 Union Blvd., Suite 300
Lakewood, CO 80228

Bill to:
Accounts Payable
Golder Associates
44 Union Blvd., Suite 300
Lakewood, CO 80228

cc: Morgan Warren, Matthew Cahalan

Project ID: 19121576
ACZ Project ID: L52434

Sara Harkins:

Enclosed are revised analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on June 13, 2019 and originally reported on July 09, 2019. Refer to the case narrative for an explanation of the changes. This project was assigned to ACZ's project number, L52434. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L52434. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after August 08, 2019. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Golder Associates

August 28, 2019

Project ID: 19121576
ACZ Project ID: L52434

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 9 groundwater samples from Golder Associates on June 13, 2019. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L52434. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

Any analyses not performed within EPA recommended holding times have been qualified with an "H" flag.

(H1) Alkalinity. Included in scope past the 14 day hold time.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures.

This project has been revised to include a analysis by ICPMS for certain metals that had exceeded needed detection limits.

Golder Associates
Project ID: 19121576
Sample ID: MW-1

ACZ Sample ID: ***L52434-01***
Date Sampled: *06/12/19 10:35*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U		mg/L	0.3	1	06/27/19 3:01	aeh
Antimony, dissolved	M200.8 ICP-MS	1	0.0021			mg/L	0.0004	0.002	06/17/19 20:39	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0018			mg/L	0.0002	0.001	06/17/19 20:39	bsu
Barium, dissolved	M200.7 ICP	5		U		mg/L	0.04	0.2	06/27/19 3:01	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:39	bsu
Boron, dissolved	M200.7 ICP	5	0.7			mg/L	0.1	0.5	06/27/19 3:01	aeh
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 20:39	bsu
Calcium, dissolved	M200.7 ICP	5	171			mg/L	0.5	3	06/27/19 3:01	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:39	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00349			mg/L	0.00005	0.0003	06/17/19 20:39	bsu
Copper, dissolved	M200.8 ICP-MS	1	0.0028			mg/L	0.0008	0.002	06/17/19 20:39	bsu
Copper, dissolved	M200.7 ICP	5		U		mg/L	0.05	0.3	06/27/19 3:01	aeh
Iron, dissolved	M200.7 ICP	5		U		mg/L	0.2	0.4	06/27/19 3:01	aeh
Iron, dissolved	M200.8 ICP-MS	1	0.018	B	*	mg/L	0.005	0.02	06/17/19 20:39	bsu
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:39	bsu
Lithium, dissolved	M200.7 ICP	5	1.23			mg/L	0.04	0.2	06/27/19 3:01	aeh
Magnesium, dissolved	M200.7 ICP	5	170			mg/L	1	5	06/27/19 3:01	aeh
Manganese, dissolved	M200.7 ICP	5	0.05	B		mg/L	0.05	0.3	06/27/19 3:01	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:07	slm
Molybdenum, dissolved	M200.7 ICP	5	0.1	B		mg/L	0.1	0.5	06/27/19 3:01	aeh
Nickel, dissolved	M200.7 ICP	5		U		mg/L	0.04	0.2	06/27/19 3:01	aeh
Potassium, dissolved	M200.7 ICP	5	13			mg/L	1	5	06/27/19 3:01	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0998			mg/L	0.0001	0.0003	06/17/19 20:39	bsu
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:39	bsu
Sodium, dissolved	M200.7 ICP	5	1730			mg/L	1	5	06/27/19 3:01	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:39	bsu
Thallium, dissolved	M200.8 ICP-MS	5		U		mg/L	0.0003	0.001	07/01/19 15:11	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0352			mg/L	0.0001	0.0005	06/17/19 20:39	bsu
Vanadium, dissolved	M200.7 ICP	5		U		mg/L	0.03	0.1	06/27/19 3:01	aeh
Zinc, dissolved	M200.7 ICP	5		U		mg/L	0.05	0.3	06/27/19 3:01	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-1

ACZ Sample ID: ***L52434-01***
Date Sampled: *06/12/19 10:35*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	376	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	376	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-7.5			%			08/22/19 0:00	calc
Sum of Anions			115			meq/L			08/22/19 0:00	calc
Sum of Cations			99.0			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	100		U	*	mg/L	40	200	06/21/19 18:40	krh
Cyanide, Free	D6888-09/OIA-1677-09	1		U	*	mg/L	0.003	0.01	06/18/19 14:01	rbt
Fluoride	SM4500F-C	1	0.6			mg/L	0.1	0.4	06/18/19 14:11	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		17			mg/L	0.2	1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	10	16.8			mg/L	0.2	1	06/13/19 23:47	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1	0.17		*	mg/L	0.01	0.05	06/13/19 23:25	pjb
pH (lab)	SM4500H+ B	1	7.9	H		units	0.1	0.1	06/20/19 21:29	enb
Residue, Filterable (TDS) @180C	SM2540C	5	6670		*	mg/L	100	200	06/18/19 10:44	oah/enb
Sulfate	M300.0 - Ion Chromatography	100	5040			mg/L	40	200	06/21/19 18:40	krh
TDS (calculated)	Calculation		7430			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.90						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-2

ACZ Sample ID: ***L52434-02***
Date Sampled: *06/12/19 13:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	5		U		mg/L	0.3	1	06/27/19 3:10	aeh
Antimony, dissolved	M200.8 ICP-MS	1	0.0023			mg/L	0.0004	0.002	06/17/19 20:41	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0063			mg/L	0.0002	0.001	06/17/19 20:41	bsu
Barium, dissolved	M200.7 ICP	5	3.19			mg/L	0.04	0.2	06/27/19 3:10	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:41	bsu
Boron, dissolved	M200.7 ICP	5	0.8			mg/L	0.1	0.5	06/27/19 3:10	aeh
Cadmium, dissolved	M200.8 ICP-MS	1	0.00011	B		mg/L	0.00005	0.0003	06/17/19 20:41	bsu
Calcium, dissolved	M200.7 ICP	5	17.3			mg/L	0.5	3	06/27/19 3:10	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:41	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00009	B		mg/L	0.00005	0.0003	06/17/19 20:41	bsu
Copper, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0008	0.002	06/17/19 20:41	bsu
Copper, dissolved	M200.7 ICP	5		U		mg/L	0.05	0.3	06/27/19 3:10	aeh
Iron, dissolved	M200.7 ICP	5	0.4			mg/L	0.2	0.4	06/27/19 3:10	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:41	bsu
Lithium, dissolved	M200.7 ICP	5	1.31			mg/L	0.04	0.2	06/27/19 3:10	aeh
Magnesium, dissolved	M200.7 ICP	5	6			mg/L	1	5	06/27/19 3:10	aeh
Manganese, dissolved	M200.7 ICP	5	0.07	B		mg/L	0.05	0.3	06/27/19 3:10	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:08	slm
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0013			mg/L	0.0002	0.0005	06/17/19 20:41	bsu
Molybdenum, dissolved	M200.7 ICP	5		U		mg/L	0.1	0.5	06/27/19 3:10	aeh
Nickel, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.001	06/17/19 20:41	bsu
Nickel, dissolved	M200.7 ICP	5		U		mg/L	0.04	0.2	06/27/19 3:10	aeh
Potassium, dissolved	M200.7 ICP	5	6			mg/L	1	5	06/27/19 3:10	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0004			mg/L	0.0001	0.0003	06/17/19 20:41	bsu
Silver, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:41	bsu
Sodium, dissolved	M200.7 ICP	5	2420			mg/L	1	5	06/27/19 3:10	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:41	bsu
Thallium, dissolved	M200.8 ICP-MS	5		U		mg/L	0.0003	0.001	07/01/19 15:12	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0028			mg/L	0.0001	0.0005	06/17/19 20:41	bsu
Vanadium, dissolved	M200.7 ICP	5		U		mg/L	0.03	0.1	06/27/19 3:10	aeh
Zinc, dissolved	M200.7 ICP	5		U		mg/L	0.05	0.3	06/27/19 3:10	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-2

ACZ Sample ID: ***L52434-02***
Date Sampled: *06/12/19 13:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1090	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	1090	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.1			%			08/22/19 0:00	calc
Sum of Anions			115			meq/L			08/22/19 0:00	calc
Sum of Cations			108			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	3340		*	mg/L	20	100	06/24/19 17:29	krh
Cyanide, Free	D6888-09/OIA-1677-09	1	0.004	B	*	mg/L	0.003	0.01	06/18/19 14:07	rbt
Fluoride	SM4500F-C	1	1.6			mg/L	0.1	0.4	06/18/19 14:30	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:54	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:28	pjb
pH (lab)	SM4500H+ B	1	8.0	H		units	0.1	0.1	06/20/19 21:33	enb
Residue, Filterable (TDS) @180C	SM2540C	5	6310		*	mg/L	100	200	06/18/19 10:47	oah/enb
Sulfate	M300.0 - Ion Chromatography	50		U	*	mg/L	20	100	06/24/19 17:29	krh
TDS (calculated)	Calculation		6460			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.98						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-3

ACZ Sample ID: ***L52434-03***
Date Sampled: *06/12/19 15:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2		U		mg/L	0.1	0.5	06/27/19 3:13	aeh
Antimony, dissolved	M200.8 ICP-MS	1	0.0007	B		mg/L	0.0004	0.002	06/17/19 20:43	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0009	B		mg/L	0.0002	0.001	06/17/19 20:43	bsu
Barium, dissolved	M200.7 ICP	2	2.93			mg/L	0.01	0.07	06/27/19 3:13	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:43	bsu
Boron, dissolved	M200.7 ICP	2	0.80			mg/L	0.04	0.2	06/27/19 3:13	aeh
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 20:43	bsu
Calcium, dissolved	M200.7 ICP	2	6.7			mg/L	0.2	1	06/27/19 3:13	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:43	bsu
Cobalt, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 20:43	bsu
Copper, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:13	aeh
Iron, dissolved	M200.7 ICP	2		U		mg/L	0.06	0.2	06/27/19 3:13	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:43	bsu
Lithium, dissolved	M200.7 ICP	2	0.86			mg/L	0.02	0.08	06/27/19 3:13	aeh
Magnesium, dissolved	M200.7 ICP	2	2.5			mg/L	0.4	2	06/27/19 3:13	aeh
Manganese, dissolved	M200.7 ICP	2	0.02	B		mg/L	0.02	0.1	06/27/19 3:13	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:08	slm
Molybdenum, dissolved	M200.7 ICP	2		U		mg/L	0.04	0.2	06/27/19 3:13	aeh
Nickel, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.08	06/27/19 3:13	aeh
Potassium, dissolved	M200.7 ICP	2	3.9			mg/L	0.4	2	06/27/19 3:13	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0001	0.0003	06/17/19 20:43	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 20:43	bsu
Sodium, dissolved	M200.7 ICP	2	1560			mg/L	0.4	2	06/27/19 3:13	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:43	bsu
Thallium, dissolved	M200.8 ICP-MS	2		U		mg/L	0.0001	0.0005	07/01/19 15:14	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0008			mg/L	0.0001	0.0005	06/17/19 20:43	bsu
Vanadium, dissolved	M200.7 ICP	2		U		mg/L	0.01	0.05	06/27/19 3:13	aeh
Zinc, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:13	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-3

ACZ Sample ID: ***L52434-03***
Date Sampled: *06/12/19 15:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	1260	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	1260	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.1			%			08/22/19 0:00	calc
Sum of Anions			72			meq/L			08/22/19 0:00	calc
Sum of Cations			69			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	20	1660		*	mg/L	8	40	06/21/19 19:16	krh
Cyanide, Free	D6888-09/OIA-1677-09	1		U	*	mg/L	0.003	0.01	06/18/19 14:09	rbt
Fluoride	SM4500F-C	1	2.4			mg/L	0.1	0.4	06/18/19 14:33	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:29	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:29	pjb
pH (lab)	SM4500H+ B	1	8.4	H		units	0.1	0.1	06/20/19 21:38	enb
Residue, Filterable (TDS) @180C	SM2540C	2	3960			mg/L	40	80	06/18/19 15:10	enb
Sulfate	M300.0 - Ion Chromatography	20		U	*	mg/L	8	40	06/21/19 19:16	krh
TDS (calculated)	Calculation		4000			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.99						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-4

ACZ Sample ID: ***L52434-04***
Date Sampled: *06/12/19 11:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10		U		mg/L	0.5	3	06/27/19 3:16	aeh
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/17/19 20:45	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0004	B		mg/L	0.0002	0.001	06/17/19 20:45	bsu
Barium, dissolved	M200.7 ICP	10	8.42			mg/L	0.07	0.4	06/27/19 3:16	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:45	bsu
Boron, dissolved	M200.7 ICP	10	0.7	B		mg/L	0.2	1	06/27/19 3:16	aeh
Cadmium, dissolved	M200.8 ICP-MS	1	0.00007	B		mg/L	0.00005	0.0003	06/17/19 20:45	bsu
Calcium, dissolved	M200.7 ICP	10	35			mg/L	1	5	06/27/19 3:16	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:45	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00015	B		mg/L	0.00005	0.0003	06/17/19 20:45	bsu
Copper, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0008	0.002	06/17/19 20:45	bsu
Copper, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:16	aeh
Iron, dissolved	M200.7 ICP	10		U		mg/L	0.3	0.8	06/27/19 3:16	aeh
Iron, dissolved	M200.8 ICP-MS	1	0.114		*	mg/L	0.005	0.02	06/17/19 20:45	bsu
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:45	bsu
Lithium, dissolved	M200.7 ICP	10	1.93			mg/L	0.08	0.4	06/27/19 3:16	aeh
Magnesium, dissolved	M200.7 ICP	10	15			mg/L	2	10	06/27/19 3:16	aeh
Manganese, dissolved	M200.8 ICP-MS	1	0.0065			mg/L	0.0004	0.002	06/17/19 20:45	bsu
Manganese, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:16	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:11	slm
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0002	B		mg/L	0.0002	0.0005	06/17/19 20:45	bsu
Molybdenum, dissolved	M200.7 ICP	10		U		mg/L	0.2	1	06/27/19 3:16	aeh
Nickel, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.001	06/17/19 20:45	bsu
Nickel, dissolved	M200.7 ICP	10		U		mg/L	0.08	0.4	06/27/19 3:16	aeh
Potassium, dissolved	M200.7 ICP	10	8	B		mg/L	2	10	06/27/19 3:16	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0014			mg/L	0.0001	0.0003	06/17/19 20:45	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 20:45	bsu
Sodium, dissolved	M200.7 ICP	10	4030			mg/L	2	10	06/27/19 3:16	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:45	bsu
Thallium, dissolved	M200.8 ICP-MS	10		U		mg/L	0.0005	0.003	07/01/19 15:18	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0001	B		mg/L	0.0001	0.0005	06/17/19 20:45	bsu
Vanadium, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0005	0.002	06/17/19 20:45	bsu
Vanadium, dissolved	M200.7 ICP	10		U		mg/L	0.05	0.3	06/27/19 3:16	aeh
Zinc, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:16	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-4

ACZ Sample ID: ***L52434-04***
Date Sampled: *06/12/19 11:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	601	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	601	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-7.9			%			08/22/19 0:00	calc
Sum of Anions			212			meq/L			08/22/19 0:00	calc
Sum of Cations			181			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	100	7140		*	mg/L	40	200	06/24/19 17:47	krh
Cyanide, Free	D6888-09/OIA-1677-09	1	0.009	B	*	mg/L	0.003	0.01	06/18/19 14:11	rbt
Fluoride	SM4500F-C	1	1.1			mg/L	0.1	0.4	06/18/19 14:36	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2		0.12			mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1	0.12			mg/L	0.02	0.1	06/13/19 23:30	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:30	pjb
pH (lab)	SM4500H+ B	1	8.0	H		units	0.1	0.1	06/20/19 21:51	enb
Residue, Filterable (TDS) @180C	SM2540C	5	11000			mg/L	100	200	06/18/19 15:13	enb
Sulfate	M300.0 - Ion Chromatography	100		U	*	mg/L	40	200	06/24/19 17:47	krh
TDS (calculated)	Calculation		11600			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.95						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-5

ACZ Sample ID: ***L52434-05***
Date Sampled: *06/12/19 09:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2		U		mg/L	0.1	0.5	06/27/19 3:19	aeh
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/17/19 20:50	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0018			mg/L	0.0002	0.001	06/17/19 20:50	bsu
Barium, dissolved	M200.7 ICP	2	0.02	B		mg/L	0.01	0.07	06/27/19 3:19	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:50	bsu
Boron, dissolved	M200.7 ICP	2	0.35			mg/L	0.04	0.2	06/27/19 3:19	aeh
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 20:50	bsu
Calcium, dissolved	M200.7 ICP	2	402			mg/L	0.2	1	06/27/19 3:19	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:50	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00595			mg/L	0.00005	0.0003	06/17/19 20:50	bsu
Copper, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:19	aeh
Iron, dissolved	M200.7 ICP	2	7.67			mg/L	0.06	0.2	06/27/19 3:19	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:50	bsu
Lithium, dissolved	M200.7 ICP	2	0.39			mg/L	0.02	0.08	06/27/19 3:19	aeh
Magnesium, dissolved	M200.7 ICP	2	113			mg/L	0.4	2	06/27/19 3:19	aeh
Manganese, dissolved	M200.7 ICP	2	0.09	B		mg/L	0.02	0.1	06/27/19 3:19	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:12	slm
Molybdenum, dissolved	M200.7 ICP	2		U		mg/L	0.04	0.2	06/27/19 3:19	aeh
Nickel, dissolved	M200.7 ICP	2	0.04	B		mg/L	0.02	0.08	06/27/19 3:19	aeh
Potassium, dissolved	M200.7 ICP	2	8.1			mg/L	0.4	2	06/27/19 3:19	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0005			mg/L	0.0001	0.0003	06/17/19 20:50	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 20:50	bsu
Sodium, dissolved	M200.7 ICP	2	501			mg/L	0.4	2	06/27/19 3:19	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:50	bsu
Thallium, dissolved	M200.8 ICP-MS	2	0.0001	B		mg/L	0.0001	0.0005	07/01/19 15:19	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0261			mg/L	0.0001	0.0005	06/17/19 20:50	bsu
Vanadium, dissolved	M200.7 ICP	2		U		mg/L	0.01	0.05	06/27/19 3:19	aeh
Zinc, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:19	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-5

ACZ Sample ID: ***L52434-05***
Date Sampled: *06/12/19 09:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	392	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	392	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.8			%			08/22/19 0:00	calc
Sum of Anions			55			meq/L			08/22/19 0:00	calc
Sum of Cations			52.0			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	29.8	B	*	mg/L	20	100	06/21/19 20:27	krh
Cyanide, Free	D6888-09/OIA-1677-09	1		U	*	mg/L	0.003	0.01	06/18/19 14:13	rbt
Fluoride	SM4500F-C	1	0.6			mg/L	0.1	0.4	06/18/19 14:39	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:36	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:36	pjb
pH (lab)	SM4500H+ B	1	7.7	H		units	0.1	0.1	06/20/19 22:32	enb
Residue, Filterable (TDS) @180C	SM2540C	2	3630			mg/L	40	80	06/18/19 15:15	enb
Sulfate	M300.0 - Ion Chromatography	50	2180			mg/L	20	100	06/21/19 20:27	krh
TDS (calculated)	Calculation		3480			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.04						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-6

ACZ Sample ID: ***L52434-06***
Date Sampled: *06/12/19 14:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10		U		mg/L	0.5	3	06/27/19 3:23	aeh
Antimony, dissolved	M200.8 ICP-MS	1	0.0014	B		mg/L	0.0004	0.002	06/17/19 20:56	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0074			mg/L	0.0002	0.001	06/17/19 20:56	bsu
Barium, dissolved	M200.7 ICP	10	6.66			mg/L	0.07	0.4	06/27/19 3:23	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:56	bsu
Boron, dissolved	M200.7 ICP	10	0.6	B		mg/L	0.2	1	06/27/19 3:23	aeh
Cadmium, dissolved	M200.8 ICP-MS	1	0.00006	B		mg/L	0.00005	0.0003	06/17/19 20:56	bsu
Calcium, dissolved	M200.7 ICP	10	40			mg/L	1	5	06/27/19 3:23	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:56	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00024	B		mg/L	0.00005	0.0003	06/17/19 20:56	bsu
Copper, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0008	0.002	06/17/19 20:56	bsu
Copper, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:23	aeh
Iron, dissolved	M200.7 ICP	10	2.2			mg/L	0.3	0.8	06/27/19 3:23	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:56	bsu
Lithium, dissolved	M200.7 ICP	10	1.87			mg/L	0.08	0.4	06/27/19 3:23	aeh
Magnesium, dissolved	M200.7 ICP	10	14			mg/L	2	10	06/27/19 3:23	aeh
Manganese, dissolved	M200.8 ICP-MS	1	0.0733			mg/L	0.0004	0.002	06/17/19 20:56	bsu
Manganese, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:23	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:15	slm
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0208			mg/L	0.0002	0.0005	06/17/19 20:56	bsu
Molybdenum, dissolved	M200.7 ICP	10		U		mg/L	0.2	1	06/27/19 3:23	aeh
Nickel, dissolved	M200.8 ICP-MS	1	0.0063			mg/L	0.0004	0.001	06/17/19 20:56	bsu
Nickel, dissolved	M200.7 ICP	10		U		mg/L	0.08	0.4	06/27/19 3:23	aeh
Potassium, dissolved	M200.7 ICP	10	9	B		mg/L	2	10	06/27/19 3:23	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0009			mg/L	0.0001	0.0003	06/17/19 20:56	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 20:56	bsu
Sodium, dissolved	M200.7 ICP	10	3910			mg/L	2	10	06/27/19 3:23	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:56	bsu
Thallium, dissolved	M200.8 ICP-MS	10		U		mg/L	0.0005	0.003	07/01/19 15:24	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0023			mg/L	0.0001	0.0005	06/17/19 20:56	bsu
Vanadium, dissolved	M200.8 ICP-MS	1	0.0005	B		mg/L	0.0005	0.002	06/17/19 20:56	bsu
Vanadium, dissolved	M200.7 ICP	10		U		mg/L	0.05	0.3	06/27/19 3:23	aeh
Zinc, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:23	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-6

ACZ Sample ID: ***L52434-06***
Date Sampled: *06/12/19 14:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	685	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	685	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-6.1			%			08/22/19 0:00	calc
Sum of Anions			199			meq/L			08/22/19 0:00	calc
Sum of Cations			176			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	100	6610	H	*	mg/L	40	200	08/19/19 18:34	krh
Cyanide, Free	D6888-09/OIA-1677-09	1	0.012		*	mg/L	0.003	0.01	06/18/19 14:15	rbt
Fluoride	SM4500F-C	1	1.2			mg/L	0.1	0.4	06/18/19 14:43	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:37	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:37	pjb
pH (lab)	SM4500H+ B	1	7.9	H		units	0.1	0.1	06/20/19 22:37	enb
Residue, Filterable (TDS) @180C	SM2540C	5	10600			mg/L	100	200	06/18/19 15:18	enb
Sulfate	M300.0 - Ion Chromatography	100		U	*	mg/L	40	200	06/21/19 20:45	krh
TDS (calculated)	Calculation		11000			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.96						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-7

ACZ Sample ID: ***L52434-07***
Date Sampled: *06/12/19 14:45*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	10		U		mg/L	0.5	3	06/27/19 3:26	aeh
Antimony, dissolved	M200.8 ICP-MS	1	0.0015	B		mg/L	0.0004	0.002	06/17/19 20:58	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0031			mg/L	0.0002	0.001	06/17/19 20:58	bsu
Barium, dissolved	M200.7 ICP	10	4.42			mg/L	0.07	0.4	06/27/19 3:26	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 20:58	bsu
Boron, dissolved	M200.7 ICP	10	0.7	B		mg/L	0.2	1	06/27/19 3:26	aeh
Cadmium, dissolved	M200.8 ICP-MS	1	0.00007	B		mg/L	0.00005	0.0003	06/17/19 20:58	bsu
Calcium, dissolved	M200.7 ICP	10	53			mg/L	1	5	06/27/19 3:26	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 20:58	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00025	B		mg/L	0.00005	0.0003	06/17/19 20:58	bsu
Copper, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0008	0.002	06/17/19 20:58	bsu
Copper, dissolved	M200.7 ICP	10		U		mg/L	0.1	0.5	06/27/19 3:26	aeh
Iron, dissolved	M200.7 ICP	10	2.0			mg/L	0.3	0.8	06/27/19 3:26	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:58	bsu
Lithium, dissolved	M200.7 ICP	10	2.02			mg/L	0.08	0.4	06/27/19 3:26	aeh
Magnesium, dissolved	M200.7 ICP	10	18			mg/L	2	10	06/27/19 3:26	aeh
Manganese, dissolved	M200.7 ICP	10	0.2	B		mg/L	0.1	0.5	06/27/19 3:26	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:16	slm
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0182			mg/L	0.0002	0.0005	06/17/19 20:58	bsu
Molybdenum, dissolved	M200.7 ICP	10		U		mg/L	0.2	1	06/27/19 3:26	aeh
Nickel, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.001	06/17/19 20:58	bsu
Nickel, dissolved	M200.7 ICP	10		U		mg/L	0.08	0.4	06/27/19 3:26	aeh
Potassium, dissolved	M200.7 ICP	10	11			mg/L	2	10	06/27/19 3:26	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.001			mg/L	0.0001	0.0003	06/17/19 20:58	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 20:58	bsu
Sodium, dissolved	M200.7 ICP	10	4220			mg/L	2	10	06/27/19 3:26	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 20:58	bsu
Thallium, dissolved	M200.8 ICP-MS	10		U		mg/L	0.0005	0.003	07/01/19 15:25	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.004			mg/L	0.0001	0.0005	06/17/19 20:58	bsu
Vanadium, dissolved	M200.8 ICP-MS	1	0.0008	B		mg/L	0.0005	0.002	06/17/19 20:58	bsu
Vanadium, dissolved	M200.7 ICP	10		U		mg/L	0.05	0.3	06/27/19 3:26	aeh
Zinc, dissolved	M200.7 ICP	10	0.1	B		mg/L	0.1	0.5	06/27/19 3:26	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-7

ACZ Sample ID: ***L52434-07***
Date Sampled: *06/12/19 14:45*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	681	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	681	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-8.2			%			08/22/19 0:00	calc
Sum of Anions			224			meq/L			08/22/19 0:00	calc
Sum of Cations			190			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	100	7480	H	*	mg/L	40	200	08/19/19 18:52	krh
Cyanide, Free	D6888-09/OIA-1677-09	1	0.012		*	mg/L	0.003	0.01	06/18/19 14:23	rbt
Fluoride	SM4500F-C	1	1.0			mg/L	0.1	0.4	06/18/19 14:51	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:39	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:39	pjb
pH (lab)	SM4500H+ B	1	7.9	H		units	0.1	0.1	06/20/19 22:42	enb
Residue, Filterable (TDS) @180C	SM2540C	5	11300			mg/L	100	200	06/18/19 15:20	enb
Sulfate	M300.0 - Ion Chromatography	100	63.8	B	*	mg/L	40	200	06/21/19 21:03	krh
TDS (calculated)	Calculation		12300			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		0.92						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-15

ACZ Sample ID: ***L52434-08***
Date Sampled: *06/12/19 09:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	1		U		mg/L	0.05	0.3	06/27/19 3:29	aeh
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/17/19 21:00	bsu
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	06/17/19 21:00	bsu
Barium, dissolved	M200.7 ICP	1		U		mg/L	0.007	0.04	06/27/19 3:29	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 21:00	bsu
Boron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/27/19 3:29	aeh
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 21:00	bsu
Calcium, dissolved	M200.7 ICP	1		U		mg/L	0.1	0.5	06/27/19 3:29	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 21:00	bsu
Cobalt, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 21:00	bsu
Copper, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/27/19 3:29	aeh
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.03	0.08	06/27/19 3:29	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 21:00	bsu
Lithium, dissolved	M200.7 ICP	1		U		mg/L	0.008	0.04	06/27/19 3:29	aeh
Magnesium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/27/19 3:29	aeh
Manganese, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/27/19 3:29	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:17	slm
Molybdenum, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.1	06/27/19 3:29	aeh
Nickel, dissolved	M200.7 ICP	1		U		mg/L	0.008	0.04	06/27/19 3:29	aeh
Potassium, dissolved	M200.7 ICP	1		U		mg/L	0.2	1	06/27/19 3:29	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0003			mg/L	0.0001	0.0003	06/17/19 21:00	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 21:00	bsu
Sodium, dissolved	M200.7 ICP	1	0.6	B		mg/L	0.2	1	06/27/19 3:29	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 21:00	bsu
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	07/01/19 15:27	bsu
Uranium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 21:00	bsu
Vanadium, dissolved	M200.7 ICP	1		U		mg/L	0.005	0.03	06/27/19 3:29	aeh
Zinc, dissolved	M200.7 ICP	1		U		mg/L	0.01	0.05	06/27/19 3:29	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-15

ACZ Sample ID: ***L52434-08***
Date Sampled: *06/12/19 09:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	2.2	BH		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	2.2	BH	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			n/a			%			08/22/19 0:00	calc
Sum of Anions				U		meq/L			08/22/19 0:00	calc
Sum of Cations				U		meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	1		U	*	mg/L	0.4	2	06/21/19 21:21	krh
Cyanide, Free	D6888-09/OIA-1677-09	1		U	*	mg/L	0.003	0.01	06/18/19 14:25	rbt
Fluoride	SM4500F-C	1		U		mg/L	0.1	0.4	06/18/19 14:56	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:40	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U	*	mg/L	0.01	0.05	06/13/19 23:40	pjb
pH (lab)	SM4500H+ B	1	6.9	H		units	0.1	0.1	06/20/19 22:46	enb
Residue, Filterable (TDS) @180C	SM2540C	1		U	*	mg/L	20	40	06/18/19 15:23	enb
Sulfate	M300.0 - Ion Chromatography	1		U		mg/L	0.4	2	06/21/19 21:21	krh
TDS (calculated)	Calculation		1.94			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		n/a						08/22/19 0:00	calc

Golder Associates
Project ID: 19121576
Sample ID: MW-20

ACZ Sample ID: ***L52434-09***
Date Sampled: *06/12/19 09:30*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum, dissolved	M200.7 ICP	2		U		mg/L	0.1	0.5	06/27/19 3:38	aeh
Antimony, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0004	0.002	06/17/19 21:01	bsu
Arsenic, dissolved	M200.8 ICP-MS	1	0.0016			mg/L	0.0002	0.001	06/17/19 21:01	bsu
Barium, dissolved	M200.7 ICP	2	0.02	B		mg/L	0.01	0.07	06/27/19 3:38	aeh
Beryllium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00008	0.0003	06/17/19 21:01	bsu
Boron, dissolved	M200.7 ICP	2	0.37			mg/L	0.04	0.2	06/27/19 3:38	aeh
Cadmium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.00005	0.0003	06/17/19 21:01	bsu
Calcium, dissolved	M200.7 ICP	2	398			mg/L	0.2	1	06/27/19 3:38	aeh
Chromium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0005	0.002	06/17/19 21:01	bsu
Cobalt, dissolved	M200.8 ICP-MS	1	0.00623			mg/L	0.00005	0.0003	06/17/19 21:01	bsu
Copper, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:38	aeh
Iron, dissolved	M200.7 ICP	2	5.78			mg/L	0.06	0.2	06/27/19 3:38	aeh
Lead, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 21:01	bsu
Lithium, dissolved	M200.7 ICP	2	0.39			mg/L	0.02	0.08	06/27/19 3:38	aeh
Magnesium, dissolved	M200.7 ICP	2	113			mg/L	0.4	2	06/27/19 3:38	aeh
Manganese, dissolved	M200.7 ICP	2	0.09	B		mg/L	0.02	0.1	06/27/19 3:38	aeh
Mercury, dissolved	M245.1 CVAA	1		U	*	mg/L	0.0002	0.001	06/17/19 18:18	slm
Molybdenum, dissolved	M200.7 ICP	2		U		mg/L	0.04	0.2	06/27/19 3:38	aeh
Nickel, dissolved	M200.7 ICP	2	0.02	B		mg/L	0.02	0.08	06/27/19 3:38	aeh
Potassium, dissolved	M200.7 ICP	2	8.3			mg/L	0.4	2	06/27/19 3:38	aeh
Selenium, dissolved	M200.8 ICP-MS	1	0.0005			mg/L	0.0001	0.0003	06/17/19 21:01	bsu
Silver, dissolved	M200.8 ICP-MS	1		U	*	mg/L	0.0001	0.0005	06/17/19 21:01	bsu
Sodium, dissolved	M200.7 ICP	2	498			mg/L	0.4	2	06/27/19 3:38	aeh
Thallium, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0001	0.0005	06/17/19 21:01	bsu
Thallium, dissolved	M200.8 ICP-MS	2	0.0001	B		mg/L	0.0001	0.0005	07/01/19 15:28	bsu
Uranium, dissolved	M200.8 ICP-MS	1	0.0243			mg/L	0.0001	0.0005	06/17/19 21:01	bsu
Vanadium, dissolved	M200.7 ICP	2		U		mg/L	0.01	0.05	06/27/19 3:38	aeh
Zinc, dissolved	M200.7 ICP	2		U		mg/L	0.02	0.1	06/27/19 3:38	aeh

Golder Associates
Project ID: 19121576
Sample ID: MW-20

ACZ Sample ID: ***L52434-09***
Date Sampled: *06/12/19 09:30*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	387	H		mg/L	2	20	07/08/19 0:00	nmc
Carbonate as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Hydroxide as CaCO3		1		UH		mg/L	2	20	07/08/19 0:00	nmc
Total Alkalinity		1	387	H	*	mg/L	2	20	07/08/19 0:00	nmc
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.6			%			08/22/19 0:00	calc
Sum of Anions			57			meq/L			08/22/19 0:00	calc
Sum of Cations			52			meq/L			08/22/19 0:00	calc
Chloride	M300.0 - Ion Chromatography	50	32.0	B	*	mg/L	20	100	06/21/19 21:39	krh
Cyanide, Free	D6888-09/OIA-1677-09	1		U	*	mg/L	0.003	0.01	06/18/19 14:27	rbt
Fluoride	SM4500F-C	1	0.6			mg/L	0.1	0.4	06/18/19 14:59	enb
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2			U		mg/L	0.02	0.1	08/22/19 0:00	calc
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1		U		mg/L	0.02	0.1	06/13/19 23:41	pjb
Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	1	0.01	B	*	mg/L	0.01	0.05	06/13/19 23:41	pjb
pH (lab)	SM4500H+ B	1	7.7	H		units	0.1	0.1	06/20/19 22:51	enb
Residue, Filterable (TDS) @180C	SM2540C	2	3680			mg/L	40	80	06/18/19 15:26	enb
Sulfate	M300.0 - Ion Chromatography	50	2280			mg/L	20	100	06/21/19 21:39	krh
TDS (calculated)	Calculation		3570			mg/L			08/22/19 0:00	calc
TDS (ratio - measured/calculated)	Calculation		1.03						08/22/19 0:00	calc

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG476400													
WG476400PBW1	PBW	07/08/19 16:59				2.1	mg/L		-20	20			
WG476400LCSW3	LCSW	07/08/19 17:16	WC190627-1	820.0001		807	mg/L	98	90	110			
L52434-05DUP	DUP	07/08/19 20:16			392	381	mg/L				3	20	
WG476400LCSW6	LCSW	07/08/19 20:34	WC190627-1	820.0001		818	mg/L	100	90	110			
WG476400PBW2	PBW	07/08/19 20:41				2.4	mg/L		-20	20			
L52608-03DUP	DUP	07/08/19 22:31			238	238	mg/L				0	20	
WG476400LCSW9	LCSW	07/09/19 0:41	WC190627-1	820.0001		824	mg/L	100	90	110			
WG476400PBW3	PBW	07/09/19 0:47				U	mg/L		-20	20			
WG476400LCSW12	LCSW	07/09/19 4:52	WC190627-1	820.0001		829	mg/L	101	90	110			
WG476400PBW4	PBW	07/09/19 4:59				2.2	mg/L		-20	20			
WG476400LCSW15	LCSW	07/09/19 8:03	WC190627-1	820.0001		812	mg/L	99	90	110			

Aluminum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.968	mg/L	98	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.15	0.15			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	1.0006		1.014	mg/L	101	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	1.0006	U	1.067	mg/L	107	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	1.0006	U	1.033	mg/L	103	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	1.0006	U	.984	mg/L	98	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	1.0006	U	.994	mg/L	99	85	115	1	20	

Antimony, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.02		.01984	mg/L	99	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00088	0.00088			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.01		.00963	mg/L	96	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.01	U	.00955	mg/L	96	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.01	U	.00984	mg/L	98	70	130	3	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.01	U	.01117	mg/L	112	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.01	U	.01116	mg/L	112	70	130	0	20	

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05045	mg/L	101	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00044	0.00044			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.05082	mg/L	102	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	.0005	.05359	mg/L	106	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	.0005	.05603	mg/L	111	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	.0004	.06143	mg/L	122	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	.0004	.06039	mg/L	120	70	130	2	20	

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ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.9795	mg/L	99	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.021	0.021			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.4995		.5033	mg/L	101	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.4995	.057	.5764	mg/L	104	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.4995	.057	.5659	mg/L	102	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.4995	U	.4928	mg/L	99	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.4995	U	.4966	mg/L	99	85	115	1	20	

Beryllium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.049254	mg/L	99	90	110			
WG474739ICB	ICB	06/17/19 20:14				.000084	mg/L		-0.000176	0.000176			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.048203	mg/L	96	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	.0001	.04361	mg/L	87	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	.0001	.04546	mg/L	91	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	U	.047012	mg/L	94	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	U	.047145	mg/L	94	70	130	0	20	

Boron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		2.048	mg/L	102	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.06	0.06			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.5005		.534	mg/L	107	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.5005	.04	.596	mg/L	111	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.5005	.04	.585	mg/L	109	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.5005	U	.529	mg/L	106	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.5005	U	.525	mg/L	105	85	115	1	20	

Cadmium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.049051	mg/L	98	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00011	0.00011			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.047851	mg/L	96	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	U	.048429	mg/L	97	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	U	.050301	mg/L	101	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	.00007	.045727	mg/L	91	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	.00007	.045428	mg/L	91	70	130	1	20	

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	100		97.49	mg/L	97	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.3	0.3			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	68.11783		68.21	mg/L	100	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	68.11783	129	195.2	mg/L	97	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	68.11783	129	190.9	mg/L	91	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	68.11783	U	67.13	mg/L	99	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	68.11783	U	67.69	mg/L	99	85	115	1	20	

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG473605													
WG473605ICV	ICV	05/31/19 12:17	WI190530-11	19.94		20.6	mg/L	103	90	110			
WG473605ICB	ICB	05/31/19 12:35				U	mg/L		-0.4	0.4			
WG475119													
WG475119LFB	LFB	06/21/19 16:52	WI190520-1	30		30.4	mg/L	101	90	110			
L52418-01DUP	DUP	06/21/19 17:28			23.9	23.8	mg/L				0	20	RA
L52418-02AS	AS	06/21/19 18:04	WI190520-1	1500	U	1560	mg/L	104	90	110			
L52449-02AS	AS	06/22/19 0:56	WI190520-1	30	2.4	33.1	mg/L	102	90	110			
L52449-02DUP	DUP	06/22/19 1:14			2.4	2.39	mg/L				0	20	RA
WG478870													
WG478870ICV	ICV	08/06/19 18:37	WI190530-11	19.94		19.9	mg/L	100	90	110			
WG478870ICB	ICB	08/06/19 18:55				U	mg/L		-0.4	0.4			
WG479635													
WG479635LFB	LFB	08/19/19 18:16	WI190722-1	30		30	mg/L	100	90	110			
L53623-03DUP	DUP	08/19/19 19:27			1.09	1.05	mg/L				4	20	RA
L53623-05AS	AS	08/19/19 20:03	WI190722-1	30	2.97	33.3	mg/L	101	90	110			

Chromium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05204	mg/L	104	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.0011	0.0011			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.05007	mg/L	100	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	.0014	.05213	mg/L	101	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	.0014	.05391	mg/L	105	70	130	3	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	U	.05819	mg/L	116	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	U	.05724	mg/L	114	70	130	2	20	

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ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Cobalt, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.050758	mg/L	102	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00011	0.00011			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.049066	mg/L	98	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	.00018	.048558	mg/L	97	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	.00018	.0505	mg/L	101	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	.00015	.043882	mg/L	87	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	.00015	.043919	mg/L	87	70	130	0	20	

Copper, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.951	mg/L	98	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.03	0.03			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.5005		.516	mg/L	103	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.5005	U	.535	mg/L	107	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.5005	U	.527	mg/L	105	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.5005	U	.502	mg/L	100	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.5005	U	.506	mg/L	101	85	115	1	20	

Copper, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05136	mg/L	103	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00176	0.00176			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.0501		.0501	mg/L	100	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.0501	.0076	.05596	mg/L	97	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.0501	.0076	.0573	mg/L	99	70	130	2	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.0501	U	.03752	mg/L	75	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.0501	U	.03674	mg/L	73	70	130	2	20	

Cyanide, Free D6888-09/OIA-1677-09

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474803													
WG474803ICV	ICV	06/18/19 13:51	WI190618-5	.3		.284	mg/L	95	90	110			
WG474803ICB	ICB	06/18/19 13:53				U	mg/L		-0.003	0.003			
WG474803LFB	LFB	06/18/19 13:57	WI190618-7	.1		.0957	mg/L	96	90	110			
L52434-01AS	AS	06/18/19 14:03	WI190618-7	.1	U	.0894	mg/L	89	90	110			MA
L52434-01ASD	ASD	06/18/19 14:05	WI190618-7	.1	U	.0899	mg/L	90	90	110	1	20	

Fluoride SM4500F-C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474768													
WG474768ICV	ICV	06/18/19 9:45	WC190617-1	2.004		1.96	mg/L	98	90	110			
WG474768ICB	ICB	06/18/19 9:53				U	mg/L		-0.3	0.3			
WG474768LFB1	LFB	06/18/19 10:00	WC190409-6	5.01		4.88	mg/L	97	90	110			
L52434-01AS	AS	06/18/19 14:14	WC190409-6	5.01	.6	5.47	mg/L	97	90	110			
L52434-01ASD	ASD	06/18/19 14:26	WC190409-6	5.01	.6	5.42	mg/L	96	90	110	1	20	
WG474768LFB2	LFB	06/18/19 14:48	WC190409-6	5.01		5.17	mg/L	103	90	110			

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ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.917	mg/L	96	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.09	0.09			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	1.0018		1.055	mg/L	105	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	1.0018	U	1.061	mg/L	106	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	1.0018	U	1.033	mg/L	103	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	1.0018	U	1.022	mg/L	102	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	1.0018	U	1.03	mg/L	103	85	115	1	20	

Iron, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.10008		.1044	mg/L	104	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.011	0.011			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05004		.0538	mg/L	108	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05004	U	.0535	mg/L	107	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05004	U	.056	mg/L	112	70	130	5	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05004	.114	.1599	mg/L	92	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05004	.114	.1574	mg/L	87	70	130	2	20	

Lead, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05161	mg/L	103	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00022	0.00022			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.04936	mg/L	99	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	U	.04847	mg/L	97	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	U	.05036	mg/L	101	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	U	.04538	mg/L	91	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	U	.04532	mg/L	91	70	130	0	20	

Lithium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		2.0305	mg/L	102	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.024	0.024			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	1.003		1.042	mg/L	104	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	1.003	.033	1.149	mg/L	111	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	1.003	.033	1.123	mg/L	109	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	1.003	U	1.011	mg/L	101	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	1.003	U	1.03	mg/L	103	85	115	2	20	

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ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	100		96.12	mg/L	96	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.6	0.6			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	50.31093		49.17	mg/L	98	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	50.31093	63.1	112.1	mg/L	97	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	50.31093	63.1	109.4	mg/L	92	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	50.31093	U	48.45	mg/L	96	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	50.31093	U	49.15	mg/L	98	85	115	1	20	

Manganese, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.923	mg/L	96	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.03	0.03			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.4995		.516	mg/L	103	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.4995	U	.528	mg/L	106	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.4995	U	.518	mg/L	104	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.4995	U	.504	mg/L	101	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.4995	U	.508	mg/L	102	85	115	1	20	

Manganese, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05031	mg/L	101	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00088	0.00088			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05		.04965	mg/L	99	85	115			
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05	.0065	.05213	mg/L	91	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05	.0065	.05183	mg/L	91	70	130	1	20	

Mercury, dissolved M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474526													
WG474526ICV	ICV	06/17/19 14:12	HG190528-3	.004995		.00502	mg/L	101	95	105			
WG474526ICB	ICB	06/17/19 14:13				U	mg/L		-0.0002	0.0002			
WG474677													
WG474677LRB	LRB	06/17/19 18:05				U	mg/L		-0.00044	0.00044			
WG474677LFB	LFB	06/17/19 18:06	HG190611-3	.002002		.00195	mg/L	97	85	115			
L52434-03LFM	LFM	06/17/19 18:09	HG190611-3	.002002	U	.00125	mg/L	62	85	115			M2
L52434-03LFMD	LFMD	06/17/19 18:10	HG190611-3	.002002	U	.00121	mg/L	60	85	115	3	20	M2

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ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		2.005	mg/L	100	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.06	0.06			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.4975		.513	mg/L	103	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.4975	.04	.562	mg/L	105	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.4975	.04	.543	mg/L	101	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.4975	U	.493	mg/L	99	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.4975	U	.509	mg/L	102	85	115	3	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.02006		.01949	mg/L	97	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00044	0.00044			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.0501		.0485	mg/L	97	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.0501	.0567	.10593	mg/L	98	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.0501	.0567	.1084	mg/L	103	70	130	2	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.0501	.0002	.05353	mg/L	106	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.0501	.0002	.05312	mg/L	106	70	130	1	20	

Nickel, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2.004		1.912	mg/L	95	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.024	0.024			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.5		.5154	mg/L	103	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.5	U	.5138	mg/L	103	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.5	U	.4991	mg/L	100	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.5	U	.4965	mg/L	99	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.5	U	.503	mg/L	101	85	115	1	20	

Nickel, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05034	mg/L	101	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00088	0.00088			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.0501		.04924	mg/L	98	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.0501	U	.04712	mg/L	94	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.0501	U	.04859	mg/L	97	70	130	3	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.0501	U	.03758	mg/L	75	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.0501	U	.03687	mg/L	74	70	130	2	20	

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Nitrate/Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474529													
WG474529ICV	ICV	06/13/19 21:11	WI190508-3	2.416		2.484	mg/L	103	90	110			
WG474529ICB	ICB	06/13/19 21:12				U	mg/L		-0.02	0.02			
WG474530													
WG474530LFB	LFB	06/13/19 23:02	WI190405-9	2		2.021	mg/L	101	90	110			
L52407-16AS	AS	06/13/19 23:46	WI190405-9	20	8.7	28.54	mg/L	99	90	110			
L52434-01DUP	DUP	06/13/19 23:53			16.8	16.86	mg/L				0	20	

Nitrite as N, dissolved M353.2 - Automated Cadmium Reduction

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474529													
WG474529ICV	ICV	06/13/19 21:11	WI190508-3	.609		.627	mg/L	103	90	110			
WG474529ICB	ICB	06/13/19 21:12				U	mg/L		-0.01	0.01			
WG474530													
WG474530LFB	LFB	06/13/19 23:02	WI190405-9	1		.993	mg/L	99	90	110			
L52407-16AS	AS	06/13/19 23:24	WI190405-9	1	U	1.062	mg/L	106	90	110			
L52434-01DUP	DUP	06/13/19 23:27			.17	.173	mg/L				2	20	

pH (lab) SM4500H+ B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475065													
WG475065LCSW1	LCSW	06/20/19 18:39	PCN56769	6		6	units	100	5.9	6.1			
L52434-04DUP	DUP	06/20/19 22:03			8	8	units				0	20	
WG475065LCSW4	LCSW	06/20/19 22:07	PCN56769	6		6	units	100	5.9	6.1			
L52438-03DUP	DUP	06/21/19 0:08			7.6	7.6	units				0	20	
WG475065LCSW7	LCSW	06/21/19 1:36	PCN56769	6		6	units	100	5.9	6.1			
WG475065LCSW10	LCSW	06/21/19 4:45	PCN56769	6		6	units	100	5.9	6.1			
WG475065LCSW13	LCSW	06/21/19 8:44	PCN56769	6		6	units	100	5.9	6.1			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	20		19.7	mg/L	99	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.6	0.6			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	99.96426		98.98	mg/L	99	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	99.96426	6.2	110.6	mg/L	104	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	99.96426	6.2	109	mg/L	103	85	115	1	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	99.96426	U	98.21	mg/L	98	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	99.96426	U	99.2	mg/L	99	85	115	1	20	

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474775													
WG474775PBW	PBW	06/18/19 10:20				U	mg/L		-40	40			
WG474775LCSW	LCSW	06/18/19 10:23	PCN58476	260		258	mg/L	99	80	120			
L52506-07DUP	DUP	06/18/19 10:56			142	144	mg/L				1	10	RA
WG474831													
WG474831PBW	PBW	06/18/19 15:00				U	mg/L		-40	40			
WG474831LCSW	LCSW	06/18/19 15:02	PCN58475	260		266	mg/L	102	80	120			
L52436-01DUP	DUP	06/18/19 15:31			5700	5730	mg/L				1	10	

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05037	mg/L	101	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00022	0.00022			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.04941	mg/L	99	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05005	.0014	.05178	mg/L	101	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05005	.0014	.05375	mg/L	105	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	.0014	.0434	mg/L	84	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	.0014	.0429	mg/L	83	70	130	1	20	

Silver, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.02004		.02002	mg/L	100	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00022	0.00022			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.01002		.00985	mg/L	98	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.01002	U	.00965	mg/L	96	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.01002	U	.00967	mg/L	97	70	130	0	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.01002	U	.0037	mg/L	37	70	130			M2 ZA
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.01002	U	.00521	mg/L	52	70	130	34	20	M2 RF ZA

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	100		98.68	mg/L	99	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.6	0.6			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	100.0471		99.8	mg/L	100	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	100.0471	23.9	129.4	mg/L	105	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	100.0471	23.9	126.9	mg/L	103	85	115	2	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	100.0471	.6	99.49	mg/L	99	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	100.0471	.6	100.3	mg/L	100	85	115	1	20	

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Sulfate M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG473605													
WG473605ICV	ICV	05/31/19 12:17	WI190530-11	50		51	mg/L	102	90	110			
WG473605ICB	ICB	05/31/19 12:35				U	mg/L		-0.4	0.4			
WG475119													
WG475119LFB	LFB	06/21/19 16:52	WI190520-1	30		31	mg/L	103	90	110			
L52418-01DUP	DUP	06/21/19 17:28			2080	2070	mg/L				0	20	
L52418-02AS	AS	06/21/19 18:04	WI190520-1	1500	2370	3780	mg/L	94	90	110			
L52449-02AS	AS	06/22/19 0:56	WI190520-1	30	24.9	55.1	mg/L	101	90	110			
L52449-02DUP	DUP	06/22/19 1:14			24.9	24.9	mg/L				0	20	

Thallium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.0535	mg/L	107	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00022	0.00022			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.0501		.04962	mg/L	99	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.0501	U	.04923	mg/L	98	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.0501	U	.05143	mg/L	103	70	130	4	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.0501	U	.04609	mg/L	92	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.0501	U	.04593	mg/L	92	70	130	0	20	
WG475975													
WG475975ICV	ICV	07/01/19 15:05	MS190630-2	.05		.049532	mg/L	99	90	110			
WG475975ICB	ICB	07/01/19 15:06				U	mg/L		-0.00011	0.00011			
WG475975LFB	LFB	07/01/19 15:09	MS190606-3	.0501		.050406	mg/L	101	85	115			
L52434-03AS	AS	07/01/19 15:15	MS190606-3	.1002	U	.12172	mg/L	121	70	130			
L52434-03ASD	ASD	07/01/19 15:17	MS190606-3	.1002	U	.10858	mg/L	108	70	130	11	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.05109	mg/L	102	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.00022	0.00022			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05		.0487	mg/L	97	85	115			
L52244-03AS	AS	06/17/19 20:21	MS190606-3	.05	.015	.06369	mg/L	97	70	130			
L52244-03ASD	ASD	06/17/19 20:23	MS190606-3	.05	.015	.06501	mg/L	100	70	130	2	20	
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05	.0001	.04853	mg/L	97	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05	.0001	.04839	mg/L	97	70	130	0	20	

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Vanadium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		2.0102	mg/L	101	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.015	0.015			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.5005		.5068	mg/L	101	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.5005	U	.5204	mg/L	104	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.5005	U	.5065	mg/L	101	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.5005	U	.5049	mg/L	101	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.5005	U	.4982	mg/L	100	85	115	1	20	

Vanadium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG474739													
WG474739ICV	ICV	06/17/19 20:12	MS190513-2	.05		.04835	mg/L	97	90	110			
WG474739ICB	ICB	06/17/19 20:14				U	mg/L		-0.0011	0.0011			
WG474739LFB	LFB	06/17/19 20:16	MS190606-3	.05005		.04846	mg/L	97	85	115			
L52434-04AS	AS	06/17/19 20:47	MS190606-3	.05005	U	.04746	mg/L	95	70	130			
L52434-04ASD	ASD	06/17/19 20:49	MS190606-3	.05005	U	.04671	mg/L	93	70	130	2	20	

Zinc, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG475606													
WG475606ICV	ICV	06/27/19 2:15	II190613-1	2		1.924	mg/L	96	95	105			
WG475606ICB	ICB	06/27/19 2:21				U	mg/L		-0.03	0.03			
WG475606LFB	LFB	06/27/19 2:33	II190606-4	.50075		.515	mg/L	103	85	115			
L52249-02AS	AS	06/27/19 2:45	II190606-4	.50075	.04	.556	mg/L	103	85	115			
L52249-02ASD	ASD	06/27/19 2:48	II190606-4	.50075	.04	.537	mg/L	99	85	115	3	20	
L52434-08AS	AS	06/27/19 3:32	II190606-4	.50075	U	.502	mg/L	100	85	115			
L52434-08ASD	ASD	06/27/19 3:35	II190606-4	.50075	U	.51	mg/L	102	85	115	2	20	

Golder Associates

ACZ Project ID: ***L52434***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52434-01	WG475119	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474775	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.
L52434-02	WG475119	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474775	Residue, Filterable (TDS) @180C	SM2540C	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG475119	Sulfate	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.
L52434-03	WG475119	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG475119	Sulfate	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.

Golder Associates

ACZ Project ID: ***L52434***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52434-04	WG475119	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG475119	Sulfate	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.
	WG474739	Vanadium, dissolved	M200.8 ICP-MS	BE	Target analyte in continuing calibration blank (CCB) at or above the acceptance criteria. Target analyte was not detected in the sample [< MDL].
L52434-05	WG475119	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.

Golder Associates

ACZ Project ID: ***L52434***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52434-06	WG479635	Chloride	M300.0 - Ion Chromatography	C4	Confirmatory analysis was past holding time.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG475119	Sulfate	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.
L52434-07	WG479635	Chloride	M300.0 - Ion Chromatography	C4	Confirmatory analysis was past holding time.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG475119	Sulfate	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.

Golder Associates

ACZ Project ID: ***L52434***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L52434-08	WG475119	Chloride	M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474831	Residue, Filterable (TDS) @180C	SM2540C	Z3	Sample volume yielded a residue less than 2.5 mg
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.
L52434-09	WG475119	Chloride	M300.0 - Ion Chromatography	DC	Sample required dilution. Non-target analyte exceeded calibration range.
			M300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474803	Cyanide, Free	D6888-09/OIA-1677-09	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG474677	Mercury, dissolved	M245.1 CVAA	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG474530	Nitrite as N, dissolved	M353.2 - Automated Cadmium Reduction	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG474739	Silver, dissolved	M200.8 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.8 ICP-MS	RF	Relative Percent Difference (RPD) for Ag in spiked samples exceeded limit. In the absence of HCl, precipitation of Ag may occur at different rates.
			M200.8 ICP-MS	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.
	WG476400	Total Alkalinity	SM2320B - Titration	H1	Sample prep or analysis performed past holding time. See case narrative.

Golder Associates
Project ID: 19121576
Sample ID: MW-1
Locator:

ACZ Sample ID: ***L52434-01***
Date Sampled: *06/12/19 10:35*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		20	18	120	pCi/L		amk
Gross Beta	06/19/19 0:00		28	22	68	pCi/L		amk

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RadioChemistry Analytical Results

Golder Associates
Project ID: 19121576
Sample ID: MW-2
Locator:

ACZ Sample ID: ***L52434-02***
Date Sampled: *06/12/19 13:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		0.14	18	77	pCi/L		amk
Gross Beta	06/19/19 0:00		-3.9	30	49	pCi/L		amk

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RadioChemistry Analytical Results

Golder Associates
Project ID: 19121576
Sample ID: MW-3
Locator:

ACZ Sample ID: ***L52434-03***
Date Sampled: *06/12/19 15:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		3.5	11	51	pCi/L		amk
Gross Beta	06/19/19 0:00		1.6	16	42	pCi/L		amk

Golder Associates
Project ID: 19121576
Sample ID: MW-4
Locator:

ACZ Sample ID: ***L52434-04***
Date Sampled: *06/12/19 11:40*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
Prep Method:
M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		-17	22	150	pCi/L		amk
Gross Beta	06/19/19 0:00		-11	57	150	pCi/L		amk

Golder Associates
Project ID: 19121576
Sample ID: MW-5
Locator:

ACZ Sample ID: ***L52434-05***
Date Sampled: *06/12/19 9:10*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		8.5	9.2	40	pCi/L		amk
Gross Beta	06/19/19 0:00		8.2	13	52	pCi/L		amk

Golder Associates
Project ID: 19121576
Sample ID: MW-6
Locator:

ACZ Sample ID: ***L52434-06***
Date Sampled: *06/12/19 14:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
Prep Method:
M900.0

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		-33	24	110	pCi/L		amk
Gross Beta	06/19/19 0:00		56	47	110	pCi/L		amk

Golder Associates
Project ID: 19121576
Sample ID: MW-7
Locator:

ACZ Sample ID: ***L52434-07***
Date Sampled: *06/12/19 14:45*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		23	41	170	pCi/L		amk
Gross Beta	06/19/19 0:00		42	52	110	pCi/L		amk

Golder Associates
Project ID: 19121576
Sample ID: MW-15
Locator:

ACZ Sample ID: ***L52434-08***
Date Sampled: *06/12/19 9:00*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		-0.15	0.76	4.8	pCi/L		amk
Gross Beta	06/19/19 0:00		0.4	2.5	6.7	pCi/L		amk

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RadioChemistry Analytical Results

Golder Associates
Project ID: 19121576
Sample ID: MW-20
Locator:

ACZ Sample ID: ***L52434-09***
Date Sampled: *06/12/19 9:30*
Date Received: *06/13/19*
Sample Matrix: *Groundwater*

Gross Alpha & Beta, dissolved
M900.0

Prep Method:

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	06/19/19 0:00		14	10	36	pCi/L		amk
Gross Beta	06/19/19 0:00		21	13	36	pCi/L		amk

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

DUP	Sample Duplicate	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	*PBS*	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.

Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

(1)	Solid matrices are reported on a dry weight basis.
(2)	Preparation method: "Method" indicates preparation defined in analytical method.
(3)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

Golder Associates

ACZ Project ID: ***L52434***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Alpha M900.0 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG474996																
WG474720PBW	PBW	06/19/19						1.3	1.2	5.2			10.4			
WG474720LCSWA	LCSW	06/19/19	PCN58725	100				100	8.4	3.5	100	67	144			
L52434-08DUP	DUP-RER	06/19/19			-0.15	0.76	4.8	.77	1.5	5.1				0.55	2	
L52244-03MSA	MS	06/19/19	PCN58725	100	9.6	3.5	7.8	91	10	7.8	81	67	144			
L52244-01DUP	DUP-RER	06/19/19			3.2	2.3	7.7	6.5	3	13				0.87	2	

Beta M900.0 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec%	Lower	Upper	RPD/RER	Limit	Qual
WG474996																
WG474720PBW	PBW	06/19/19						.77	2.7	12			24			
WG474720LCSWB	LCSW	06/19/19	RC190312-11	98.52				87	5.9	5.4	88	82	122			
L52434-08DUP	DUP-RER	06/19/19			0.4	2.5	6.7	1	2.6	4.2				0.17	2	
L52245-01MSB	MS	06/19/19	RC190312-11	98.52	8	3.1	8.6	120	7	7.6	114	82	122			
L52244-01DUP	DUP-RER	06/19/19			1.2	2.6	6.9	7.8	3	8.5				1.66	2	

RadChem Extended Qualifier Report

Golder Associates

ACZ Project ID: ***L52434***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION

No extended qualifiers associated with this analysis

Golder Associates

ACZ Project ID: ***L52434***

Metals Analysis

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Iron, dissolved	M200.8 ICP-MS

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Sample Receipt

Golder Associates
19121576

ACZ Project ID: L52434
Date Received: 06/13/2019 12:13
Received By:
Date Printed: 6/14/2019

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
6023	0.1	<=6.0	14	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Golder Associates
19121576

ACZ Project ID: L52434
Date Received: 06/13/2019 12:13
Received By:
Date Printed: 6/14/2019

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L52434

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Sara Harkins
Company: Golder Associates
E-mail: Sara_Harkins@golder.com
Address: 44 Union Blvd, Ste 300
Lakewood, CO 80228
Telephone: 303-980-0540

Copy of Report to:

Name: Matthew Cahalan
Company: Golder Associates
E-mail: Matthew_Cahalan@golder.com
Telephone: 515-250-0365

Invoice to:

Name: Sara Harkins
Company: Golder Associates
E-mail: Sara_Harkins@golder.com
Address: 44 Union Blvd, Ste 300
Lakewood, CO 80228
Telephone: 303-980-0540

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: M. Cahalan **Sampler's Site Information** **State** Colorado **Zip code** 80535 **Time Zone** MST

***Sampler's Signature:** Matthew Cahalan

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: HOLCIM-TAB1 ; B042395
PO#: 19121576 (Golder's project number)
Reporting state for compliance testing:
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	See Quote/SOP (attached)
MW-1	6/12/2019 1035	GW	5	X
MW-2	6/12/2019 1310	GW	5	X
MW-3	6/12/2019 1540	GW	5	X
MW-4	6/12/2019 1140	GW	5	X
MW-5	6/12/2019 0910	GW	5	X
MW-6	6/12/2019 1400	GW	5	X
MW-7	6/12/2019 1445	GW	5	X
MW-15	6/12/2019 0900	GW	5	X
MW-20	6/12/2019 0930	GW	5	X

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Two coolers with samples associated with this COC.
Samples field filtered according to bottle order *Quote attached to this COC*
Short hold times for nitrate as N, nitrite as N, and nitrate/nitrite as N

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Matthew Cahalan	6/12/2019 1645		6/13/19 12:17

FRM-00059 06/2014 White - Return with sample. Yellow - Retain for your records.

L52434 Chain of Custody

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

10/22/2018

Accounts Payable
Golder Associates
44 Union Blvd., Suite 300
Lakewood, CO 80228

Quote Number: HOLCIM-TAB1

Matrix: Groundwater Holcim Groundwater Monitoring Table 1

Parameter	Method	Detection Limit	Cost/Sample
Metals Analysis			
Aluminum, dissolved	M200.7 ICP	0.03 mg/L	$0.00
Antimony, dissolved	M200.8 ICP-MS	0.0004 mg/L	$14.45
Arsenic, dissolved	M200.8 ICP-MS	0.0002 mg/L	$14.40
Barium, dissolved	M200.7 ICP	0.003 mg/L	$0.00
Beryllium, dissolved	M200.8 ICP-MS	0.00005 mg/L	$14.45
Boron, dissolved	M200.7 ICP	0.01 mg/L	$0.00
Cadmium, dissolved	M200.8 ICP-MS	0.00005 mg/L	$14.45
Calcium, dissolved	M200.7 ICP	0.1 mg/L	$0.00
Chromium, dissolved	M200.8 ICP-MS	0.0005 mg/L	$14.45
Cobalt, dissolved	M200.7 ICP	0.01 mg/L	$0.00
Copper, dissolved	M200.7 ICP	0.01 mg/L	$0.00
Iron, dissolved	M200.7 ICP	0.02 mg/L	$0.00
Lead, dissolved	M200.8 ICP-MS	0.0001 mg/L	$14.45
Lithium, dissolved	M200.7 ICP	0.008 mg/L	$0.00
Magnesium, dissolved	M200.7 ICP	0.2 mg/L	$0.00
Manganese, dissolved	M200.7 ICP	0.005 mg/L	$0.00
Mercury, dissolved	M245.1 CVAA	0.0002 mg/L	$18.70
Molybdenum, dissolved	M200.7 ICP	0.02 mg/L	$0.00
Nickel, dissolved	M200.7 ICP	0.008 mg/L	$7.65
Potassium, dissolved	M200.7 ICP	0.2 mg/L	$0.00
Selenium, dissolved	M200.8 ICP-MS	0.0001 mg/L	$14.40
Silver, dissolved	M200.7 ICP	0.01 mg/L	$0.00
Sodium, dissolved	M200.7 ICP	0.2 mg/L	$0.00
Thallium, dissolved	M200.8 ICP-MS	0.0001 mg/L	$14.45
Uranium, dissolved	M200.8 ICP-MS	0.0001 mg/L	$14.45
Vanadium, dissolved	M200.7 ICP	0.005 mg/L	$0.00
Zinc, dissolved	M200.7 ICP	0.01 mg/L	$0.00
Misc.			
Electronic Data Deliverable			$0.00
Electronic Data Deliverable			$0.00
Quality Control Summary			$0.00
Setup charge for ICP, dissolved			$80.00
Radiochemistry			

REPAD.09.06.05.01 S/ sh D/ ## P/

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

Accounts Payable
Golder Associates
44 Union Blvd., Suite 300
Lakewood, CO 80228

10/22/2018

Gross Alpha & Beta, dissolved	M900.0	2 to 4 pCi/L	$42.50
Wet Chemistry			
Chloride	M300.0 - Ion Chromatography	0.4 mg/L	$11.05
Cyanide, Free	D6888-09/OIA-1677-09	0.006 mg/L	$28.90
Fluoride	SM4500F-C	0.05 mg/L	$9.35
Nitrate as N, dissolved	Calculation: NO3NO2 minus NO2	Calculation	$0.00
Nitrate/Nitrite as N, dissolved	M353.2 - Automated Cadmium Redu	0.02 mg/L	$9.35
Nitrite as N, dissolved	M353.2 - Automated Cadmium Redu	0.01 mg/L	$9.35
pH (lab)	SM4500H+ B	0.1 C	$6.80
Residue, Filterable (TDS) @180C	SM2540C	10 mg/L	$11.90
Sulfate	M300.0 - Ion Chromatography	0.4 mg/L	$11.05
		Cost/Sample:	**$376.55**

Pricing includes standard deliverables and turnaround. Includes a QC Summary and default electronic data deliverable. Method detection limits are estimates and may be elevated depending on sample matrix.

NOTE: Quotes do not currently reflect customized reporting units. Please verify with your Project Manager that customized units have been configured correctly.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

10/22/2018

Accounts Payable
Golder Associates
44 Union Blvd., Suite 300
Lakewood, CO 80228

Quote Number: HOLCIM-TAB1

CONTRACT DETAILS
Pricing includes coolers, bottles pre-preserved as needed, labels, COCs and ice-packs shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow three to five days for delivery when ordering containers. ACZ must be notified prior to receiving samples of all special requests such as electronic data deliverables or special reporting requirements. The client will be charged for special sample containers or express shipping and additional charges may apply for non-standard requests.

This quotation is valid for six months from the bid date unless specified otherwise in the bid. All bids must be signed and returned to ACZ before the project(s) is received. The authorized signature represents acceptance of the pricing as well as the general terms and conditions of ACZ Laboratories, Inc. which may be downloaded from our web site at http://www.acz.com/PDF/termsconditions.pdf. Please note that MDL's in this quote may possibly increase due to sample matrix or samples with high TDS.

All orders that require shipping of coolers are subject to a minimum charge of $200.00. Local orders without shipping are subject to a minimum charge of $125.00. Samples may incur a $11.00/sample disposal fee for any samples deemed to be hazardous.

ACZ Representative (Authorized signature and date) _____

Client Representative (Authorized signature and date) _____

ATTACHMENT 2

Field Sheets

GOLDER

WELL DEVELOPMENT/PURGING FORM

Project Ref: Holcim/Boettcher Quarry 2019 GW Mntg **Project No.:** 19121576

Location MW-2

Monitored By: MC + TH Date 6/5/2019 Time 1532

Well Piezometer Data

(circle one)

Depth of Well (from top of PVC or ground)	112	feet
Depth of Water (from top of PVC or ground)	64.57	feet
Radius of Casing	2	inches
	0.17	feet
Casing Volume	—	cubic feet
	7.74	gallons

0.1632 gal/ft in 2" well

Development / Purging Discharge Data

Purging Method	Bailer			
Start Purging	Date 6/5/19	Time 1532		
Stop Purging	Date 6/5/19	Time 1632		

Monitoring

Date	Time	Volume Discharge (gals)	Temp (°C)	pH	Spec.Cond. (µS/cm)	Relative Turbidity (~~NTU~~)		Appearance of Water and Comments
6/5/19	1543	3.0	15.04	9.27	10,670	mod.		light orangeish brown, soapy
	1552	6.0	14.68	9.07	11080	mod.		" " " " "
	1604	9.0	14.98	9.00	11240	Low		Cloudy, soapy, light brown
	1615	12.0	14.85	9.00	11340	Low		" slight to clearer "
	1631	15.0	14.79	8.98	11,320	low		light brown to clear, slight sulfur smell, soapy
		Dry at	15.25	gallons				

GOLDER

WELL DEVELOPMENT/PURGING FORM

Project Ref: Holcim/Boettcher Quarry 2019 GW Mntrg **Project No.:** 19121576

Location MW-3

Monitored By: MC + TH Date 6/6/2019 Time 1142

Well Piezometer Data

(circle one)

Depth of Well (from top of PVC or ground)	169.2	feet
Depth of Water (from top of PVC or ground)	38.51	feet
Radius of Casing	2	inches
	0.17	feet
Casing Volume	—	cubic feet
	11.21	gallons

0.1632 gal/ft in 2" well

Development / Purging Discharge Data

Purging Method: Hydrolift inertial pump

Start Purging Date 6/6/2019 Time 1142

Stop Purging Date 6/6/2019 Time 1209

Monitoring

Date	Time	Volume Discharge (gals)	Temp (°C)	pH	Spec.Cond. (µS/cm)	Relative Turbidity (~~NTU~~)		Appearance of Water and Comments
6/6/19	1146	4	17.31	9.35	6,913	Low		clear, grey suspended
|	1151	8	17.46	9.29	6,870	Low		solids 〃
|	1156	12	17.58	9.18	6,716	Low		light grey, slightly more turbid
|	1204	16	18.23	9.27	7,016	Low		〃 〃 〃
|	1209	17	—	—	—	—		Dry
		Dry at 17.0 gallons						

GOLDER

WELL DEVELOPMENT/PURGING FORM

Project Ref: Holcim/Boettcher Quarry 2019 GW Mntrg **Project No.:** 19121576

Location MW-4

Monitored By: MC + TH Date 6/6/2019 Time 0805

Well Piezometer Data

(circle one)

Depth of Well (from top of PVC or ground)	187	feet	4-gallon bucket dumps
Depth of Water (from top of PVC or ground)	62.71	feet	IIII III
Radius of Casing	2	inches	
	0.17	feet	
Casing Volume	—	cubic feet	
	19.47	gallons	0.1632 gal/ft in 2" well

Development / Purging Discharge Data

Purging Method: Bailer

Start Purging Date 6/6/19 Time 0805

Stop Purging Date 6/6/19 Time 1059

Monitoring

Date	Time	Volume Discharge (gals)	Temp (°C)	pH	Spec.Cond. (~~µ~~S/cm)	Relative Turbidity (~~NTU~~)		Appearance of Water and Comments
6/6/19	0838	8.0	12.61	9.11	19,440	low		light gray, soapy, sulfur smell
|	0911	16.0	13.17	9.05	19,480	low		slightly darker gray
|	0955	24.0	13.02	9.32	19,370	low-med		mod. gray, soapy, sulfur smell
|	1045	32.0	14.97	9.19	19,580	low-med		" " "
|	1059	34.25	14.63	9.28	19,430	low-med		" " "
		Dry at 34.25 gallons						

GOLDER

WELL DEVELOPMENT/PURGING FORM

Project Ref: Holcim/Boettcher Quarry 2019 GW Mntrg **Project No.:** 19121576

Location MW-6

Monitored By: MC + TH Date 6/5/19 Time 1330

Well Piezometer Data

(circle one)

Depth of Well (from top of PVC or ground)	229.7	feet
Depth of Water (from top of PVC or ground)	196.10	feet
Radius of Casing	4	inches
	0.33	feet
Casing Volume	—	cubic feet
	21.93	gallons

0.0528 gal/ft in 4" well

Development / Purging Discharge Data

Purging Method: Bailer w/ winch

Start Purging Date 6/5/19 Time 1330

Stop Purging Date 6/5/19 Time 1440

Monitoring

Date	Time	Volume Discharge (gals)	Temp (°C)	pH	Spec.Cond. (µS/cm)	Relative Turbidity (NTU)		Appearance of Water and Comments
6/5/19	1340	4	14.98	9.13	17800	cloudy		sulfur-like odor, slight petroleum odor
	1348	8	15.03	9.06	17960	"	"	
	~~1356~~	12	14.90	9.04	17940	"	"	
	1402	16	15.32	8.89	18010	"	"	
	1415	20	~~15.42~~ 15	8.86	17980	"	"	
	1423	24	15.05	8.76	18340	"	"	
	1433	28	15.44	8.91	17930	"	"	
	1438	30	17.09	8.84	19030	"	"	
		Dry at 30.0 gallons						

GOLDER

WELL DEVELOPMENT/PURGING FORM

Project Ref: Holcim/Boettcher Quarry 2019 GW Mntrg **Project No.:** 19121576

Location

MW-7

Monitored By: MC + TH Date 6/5/19 Time 1110

Well Piezometer Data

(circle one)

5-gallon bucket dumps

Depth of Well (from top of PVC or ground)	259.2	feet
Depth of Water (from top of PVC or ground)	215.34	feet
Radius of Casing	4	inches
	0.33	feet
Casing Volume	—	cubic feet
	28.63	gallons

MW 11

0.0528 gal/ft in 4" well

Development / Purging Discharge Data

Purging Method: Bailer w/ winch

Start Purging Date 6/5/19 Time 1110

Stop Purging Date 6/5/19 Time 1253

Monitoring

Date	Time	Volume Discharge (gals)	Temp (°C)	pH	Spec.Cond. (µS/cm)	Relative Turbidity (~~NTU~~)		Appearance of Water and Comments
6/5/19	1120	5.0	14.91	9.64	15,060	very low		clear to very light brown; sulfur smell; soapy
	1134	10.0	14.43	9.67	15,140	very low		" " " " " "
	1145	15.0	14.12	9.53	16,490	very low		same as above, becoming light gray, soapy
	1158	20.0	13.93	9.61	16,930	low-mod		mod. brownish gray, some sus. solids, slightly ~~soapy~~
	1210	25.0	13.85	9.29	19,060	mod-high		sulfur smell dark brownish gray, some sus. solids (black), slightly soapy, sulfur smell
	1222	30.0	13.82	8.90	19,090	mod-high		mod. to dark gray, some sus. solids (black) slightly soapy, sulfur smell
	1235	34.5	13.70	8.85	~~2000~~ 20,120	high		" " " " "
	1253	Dry at 38.0 gallons						

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 19121576	Date: 6/12/19
Monitoring Well I.D.: **MW-1**	Weather Conditions: ~70 F clear, sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	43.78	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	65.59 ft btoc	9. Dedicated? (Yes or No)	~~Yes~~ No, disposable
3. Casing Diameter (in.)	2	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	3.56	11. Time to Purge Well (min)	0955-1023 28
5. 3 x Casing Volume (gallons)	10.68	12. Immiscible Layer Observed (yes or no)	NO
6. Actual Volume of Water Purged	11.0	13. Thickness if Immiscible layer (if present)	N/A
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	1011	6.0	16.9	7.64	6,410	~~clear~~ low	4.1
|	1017	8.5	16.7	7.59	6,310	clear	4.0
|	1023	11.0	17.1	7.69	6,420	clear	4.2
|							

Well Evacuated to Dryness? (Yes or No) No

Time to recharge? NA

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6-12-19	1035	11.0	17.2	16.8	6,740	clear	4.3

1. Sampling Equipment Used	Bailer				**Other Information:**	
2. Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
3. Sample Appearance:	clear ☒	low ☐	medium ☐	high ☐		
4. Color	none				**Instrument Calibrations**	pH, conductivity
5. Odor	none					
6. Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	None

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project number: 19121576	Date: 6/12/2019
Monitoring Well I.D.: **MW-2**	Weather Conditions: ~ 75 F sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	100.55 (6/12/2019)	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	112 ft btoc	9. Dedicated? (Yes or No)	Yes (rope)
3. Casing Diameter (in.)	2	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	–	11. Time to Purge Well (min)	–
5. 3 x Casing Volume (gallons)	–	12. Immiscible Layer Observed (yes or no)	No
6. Actual Volume of Water Purged	–	13. Thickness if Immiscible layer (if present)	NA
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
		Purged dry on 6/5/19					

Well Evacuated to Dryness? (Yes or No) Yes

Time to recharge? ~7 days

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/2019	1310	~~First bailer dumped~~ 0 gallons	18.6	8.15	11,080	clear	6.3

1. Sampling Equipment Used	Bailer				**Other Information:**	
2. Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
3. Sample Appearance:	clear ☒	low ☐	medium ☐	high ☐		
4. Color	Clear				**Instrument Calibrations**	pH, conductivity
5. Odor	Strong sulfur smell					
6. Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	None

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 191215760	Date: 6/12/2019
Monitoring Well I.D.: **MW-3**	Weather Conditions: ~ 90 F Sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	80.32 (6/12/2019)	8. Purge Equipment Used	HDPE tubing
2. Bottom of Casing[1] (±0.01ft.)	107.2 ft btoc	9. Dedicated? (Yes or No)	Yes
3. Casing Diameter (in.)	2	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	–	11. Time to Purge Well (min)	–
5. 3 x Casing Volume (gallons)	–	12. Immiscible Layer Observed (yes or no)	No
6. Actual Volume of Water Purged	–	13. Thickness if Immiscible layer (if present)	NA
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
		Purged dry on	6/6/19				

Well Evacuated to Dryness? (Yes or No) Yes

Time to recharge? ~6 days

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/2019	1540	[redacted] 0.5	21.8	8.25	7,030	clear	3.9

1. Sampling Equipment Used	HDPE tubing				**Other Information:**	
2. Pump Rate	NA				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
3. Sample Appearance:	clear ☒	low ☐	medium ☐	high ☐		
4. Color	Clear				**Instrument Calibrations**	pH, conductivity
5. Odor	None					
6. Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	Difficulty advancing HDPE tubing, in part due to warm weather reducing rigidity of tubing, which also led to longer purge time.

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 191215760	Date: 6/12/2019
Monitoring Well I.D.: **MW-4**	Weather Conditions: ~ 70 F Sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	144.38 (6/12/2019)	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	182 ft btoc	9. Dedicated? (Yes or No)	Yes (rope)
3. Casing Diameter (in.)	2	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	–	11. Time to Purge Well (min)	–
5. 3 x Casing Volume (gallons)	–	12. Immiscible Layer Observed (yes or no)	No
6. Actual Volume of Water Purged	–	13. Thickness if Immiscible layer (if present)	NA
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
		Purged dry on	6/6/19				

Well Evacuated to Dryness? (Yes or No) Yes

Time to recharge? ~6 days

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	1140	First bailer dumped (0.25 gallons)	15.6	7.96	18,390	clear	10.9

1. Sampling Equipment Used	Bailer				**Other Information:**	
2. Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
3. Sample Appearance:	clear ☒	low ☐	medium ☐	high ☐		
4. Color	Clear				**Instrument Calibrations**	pH, conductivity
5. Odor	Sulfur smell					
6. Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	None

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 191215760	Date: 6/12/19
Monitoring Well I.D.: **MW-5**	Weather Conditions: ~ 65 F Sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	47.04	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	60.3 ft btoc	9. Dedicated? (Yes or No)	No, disposable
3. Casing Diameter (in.)	2	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	2.16	11. Time to Purge Well (min) Start-0830 end-0859	29
5. 3 x Casing Volume (gallons)	6.49	12. Immiscible Layer Observed (yes or no)	No
6. Actual Volume of Water Purged	7.0	13. Thickness if Immiscible layer (if present)	NA
7. Water Level Measuring Equip.	300' Electronic		

Collected MW-20 (duplicate) @ 0930

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	0840	~~3.0~~ 3.5	15.3	6.93	3,951	low, very light brown	2.1
6/12/19	0852	5.0	15.2	6.97	3,974	very low, very light brown	2.1
6/12/19	0859	7.0	15.2	7.03	3,990	very low, very light brown to clear	2.1

Well Evacuated to Dryness? (Yes or No) No

Time to recharge? NA

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	0910	—	15.2	7.06	3,983	clear to very low	2.1

Sampling Equipment Used	Bailer				**Other Information:**	
Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
Sample Appearance	clear ☒	low ☐	medium ☐	high ☐		
Color	very light brown				**Instrument Calibrations**	pH, conductivity
Odor	None					
Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	None

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 191215716	Date: 6/12/19
Monitoring Well I.D.: **MW-6**	Weather Conditions: ~ 75 F sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	197.59 (6/12/19)	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	229.7 ft btoc	9. Dedicated? (Yes or No)	~~Yes~~ No, disposable
3. Casing Diameter (in.)	4	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	–	11. Time to Purge Well (min)	–
5. 3 x Casing Volume (gallons)	–	12. Immiscible Layer Observed (yes or no)	Yes
6. Actual Volume of Water Purged	–	13. Thickness if Immiscible layer (if present)	Top of water
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
		Purged dry on 6/5/19					

Well Evacuated to Dryness? (Yes or No) Yes

Time to recharge? ~7 days

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	1400	First bailer dumped (1 gallon)	17.9	7.76	18,000	clear	10.7

Sampling Equipment Used	Bailer				**Other Information:**	
Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
Sample Appearance:	clear ☑	low ☐	medium ☐	high ☐		
Color	clear				**Instrument Calibrations**	pH, conductivity
Odor	none					
Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	none

GROUNDWATER SAMPLING DATA SHEET

Project Name: **Holcim/Boettcher Quarry 2019 Groundwater Monitoring**	Sampler Name(s): **Matthew Cahalan and Tricia Hall**
Project Number: 19121576	Date: 6/12/2019
Monitoring Well I.D.: **MW-7**	Weather Conditions: ~75 F sunny
Wellhead Inspection (note conditions): good, locked, intact	

Groundwater Measurements and Purge Data:

1. Static Water Level[1] (±0.01ft.)	256.90	8. Purge Equipment Used	Bailer
2. Bottom of Casing[1] (±0.01ft.)	259.2 ft btoc	9. Dedicated? (Yes or No)	~~No~~, disposable
3. Casing Diameter (in.)	4	10. Purge Rate (if pump used)	N/A
4. Casing Volume (gallons)	—	11. Time to Purge Well (min)	—
5. 3 x Casing Volume (gallons)	—	12. Immiscible Layer Observed (yes or no)	No
6. Actual Volume of Water Purged	—	13. Thickness if Immiscible layer (if present)	NA
7. Water Level Measuring Equip.	300' Electronic		

[1]Measured from a defined point on the edge of casing (surveyed top of casing)

Purge Parameters:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
		Purged dry on 6/5/19					

Well Evacuated to Dryness? (Yes or No) Yes

Time to recharge? ~7 days

Groundwater Sample Information:

Date	Time	Volume Purged (gallons)	Temp (°C)	pH	Specific Conductivity (µS/cm)	Relative Turbidity	Salinity (ppt)
6/12/19	1445	~~First bailer dumped~~ 0 gallons	16.3	7.61	19,110	low, light gray	11.4

Sampling Equipment Used	Bailer				**Other Information:**	
Pump Rate	N/A				**Decontamination Procedures**	Alconox, DI rinse, nitrile gloves
Sample Appearance:	clear ☐	~~low~~ ☒	medium ☐	high ☐		
Color	light gray				**Instrument Calibrations**	pH, conductivity
Odor	Slight sulfur odor					
Method of Sample Preservation	HNO_3, NaOH				**Unusual Occurrences**	None