Mine Permit Groundwater Quality Monitoring Data
HW-1L (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.44	0.3	1.22
ORP	mV	-	-239.2	-299.5	-241.5
pH	SU	8.14-9.14	8.44	8.55	8.51
Specific Conductance	uS/cm	-	353.2	294.1	344.8
Temperature	C	-	7.1	9.3	10.6
Turbidity	NTU	-	2.98	3.3	2.9
Water Elevation	ft MSL	-	1467.56	1445.58	1444.77
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	745.21	-	-	**598**
Cadmium	ug/L	3.000	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	1186.83	**957**	**606**	**480**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	23.04	-	-	**13.2**
Manganese	ug/L	200	< 50.0	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.8	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	109.06	**79.1**	**82.2**	**80.7**
Alkalinity, Carbonate	mg/L	7.8	< 2.0	<2.0	<2.0
Chloride	mg/L	57.2	**41.5**	**34.8**	**35.6**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	33.01	**30.0**	**26.1**	**27.8**
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	34.39	**26.8**	**24.9**	**24.3**
Magnesium	mg/L	14.63	**11.2**	**10**	**10.4**
Potassium	mg/L	6.17	**1.8**	**1.9**	**1.7**
Sodium	mg/L	28.01	**22.9**	**20.1**	**21.3**
General					
Hardness	mg/L	155.68	**113**	**103**	**104**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
HW-1U LLA (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.45	2.04	1.27
ORP	mV	-	-233.5	-217.2	-241.2
pH	SU	8.06-9.06	8.50	8.44	8.47
Specific Conductance	uS/cm	-	405.4	345.6	398.2
Temperature	C	-	7.6	9.7	9.9
Turbidity	NTU	-	7.75	3.09	4.74
Water Elevation	ft MSL	-	1518.62	1486.75	1415.26
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	9.6	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	8.56	< 4.0	<4.0	<4.0
Iron	ug/L	56769.6	**344**	**595**	**293**
Lead	ug/L	15.0	< 3.0	<3.0	<3.0
Lithium	ug/L	17.39	-	-	**12.1**
Manganese	ug/L	672.84	< 50.0	<50.0	<50.0
Mercury	ng/L	14.2	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	44.15	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	156.67	**100**	**106**	**104**
Alkalinity, Carbonate	mg/L	64.24	< 2.0	<2.0	<2.0
Chloride	mg/L	61.2	**17.7**	**17.8**	**17.6**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.299	**0.158**	**0.169**	**0.100**
Nitrogen, Nitrate	mg/L	0.57	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.78	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	395.42	**66.0**	**58.3**	**63.0**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	61.29	**26.3**	**21.5**	**26.5**
Magnesium	mg/L	25.82	**9.9**	**7.9**	**9.7**
Potassium	mg/L	16.88	**2.9**	**3.1**	**3.3**
Sodium	mg/L	134.27	**38.7**	**43.0**	**40.0**
General					
Hardness	mg/L	170.91	**106**	**86.0**	**106**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
HW-1U UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.23	1.15	1.25
ORP	mV	-	-362.3	-243.8	-293.5
pH	SU	8.4-9.4	8.96	8.63	8.76
Specific Conductance	uS/cm	-	237.9	139.1	218.5
Temperature	C	-	7.1	9.0	9.6
Turbidity	NTU	-	4.71	22.29	4.4
Water Elevation	ft MSL	-	1534.68	1536.77	1536.05
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	9.3	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	1364.17	**352**	**234**	**352**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	16.74	-	-	<10.0
Manganese	ug/L	80.14	**51.4**	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	121.72	**87.9**	**68.0**	**75.2**
Alkalinity, Carbonate	mg/L	17.08	**5.6**	<2.0	<2.0
Chloride	mg/L	96.09	< 10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.097	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	72.34	**5.4**	**3.2**	**11.9**
Sulfide	mg/L	2.47	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	34.03	**24.3**	**17.6**	**23.2**
Magnesium	mg/L	15.63	**7.2**	**4.5**	**6.5**
Potassium	mg/L	20.91	**4.4**	**2.5**	**4.1**
Sodium	mg/L	67.74	**6.8**	**4.8**	**8.4**
General					
Hardness	mg/L	146.74	**90.4**	**62.5**	**84.9**
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		-			

Mine Permit Groundwater Quality Monitoring Data
HW-2 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.31	0.28	1.27
ORP	mV	-	-238.2	-229.3	-175.4
pH	SU	7.29-8.29	8.13	7.54	7.46
Specific Conductance	uS/cm	-	501.3	377.4	648.7
Temperature	C	-	7.1	7.4	9.4
Turbidity	NTU	-	66.7	56.23	55.58
Water Elevation	ft MSL	-	1531.54	1538.84	1538.22
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	2594.79	**662**	**2290**	**2950**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	333.37	**264**	**457**	**602**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	141.40	**81.4**	**80.9**	**70.9**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	34.7	**26.1**	**20.5**	**28.0**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.083	0.0386	< 0.025	< 10.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	175.33	**160**	**173**	**207**
Sulfide	mg/L	0.52	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	71.88	**38.1**	**33.6**	**40.9**
Magnesium	mg/L	26.49	**18.4**	**15.9**	**17.3**
Potassium	mg/L	6.12	**4.9**	**5.4**	**6.0**
Sodium	mg/L	29.55	**41.6**	**56.6**	**53.7**
General					
Hardness	mg/L	296.9	**171**	**149**	**174**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
HW-8U (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.32	0.21	2.25
ORP	mV	-	-105.2	-124.0	-85.1
pH	SU	6.4-7.4	6.65	6.81	6.88
Specific Conductance	uS/cm	-	445.3	384.9	386.5
Temperature	C	-	7.3	9.1	10.6
Turbidity	NTU	-	3.82	3.12	4.57
Water Elevation	ft MSL	-	1533.32	1537.62	1536.52
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4	-	-	<2.0
Arsenic	ug/L	8.8	**7.8**	**7.0**	**6.0**
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	22048.83	**10200**	**10300**	**8740**
Lead	ug/L	9	< 3.0	<3.0	<3.0
Lithium	ug/L	14.39	-	-	<10.0
Manganese	ug/L	6267.76	**6110**	**5530**	**4720**
Mercury	ng/L	4	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.8	-	-	<0.20
Thallium	ug/L	2	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	26.73	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	214.17	**155**	**153**	**142**
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0
Chloride	mg/L	18.35	**19.8**	**18.0**	**15.4**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.041	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	12.26	**14.9**	**14.2**	**14.1**
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	45.93	**45.6**	**43.6**	**38.6**
Magnesium	mg/L	18.68	**14.2**	**13.8**	**13.0**
Potassium	mg/L	3.64	**3.7**	**3.8**	**3.6**
Sodium	mg/L	4.26	**4.8**	**4.7**	**4.2**
General					
Hardness	mg/L	203.47	**172**	**166**	**150**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
HYG-1 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.37	1.52	1.27
ORP	mV	-	11.3	25.4	93.5
pH	SU	6.29-7.29	6.98	6.75	6.65
Specific Conductance	uS/cm	-	610.3	607.5	681.6
Temperature	C	-	7.1	10.4	9.2
Turbidity	NTU	-	1.96	2.54	2.17
Water Elevation	ft MSL	-	1532.35	1535.31	1534.79
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	**7.4**
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	9.22	< 4.0	<4.0	<4.0
Iron	ug/L	481.9	< 200	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	627.41	**711**	**841**	**981**
Mercury	ng/L	37.3	**10.4**	**6.86**	**19.8**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	25.31	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	372.91	**155**	**243**	**238**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	21.5	**16.5**	**13.1**	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.56	**0.233**	**0.215**	**0.310**
Nitrogen, Nitrate	mg/L	0.08	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.40	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	136.69	**133**	**109**	**95.1**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	65.21	**51.4**	**59.9**	**48.8**
Magnesium	mg/L	34.32	**25.6**	**28.3**	**25.2**
Potassium	mg/L	12.96	**10.4**	**11.5**	**9.9**
Sodium	mg/L	80.47	**25.7**	**38.0**	**42.8**
General					
Hardness	mg/L	321.93	**234**	**266**	**226**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
KMW-5R (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	6.68	2.71	7.35
ORP	mV	-	233.0	65.8	126.7
pH	SU	6.67-7.67	6.96	6.62	7.05
Specific Conductance	uS/cm	-	812.9	691.4	834.2
Temperature	C	-	9.2	11.0	10.8
Turbidity	NTU	-	1087.2	746.4	147.66
Water Elevation	ft MSL	-	1560.13	1567.71	1564.29
Metals					
Aluminum	ug/L	200	-	-	**1500**
Antimony	ug/L	4	-	-	<2.0
Arsenic	ug/L	7.5	**12.2**	**7.8**	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	28.32	**37.3**	**28.4**	**6.0**
Iron	ug/L	52956	**128000**	**77000**	**8860**
Lead	ug/L	9	**5.3**	**3.1**	<3.0
Lithium	ug/L	31.39	-	-	**13.4**
Manganese	ug/L	2789	**1610**	**1980**	**718**
Mercury	ng/L	14.89	**6.68**	<3.1	**1.55**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	**44.7**	**38.1**	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.8	-	-	<0.20
Thallium	ug/L	2	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	23.65	**21.4**	**14.5**	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	480.97	**374**	**371**	**383**
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0
Chloride	mg/L	191.74	< 10.0	<50.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.063	<0.025	<0.025	<0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	138.86	**75.6**	**66.0**	**76.0**
Sulfide	mg/L	0.8	< 1.0	<1.0	<0.20
Major Cations					
Calcium	mg/L	166.39	**105**	**105**	**107**
Magnesium	mg/L	65.48	**60.3**	**52.8**	**42.1**
Potassium	mg/L	8.30	**8.2**	**7.9**	**7.1**
Sodium	mg/L	7.71	**9.9**	**10.4**	**9.9**
General					
Hardness	mg/L	757.06	**511**	**479**	**441**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-9R (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019*
Field					
D.O.	ppm	-	1.7	3.05	NM
ORP	mV	-	33.6	100.1	NM
pH	SU	5.4-6.4	6.03	6.11	NM
Specific Conductance	uS/cm	-	329.3	201.1	NM
Temperature	C	-	7.5	8.3	NM
Turbidity	NTU	-	3.67	272.87	NM
Water Elevation	ft MSL	-	1596.33	1595.5	1590.99
Metals					
Aluminum	ug/L	200	-	-	NM
Antimony	ug/L	4.0	-	-	NM
Arsenic	ug/L	7.5	< 5.0	<5.0	NM
Barium	ug/L	400	-	-	NM
Beryllium	ug/L	2.5	-	-	NM
Boron	ug/L	1200	-	-	NM
Cadmium	ug/L	3.0	-	-	NM
Chromium	ug/L	40	-	-	NM
Cobalt	ug/L	80	-	-	NM
Copper	ug/L	38.92	< 4.0	<4.0	NM
Iron	ug/L	4098.78	**3190**	**1510**	NM
Lead	ug/L	9.0	< 3.0	<3.0	NM
Lithium	ug/L	40	-	-	NM
Manganese	ug/L	1376.02	**99.2**	**92.4**	NM
Mercury	ng/L	10.07	< 1.0	<1.0	NM
Molybdenum	ug/L	200	-	-	NM
Nickel	ug/L	185.91	**90.7**	**91.0**	NM
Selenium	ug/L	20	-	-	NM
Silver	ug/L	0.80	-	-	NM
Thallium	ug/L	2.0	-	-	NM
Vanadium	ug/L	-	-	-	NM
Zinc	ug/L	38.14	**14.1**	**25.9**	NM
Major Anions					
Alkalinity, Bicarbonate	mg/L	85.44	**33.3**	<2.0	NM
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	NM
Chloride	mg/L	184.87	**15.5**	**19.2**	NM
Fluoride	mg/L	2.5	< 1.0	<1.0	NM
Nitrogen, Ammonia	mg/L	0.22	< 0.025	< 0.025	NM
Nitrogen, Nitrate	mg/L	3.8	< 0.10	< 0.10	NM
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	NM
Sulfate	mg/L	334.5	**75.3**	**41.5**	NM
Sulfide	mg/L	0.80	< 0.20	<0.20	NM
Major Cations					
Calcium	mg/L	116.03	**27.1**	**17.3**	NM
Magnesium	mg/L	41.43	**9.4**	**6.1**	NM
Potassium	mg/L	5.21	**2.1**	**1.5**	NM
Sodium	mg/L	47.56	**7.1**	**7.2**	NM
General					
Hardness	mg/L	479.44	**106**	**68.3**	NM

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* - Insufficient groundwater present for sample collection

Mine Permit Groundwater Quality Monitoring Data
MW-701 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.75	2.41	2.75
ORP	mV	-	226.1	231.7	237.6
pH	SU	5.46-6.46	5.78	5.57	5.47
Specific Conductance	uS/cm	-	381.1	1220.1	1278.4
Temperature	C	-	5.1	7.7	12.9
Turbidity	NTU	-	1.30	1.7	2.76
Water Elevation	ft MSL	-	1532.35	1537.7	1536.81
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	**162**
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	497.99	< 200	<200	<200
Lead	ug/L	9	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	5262.51	**102**	**236**	**307**
Mercury	ng/L	8.44	< 1.0	**1.44**	**1.50**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.8	-	-	<0.20
Thallium	ug/L	2	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	**16.4**	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	117.82	**50.5**	**64.5**	**62.1**
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0
Chloride	mg/L	22.96	**63.3**	**345**	**333**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.402	< 0.025	<0.050	< 0.025
Nitrogen, Nitrate	mg/L	1.87	**1.16**	**1.27**	**1.44**
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	85.65	**21.3**	**20.0**	**33.9**
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	43.04	**29.6**	**73.9**	**58.8**
Magnesium	mg/L	18.63	**12.0**	**25.6**	**19.4**
Potassium	mg/L	8.95	**4.1**	**8.9**	**9.4**
Sodium	mg/L	11.68	**21.4**	**111**	**136**
General					
Hardness	mg/L	199.04	**123**	**290**	**227**
Silica	mg/L	-	-	-	**18.1**

Mine Permit Groundwater Quality Monitoring Data
MW-701 UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.24	0.25	1.25
ORP	mV	-	223.4	-113.8	-153.4
pH	SU	6.71-7.71	7.55	6.57	6.98
Specific Conductance	uS/cm	-	365.6	1867.8	5543.1
Temperature	C	-	7.56	7.4	9.5
Turbidity	NTU	-	41.77	41.11	24.24
Water Elevation	ft MSL	-	1532.63	1537.95	1537.02
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	157.47	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	45.38	< 4.0	<4.0	<4.0
Iron	ug/L	24957.73	**17500**	**48800**	**197000**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	12.91	-	-	**14.9**
Manganese	ug/L	4677.42	**1790**	**1870**	**16400**
Mercury	ng/L	4.0	< 1.0	**3.37**	**4.35**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	13.83	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	161.71	**147**	**112**	**259**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	48.85	**14.0**	**238**	**576**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	1.75	< 0.025	0.089	0.1
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	52.19	**2.9**	**619**	**1950**
Sulfide	mg/L	1.86	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	38.59	**39.0**	**181**	**504**
Magnesium	mg/L	16.16	**13.8**	**71.4**	**162**
Potassium	mg/L	8.53	**4.3**	**8.2**	**19.3**
Sodium	mg/L	33.46	**6.1**	**90.1**	**530**
General					
Hardness	mg/L	163.25	**154**	**747**	**1930**
Silica	mg/L	-	-	-	**32.9**

Explanations of abbreviations are included on the final page of this table.

Mine Permit Groundwater Quality Monitoring Data
MW-702 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.65	1.14	1.66
ORP	mV	-	216.7	221.4	70.3
pH	SU	8.81-9.91	7.30	6.83	6.92
Specific Conductance	uS/cm	-	363.9	380.1	406.4
Temperature	C	-	6.5	7.0	8.1
Turbidity	NTU	-	1.84	96.78	67.14
Water Elevation	ft MSL	-	1534.49	1537.05	1536.48
Metals					
Aluminum	ug/L	122.72	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	195.71	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	800	< 200	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	545.68	< 50.0	<50.0	**59.1**
Mercury	ng/L	3.55	**1.52**	<1.0	**2.53**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	160.17	**111**	**112**	**114**
Alkalinity, Carbonate	mg/L	40.7	< 2.0	<2.0	<2.0
Chloride	mg/L	17.58	< 10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.042	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	1.24	**0.209**	**0.442**	**0.192**
Nitrogen, Nitrite	mg/L	0.18	<0.10	<0.10	<0.10
Sulfate	mg/L	133.19	**65.7**	**91.4**	**79.3**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	78.82	**27.7**	**28.5**	**30.5**
Magnesium	mg/L	14.06	**10.4**	**14.3**	**12.3**
Potassium	mg/L	22.00	**7.5**	**5.4**	**4.6**
Sodium	mg/L	60.14	**28.0**	**33.6**	**33.0**
General					
Hardness	mg/L	251.25	**112**	**130**	**127**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-702 UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	2.59	0.26	3.01
ORP	mV	-	-147.3	-264.2	-151.4
pH	SU	7.11-8.11	7.91	8.19	7.92
Specific Conductance	uS/cm	-	278.5	219.3	265.4
Temperature	C	-	5.34	8.5	9.3
Turbidity	NTU	-	4.77	3.21	4.93
Water Elevation	ft MSL	-	1515.42	1509.57	1510.72
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	1328.38	**669**	**1280**	**536**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	12.91	-	-	<10.0
Manganese	ug/L	118.08	**92.0**	**97.0**	**84.4**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	76.03	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	111.84	**89.5**	**87.2**	**92.7**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.087	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	36.1	**37.4**	**32.7**	**35.0**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	38.98	**30.8**	**28.5**	**32.2**
Magnesium	mg/L	11.74	**9.7**	**8.8**	**9.9**
Potassium	mg/L	11.24	**3.1**	**3.3**	**3.1**
Sodium	mg/L	5.20	**3.2**	**3.0**	**3.3**
General					
Hardness	mg/L	139.94	**117**	**107**	**121**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-703 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2014	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field						
D.O.	ppm	-	-	5.49	6.01	6.11
ORP	mV	-	-	311.6	297.8	182.3
pH	SU	7.2-8.2	-	5.69	5.98	6.11
Specific Conductance	uS/cm	-	-	175.9	147.7	185
Temperature	C	-	-	5.7	6.9	7.3
Turbidity	NTU	-	-	2.3	2.42	2.75
Water Elevation	ft MSL	-	-	1534.86	1536.49	1536.39
Metals						
Aluminum	ug/L	200 (p)	200	-	-	<50.0
Antimony	ug/L	8.0 (p)	4.0	-	-	<2.0
Arsenic	ug/L	20 (p)	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400 (p)	400	-	-	<100
Beryllium	ug/L	4.0 (p)	2.5	-	-	<1.0
Boron	ug/L	1200 (p)	1200	-	-	<300
Cadmium	ug/L	4.0 (p)	3.0	-	-	<1.0
Chromium	ug/L	40 (p)	40	-	-	<10.0
Cobalt	ug/L	80 (p)	80	-	-	<20.0
Copper	ug/L	16 (p)	16	< 4.0	<4.0	<4.0
Iron	ug/L	255.36	286.57	< 200	<200	<200
Lead	ug/L	12 (p)	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40 (p)	40	-	-	<10.0
Manganese	ug/L	105.05	106.54	< 50.0	<50.0	<50.0
Mercury	ng/L	4.0 (p)	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200 (p)	200	-	-	<50.0
Nickel	ug/L	80 (p)	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20 (p)	20	-	-	<5.0
Silver	ug/L	0.8 (p)	0.80	-	-	<0.20
Thallium	ug/L	8.0 (p)	2.0	-	-	<2.0
Vanadium	ug/L	16 (p)	-	-	-	<4.0
Zinc	ug/L	40 (p)	40	< 10.0	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	99.57	92.34	**50.8**	**47.7**	**46.8**
Alkalinity, Carbonate	mg/L	8.0 (p)	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	40 (p)	40	< 10.0	<10.0	<10.0
Fluoride	mg/L	131.24	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.12 (p)	0.082	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.22	1.81	**1.76**	**1.92**	**1.91**
Nitrogen, Nitrite	mg/L	0.40 (p)	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	49.72	40.56	**27.7**	**19.1**	**26.8**
Sulfide	mg/L	0.3	0.80	< 0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	39.66	31.29	**18.6**	**16.7**	**17.4**
Magnesium	mg/L	10.72	9.83	**8.0**	**6.9**	**7.8**
Potassium	mg/L	3.13	2.57	**1.6**	**1.5**	**1.4**
Sodium	mg/L	10.48	7.74	**2.0**	**1.7**	**1.7**
General						
Hardness	mg/L	135.72	115.53	**79.4**	**70.0**	**75.3**
			-			
			-			

Mine Permit Groundwater Quality Monitoring Data
MW-703 UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.35	0.31	1.98
ORP	mV	-	-240.1	-238.0	-198.4
pH	SU	7.44-8.44	8.32	8.20	8.07
Specific Conductance	uS/cm	-	294.3	243.6	286.4
Temperature	C	-	5.4	7.1	9.3
Turbidity	NTU	-	3.38	1.91	3.70
Water Elevation	ft MSL	-	1532.03	1536.57	1530.25
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	1902.7	**1290**	**1130**	**1510**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	199.79	**187**	**195**	**207**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	111.44	**76.6**	**77.2**	**80.0**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.75	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	49.32	**52.0**	**38.5**	**50.5**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	42.87	**31.1**	**32.0**	**33.3**
Magnesium	mg/L	13.90	**10.4**	**10.0**	**11.1**
Potassium	mg/L	4.23	**2.3**	**2.3**	**2.4**
Sodium	mg/L	17.31	**2.9**	**2.8**	**3.1**
General					
Hardness	mg/L	173.44	**121**	**121**	**129**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-703 LLA (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.24	1.26	1.26
ORP	mV	-	-229.1	-236.6	-228.1
pH	SU	8.08-9.08	8.28	8.83	8.30
Specific Conductance	uS/cm	-	265.4	245.2	278.7
Temperature	C	-	5.9	7.4	8.2
Turbidity	NTU	-	4.06	29.21	5.13
Water Elevation	ft MSL	-	1532.56	1538.59	1537.42
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	2081.98	**467**	<200	**618**
Lead	ug/L	9	< 3.0	<3.0	<3.0
Lithium	ug/L	28.08	-	-	<10.0
Manganese	ug/L	94.53	**70.2**	<50.0	**88.8**
Mercury	ng/L	4	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.8	-	-	<0.20
Thallium	ug/L	2	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	92.11	**75.6**	**80.7**	**78.2**
Alkalinity, Carbonate	mg/L	10.41	< 2.0	<2.0	<2.0
Chloride	mg/L	96.57	**11.1**	**25.8**	**12.0**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.076	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	43.42	**36.9**	**13.2**	**34.9**
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	33.74	**25.8**	**16.0**	**26.9**
Magnesium	mg/L	12.29	**10.6**	**8.3**	**10.8**
Potassium	mg/L	7.73	**3.2**	**6.4**	**3.5**
Sodium	mg/L	51.07	**7.6**	**20.2**	**7.6**
General					
Hardness	mg/L	134.66	**108**	**74.2**	**112**
*- Diver failed on 3/22/18, replaced 5/1		-	-	-	-
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-703 DBA (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.38	0.22	1.26
ORP	mV	-	-303.1	-262.1	-214.4
pH	SU	8.89-9.89	10.18	8.43	8.60
Specific Conductance	uS/cm	-	292.5	254.3	294.9
Temperature	C	-	5.2	7.00	8.2
Turbidity	NTU	-	22.73	1.74	2.51
Water Elevation	ft MSL	-	1532.25	1535.23	1534.30
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	861.32	< 200	**231**	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	19.81	-	-	<10.0
Manganese	ug/L	200	< 50.0	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	-	-	-	<4.0
Zinc	ug/L	26.21	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	87.85	**52.8**	**80.5**	**78.7**
Alkalinity, Carbonate	mg/L	38.7	**21.4**	<2.0	<2.0
Chloride	mg/L	20	**15.2**	**14.7**	**14.3**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.12	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.86	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	72.78	**29.5**	**38.3**	**39.2**
Sulfide	mg/L	1.27	**0.29**	<0.20	<0.20
Major Cations					
Calcium	mg/L	27.00	**18.6**	**28.0**	**26.8**
Magnesium	mg/L	17.28	**7.8**	**10.4**	**10.8**
Potassium	mg/L	29.63	**20.1**	**3.8**	**4.4**
Sodium	mg/L	16.16	**11.5**	**6.5**	**6.6**
General					
Hardness	mg/L	139.55	**78.5**	**113**	**111**
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Mine Permit Groundwater Quality Monitoring Data
MW-704 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm		1.39	1.3	1.23
ORP	mV		141.5	-7.6	191.6
pH	SU	5.43-6.43	5.68	6.51	5.73
Specific Conductance	uS/cm		392.2	448.6	537.9
Temperature	C		6.2	7.5	11.0
Turbidity	NTU		5.42	4.71	21.00
Water Elevation	ft MSL		1532.48	1535.35	1534.58
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	84519.23	< 200	**21600**	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	8782.76	**622**	**2870**	**815**
Mercury	ng/L	34.7	< 1.0	**3.82**	**2.64**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	37.8	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	264.36	**60.4**	**128**	**87.2**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	23.77	**21.8**	**20.2**	**65.9**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.19	<0.050	**0.70**	<0.050
Nitrogen, Nitrate	mg/L	1.47	**0.71**	**0.328**	**0.109**
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	44.8	**96.8**	**57.0**	**68.0**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Calcium	mg/L	47.35	**37.6**	**44.8**	**46.9**
Magnesium	mg/L	14.76	**14.2**	**15.8**	**18.0**
Potassium	mg/L	6.10	**2.6**	**3.7**	**3.2**
Sodium	mg/L	32.26	**16.3**	**19.3**	**23.1**
General					
Hardness	mg/L	191.15	**152**	**177**	**191**
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Explanations of abbreviations are included on the final page of this table.

Mine Permit Groundwater Quality Monitoring Data
MW-704 UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm		1.38	1.32	1.35
ORP	mV		-148.1	-166.7	-119.4
pH	SU	6.4-7.4	6.79	6.87	6.76
Specific Conductance	uS/cm		562.1	582.9	852.0
Temperature	C		7.1	7.7	9.5
Turbidity	NTU		8.01	5.75	3.93
Water Elevation	ft MSL		1533.00	1535.9	1535.13
Metals					
Aluminum	ug/L	5824.36	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	44051.82	**893**	**44800**	**69100**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	30.14	-	-	<10.0
Manganese	ug/L	1384.15	**50.9**	**1200**	**1380**
Mercury	ng/L	1.4	< 1.0	<1.0	**1.52**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	198.18	**119**	**187**	**166**
Alkalinity, Carbonate	mg/L	8.0	**2.2**	<2.0	<2.0
Chloride	mg/L	24.46	< 10.0	**32.3**	**86.1**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.78	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.18	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	45.37	< 1.0	**46.3**	**31.5**
Sulfide	mg/L	0.49	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	66.63	**22.3**	**68.0**	**66.3**
Magnesium	mg/L	14.04	**11.3**	**18.0**	**21.0**
Potassium	mg/L	5.28	**2.6**	**3.5**	**3.6**
Sodium	mg/L	43.16	**10.4**	**18.7**	**25.6**
General					
Hardness	mg/L	226.12	**102**	**244**	**252**
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Explanations of abbreviations are included on the final page of this table.

Mine Permit Groundwater Quality Monitoring Data
MW-704 LLA (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.24	1.4	1.18
ORP	mV	-	-246.7	-258.1	-251.3
pH	SU	8.2-9.2	8.09	8.28	8.28
Specific Conductance	uS/cm	-	349	253.8	400.6
Temperature	C	-	7.1	10.00	10.3
Turbidity	NTU	-	15.68	14.22	16.45
Water Elevation	ft MSL	-	1533.45	1532.96	1531.84
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	3308.59	**1190**	**943**	**1390**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	28.25	-	-	**15.1**
Manganese	ug/L	95.14	**136**	**72.5**	**161**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	40	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	152.81	**158**	**110**	**165**
Alkalinity, Carbonate	mg/L	13.4	< 2.0	**2.6**	<2.0
Chloride	mg/L	40	**13.1**	**10.4**	**14.8**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	20.79	**12.2**	**9.2**	**13.5**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	33.39	**40.7**	**23.5**	**44.8**
Magnesium	mg/L	15.62	**17.1**	**15.1**	**18.6**
Potassium	mg/L	12.01	**5.7**	**6.4**	**5.8**
Sodium	mg/L	15.49	**4.9**	**4.8**	**4.9**
General					
Hardness	mg/L	156.51	**172**	**121**	**188**
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Explanations of abbreviations are included on the final page of this table.

Mine Permit Groundwater Quality Monitoring Data
MW-704 DBA (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.25	1.68	1.25
ORP	mV	-	-263.4	-216.6	-245.4
pH	SU	-	8.18	8.00	8.44
Specific Conductance	uS/cm	-	232.1	246.3	264.5
Temperature	C	-	7.3	9.2	10.1
Turbidity	NTU	-	80.33	82.93	24.66
Water Elevation	ft MSL	-	1529.94	1529.62	1529.72
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	8.0	-	-	<2.0
Arsenic	ug/L	20.0	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	4.0	-	-	<1.0
Boron	ug/L	1480	-	-	<300
Cadmium	ug/L	4.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	9645	**882**	**930**	**950**
Lead	ug/L	12.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	**12.9**
Manganese	ug/L	58	**50.9**	**58.6**	**61.0**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	8.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	11	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	129	**119**	**126**	**129**
Alkalinity, Carbonate	mg/L	32.0	**2.6**	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0
Fluoride	mg/L	4.0	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.04	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	6	< 1.0	<1.0	**1.0**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	27.00	**22.5**	**22.8**	**23.4**
Magnesium	mg/L	14.00	**11.4**	**11.3**	**11.8**
Potassium	mg/L	4.00	**2.6**	**2.6**	**2.6**
Sodium	mg/L	14.00	**10.5**	**10.6**	**11.0**
General					
Hardness	mg/L	111.00	**103**	**104**	**107**
* - Diver failed 9/6/17, replaced 3/15/		- -	-	-	-

Mine Permit Groundwater Quality Monitoring Data
MW-705 QAL

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.02	0.47	1.21
ORP	mV	-	-8.3	-64.4	-26.9
pH	SU	5.67-6.67	6.51	6.29	6.31
Specific Conductance	uS/cm	-	276.7	369.8	199.6
Temperature	C	-	4.2	8.9	13.4
Turbidity	NTU	-	2.01	2.3	2.42
Water Elevation	ft MSL	-	1536.78	1537.96	1536.33
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	**7.6**
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	12956.53	**10100**	**13600**	**5300**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	1535.09	**1000**	**1470**	**498**
Mercury	ng/L	1.8	< 1.0	<1.0	**1.42**
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	283.42	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	85.4	**68.8**	**31.1**	**37.8**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	51.62	**52.8**	**72.1**	**23.9**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.132	**0.138**	**0.189**	0.071
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	21.2	**6.1**	**23.8**	**10.4**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	23.88	**17.5**	**22.7**	**11.7**
Magnesium	mg/L	10.91	**8.0**	**9.6**	**4.6**
Potassium	mg/L	3.03	**2.8**	**2.7**	**2.6**
Sodium	mg/L	16.56	**16.4**	**25.1**	**13.5**
General					
Hardness	mg/L	109.66	**76.6**	**96.5**	**48.1**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-705 UFB (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	0.77	0.29	1.28
ORP	mV	-	-70.2	-179.9	-132.4
pH	SU	6.59-7.59	7.19	7.2	7.15
Specific Conductance	uS/cm	-	303.4	287.0	345.6
Temperature	C	-	6.1	9.1	10.7
Turbidity	NTU	-	20.17	5.35	3.40
Water Elevation	ft MSL	-	1536.82	1540.24	1538.45
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	13309.31	**7740**	**10400**	**9750**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	13.19	-	-	<10.0
Manganese	ug/L	972.64	**1060**	**989**	**1050**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	34.43	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	117.78	**77.3**	**90.3**	**88.4**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	35.98	**36.2**	**33.0**	**38.8**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	**0.030**	**0.026**
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	14.23	**2.4**	**3.3**	**3.0**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	26.00	**25.9**	**26.6**	**28.5**
Magnesium	mg/L	13.29	**13.3**	**14.2**	**14.8**
Potassium	mg/L	4.01	**3.8**	**3.3**	**3.8**
Sodium	mg/L	3.37	**3.2**	**3.0**	**3.5**
General					
Hardness	mg/L	127.17	**119**	**125**	**132**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-706 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.92	0.5	1.79
ORP	mV	-	68.6	79.8	90.1
pH	SU	-	5.95	5.80	5.78
Specific Conductance	uS/cm	-	874.1	831.3	881.5
Temperature	C	-	8.1	9.5	10.1
Turbidity	NTU	-	4.17	3.43	5.69
Water Elevation	ft MSL	-	1561.82	1566.96	1563.44
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	31.38	-	-	**23.0**
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	8029.11	**2760**	**3280**	**2540**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	17.21	-	-	<10.0
Manganese	ug/L	23484.14	**11600**	**11000**	**11600**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	27.04	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	4.77	-	-	<4.0
Zinc	ug/L	77.08	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	131.77	**73.0**	**78.5**	**73.8**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	165.11	**123**	**118**	**118**
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.88	**0.391**	**0.512**	**0.420**
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	433.53	**189**	**176**	**191**
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	132.61	**68.4**	**60.8**	**65.9**
Magnesium	mg/L	43.54	**27.2**	**24.6**	**26.2**
Potassium	mg/L	5.64	**4.6**	**4.0**	**4.6**
Sodium	mg/L	139.93	**44.9**	**42.7**	**47.1**
General					
Hardness	mg/L	619.10	**283**	**253**	**273**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MW-707 QAL (Monitoring)

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	1.64	0.37	1.55
ORP	mV	-	-123.4	-131.5	-112.9
pH	SU	6.43-7.43	6.9	7.13	7.04
Specific Conductance	uS/cm	-	360.2	303.7	328.8
Temperature	C	-	6.7	7.5	9.3
Turbidity	NTU	-	2.63	1.79	3.19
Water Elevation	ft MSL	-	1583.73	1583.63	1581.74
Metals					
Aluminum	ug/L	200	-	-	<50.0
Antimony	ug/L	4.0	-	-	<2.0
Arsenic	ug/L	7.5	< 5.0	<5.0	<5.0
Barium	ug/L	400	-	-	<100
Beryllium	ug/L	2.5	-	-	<1.0
Boron	ug/L	1200	-	-	<300
Cadmium	ug/L	3.0	-	-	<1.0
Chromium	ug/L	40	-	-	<10.0
Cobalt	ug/L	80	-	-	<20.0
Copper	ug/L	16	< 4.0	<4.0	<4.0
Iron	ug/L	7115.36	**4350**	**4290**	**3980**
Lead	ug/L	9.0	< 3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0
Manganese	ug/L	1127.81	**970**	**892**	**893**
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0
Nickel	ug/L	80	< 20.0	<20.0	<20.0
Selenium	ug/L	20	-	-	<5.0
Silver	ug/L	0.80	-	-	<0.20
Thallium	ug/L	2.0	-	-	<2.0
Vanadium	ug/L	16	-	-	<4.0
Zinc	ug/L	29.27	< 10.0	<10.0	<10.0
Major Anions					
Alkalinity, Bicarbonate	mg/L	168.29	**158**	**163**	**158**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.32	**0.259**	**0.294**	**0.287**
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	9.35	**1.4**	<1.0	<1.0
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20
Major Cations					
Calcium	mg/L	45.91	**42.6**	**41.8**	**43.1**
Magnesium	mg/L	13.49	**11.7**	**11.6**	**11.4**
Potassium	mg/L	2.93	**2.2**	**2.2**	**2.4**
Sodium	mg/L	3.62	**3.0**	**3.0**	**3.1**
General					
Hardness	mg/L	162.23	**155**	**152**	**154**
		-			
		-			

Mine Permit Groundwater Quality Monitoring Data
MER-001 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q3	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	11.75	8.52	7.62	12.01	10.55	8.85	8.31
ORP	mV	-	67.8	230.6	143.7	93.6	239.2	173.4	177.2
pH	SU	6.1-7.1	6.91	6.66	6.78	7.60	6.87	6.72	7.64
Specific Conductance	uS/cm	-	99.6	71.9	114.3	100.0	76	87.4	155.7
Temperature	C	-	0.29	14.39	17.3	0.05	-0.04	11.01	12.8
Turbidity	NTU	-	2.9	1.2	5.26	1.54	1.88	2.35	11.72
Flow	cfs	-	-	-	-	-	-	-	5.1
Metals									
Aluminum	ug/L	200	-	-	**60.5**	-	-	-	<50.0
Antimony	ug/L	3.5	-	-	<0.80	-	-	-	<1.0
Arsenic	ug/L	2.78	**1.1**	< 1.0	**1.5**	<1.0	< 1.0	<1.0	**2.0**
Barium	ug/L	11.22	-	-	**9.1**	-	-	-	**8.2**
Beryllium	ug/L	2.5	-	-	<0.10	-	-	-	<1.0
Boron	ug/L	40	-	-	**7.0**	-	-	-	<10.0
Cadmium	ug/L	0.08	-	-	-	-	-	-	**0.007**
Chromium	ug/L	1.1	-	-	**0.30**	-	-	-	<1.0
Cobalt	ug/L	0.38	-	-	-	-	-	-	**0.105**
Copper	ug/L	0.68	**0.39**	**0.73**	-	-	**0.56**	**0.59**	**0.232**
Iron	ug/L	3531.79	**1610**	**1070**	**1640**	**911**	**881**	**823**	**1880**
Lead	ug/L	0.35	**0.145**	**0.136**	-	-	**0.122**	**0.123**	**0.063**
Lithium	ug/L	32	-	-	<4.6	-	-	-	<8.0
Manganese	ug/L	241.96	**123**	**1900**	**90.2**	**40.4**	**51.4**	**74.9**	**85.7**
Mercury	ng/L	8.05	**2.29**	**3.62**	-	**3.04**	**2.70**	**1.73**	**1.32**
Molybdenum	ug/L	4.0	-	-	**0.23**	-	-	-	<1.0
Nickel	ug/L	1.48	**0.52**	**0.7**	-	**0.62**	**0.45**	**0.63**	**0.451**
Selenium	ug/L	0.13	-	-	-	-	-	-	**0.077**
Silver	ug/L	0.8	-	-	<0.10	-	-	-	<0.20
Thallium	ug/L	1.5	-	-	<0.040	-	-	-	<1.0
Vanadium	ug/L	4.0	-	-	<1.4	-	-	-	<1.0
Zinc	ug/L	5.47	**1.88**	**2.4**	-	**2.62**	**2.59**	**2.43**	**0.58**
Major Anions									
Alkalinity, Bicarbonate	mg/L	48.06	**28.1**	**20.2**	**23.5**	**14.7**	**13.2**	**15.0**	**45.5**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	< 2.0	<2.0	<2.0	< 2.0	<2.0	<2.0
Chloride	mg/L	16.08	**6.7**	**4.9**	**7.2**	**4.0**	**2.3**	**5.4**	**13.0**
Fluoride	mg/L	0.4	< 0.10	< 0.10	**0.085**	<0.10	< 0.10	<0.10	<0.10
Nitrogen, Ammonia	mg/L	2.0	**0.066**	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Nitrogen, Nitrate	mg/L	2.0	**0.112**	< 0.1	**0.044**	< 0.10	**0.273**	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.1	< 0.1	<0.0037	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	4.0	**1.6**	< 1.0	<1.7	<2.0	**2.4**	**3.3**	**5.4**
Sulfide	mg/L	20	< 0.20	< 0.20	**0.017**	<0.20	< 0.20	<0.20	<0.20
Major Cations									
Calcium	mg/L	14.51	**8.9**	**6.1**	**8.3**	**5.5**	**5.3**	**5.9**	**15.1**
Magnesium	mg/L	4.08	**2.5**	**1.9**	**2.2**	**1.6**	**1.6**	**1.8**	**4.2**
Potassium	mg/L	1.08	**0.68**	**0.68**	**0.74**	**0.50**	**0.78**	**0.50**	**0.85**
Sodium	mg/L	8.51	**3.6**	**3**	**4.1**	**2.4**	**1.7**	**3.3**	**7.6**
General									
Hardness	mg/L	58.94	**48**	**26**	**29900**	**20500**	**19.6**	**22.3**	**55**
Total Dissolved Solids	mg/L	200	<50	**116**	**110**	<50.0	**37**	**27**	**79**
Total Suspended Solids	mg/L	13.2	< 3.3	< 3.3	**3.6**	<3.3	< 5.0	<5.0	**10**

Mine Permit Groundwater Quality Monitoring Data
MER-002 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q3	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	11.62	8.4	7.65	12.06	11.02	8.88	8.18
ORP	mV	-	42.5	147.1	172.1	259.7	265.6	172.1	154.6
pH	SU	5.9-6.9	7.06	6.67	7.11	6.00	6.93	6.58	7.48
Specific Conductance	uS/cm	-	115.6	90.7	132.7	64.9	95.3	84.7	184.7
Temperature	C	-	0.3	14.29	16.3	0.07	-0.06	10.86	15.7
Turbidity	NTU	-	3.47	1.83	5.39	1.34	2.21	1.86	6.48
Flow	cfs	-	-	-	-	-	-	85.2	6.87
Metals									
Aluminum	ug/L	460.75	-	-	**62.8**	-	-	-	<50.0
Antimony	ug/L	3.5	-	-	<0.80	-	-	-	<1.0
Arsenic	ug/L	5.28	**1.4**	**1.3**	**1.8**	<1.0	< 1.0	<1.0	**2.6**
Barium	ug/L	21.04	-	-	**9.9**	-	-	-	**9.7**
Beryllium	ug/L	2.5	-	-	<0.10	-	-	-	<1.0
Boron	ug/L	40	-	-	**23.4**	-	-	-	**14.6**
Cadmium	ug/L	0.08	-	-	-	-	-	-	**0.007**
Chromium	ug/L	4.0	-	-	**0.43**	-	-	-	<1.0
Cobalt	ug/L	0.4	-	-	-	-	-	-	**0.246**
Copper	ug/L	1.43	**0.40**	**0.66**	-	**0.55**	**0.6**	**0.61**	**0.260**
Iron	ug/L	6900.91	**2010**	**1300**	**2030**	**998**	**1060**	**1160**	**2580**
Lead	ug/L	0.34	**0.131**	**0.133**	-	**0.139**	**0.136**	**0.142**	**0.060**
Lithium	ug/L	1.37	-	-	<4.6	-	-	-	<8.0
Manganese	ug/L	628.47	**169**	**125**	**138**	**59.6**	**68.4**	**115**	**210**
Mercury	ng/L	7.46	**1.95**	**3.33**	-	**2.96**	**3.42**	**1.34**	**1.62**
Molybdenum	ug/L	4.0	-	-	**0.29**	-	-	-	<1.0
Nickel	ug/L	2.05	**0.58**	**0.7**	-	**0.68**	**0.53**	**0.81**	**0.584**
Selenium	ug/L	0.8	-	-	-	-	-	-	**0.072**
Silver	ug/L	0.8	-	-	<0.10	-	-	-	<0.20
Thallium	ug/L	4.0	-	-	<0.040	-	-	-	<1.0
Vanadium	ug/L	4.73	-	-	<1.4	-	-	-	<1.0
Zinc	ug/L	2.0	**8.25**	**1.96**	-	**2.71**	**2.71**	**2.73**	**0.65**
Major Anions									
Alkalinity, Bicarbonate	mg/L	54.22	**31.8**	**22.9**	**25.0**	**16.2**	**14.8**	**16.0**	**51.4**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0	< 2.0	<2.0	<2.0
Chloride	mg/L	16.88	**7.8**	**6.5**	**6.6**	**4.9**	**5.7**	**5.7**	**14.5**
Fluoride	mg/L	0.4	< 0.10	< 0.10	**0.11**	<0.10	< 0.10	<0.10	<0.10
Nitrogen, Ammonia	mg/L	2.0	**0.077**	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	2	**0.107**	< 0.10	**0.034**	< 0.10	**0.27**	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.10	< 0.10	**0.004**	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	16.28	**5.1**	**3.3**	**6.0**	<1.0	**3.7**	**4.7**	**11.7**
Sulfide	mg/L	20	< 0.20	< 0.20	**0.016**	<0.20	< 0.20	<0.20	<0.20
Major Cations									
Calcium	mg/L	18.1	**10.3**	**7.3**	**8.5**	**6.0**	**6.0**	**6.5**	**17.7**
Magnesium	mg/L	5.19	**2.9**	**2.3**	**2.4**	**1.7**	**1.8**	**2.0**	**4.9**
Potassium	mg/L	1.42	**0.75**	**0.77**	**0.83**	**0.56**	**0.83**	**0.60**	**1.2**
Sodium	mg/L	9.88	**4.7**	**4.2**	**5.8**	**3.2**	**3.4**	**3.9**	**9.6**
General									
Hardness	mg/L	60.32	**42**	**26**	**31000**	**22100**	**22.6**	**24.6**	**64.4**
Total Dissolved Solids	mg/L	210.48	**120**	**120**	**113**	<50.0	**45**	**32**	**93**
Total Suspended Solids	mg/L	5.57	< 3.3	< 3.3	**3.7**	<3.3	< 5.0	<5.0	<5.0

Mine Permit Groundwater Quality Monitoring Data
MER-003 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q3	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	11.36	7.6	12.34	11.75	11.75	8.88	8.34
ORP	mV	-	11.6	134.6	89.7	254.9	254.9	175.7	134
pH	SU	5.7-6.7	7.42	7.22	7.35	7.24	7.24	6.99	6.78
Specific Conductance	uS/cm	-	124.7	152.1	130.3	104.3	104.3	96.0	198.1
Temperature	C	-	0.09	16.4	0.26	0.37	0.37	11.67	15.8
Turbidity	NTU	-	3.43	5.24	1.87	4.33	4.33	45.33	6.20
Flow	cfs	-	-	-	-	-	-	-	7.03
Metals									
Aluminum	ug/L	200	-	-	**68.5**	-	-	-	<50.0
Antimony	ug/L	3.5	-	-	<0.80	-	-	-	<1.0
Arsenic	ug/L	2.64	**1.5**	**1.3**	**1.7**	<1.0	< 1.0	<1.0	**2.4**
Barium	ug/L	14.68	-	-	**9.8**	-	-	-	**9.3**
Beryllium	ug/L	2.5	-	-	<0.10	-	-	-	<1.0
Boron	ug/L	17.85	-	-	**26.1**	-	-	-	**21.9**
Cadmium	ug/L	0.08	-	-	-	-	-	-	**0.007**
Chromium	ug/L	4	-	-	**0.31**	-	-	-	<1.0
Cobalt	ug/L	0.4	-	-	-	-	-	-	**0.190**
Copper	ug/L	0.65	**0.37**	**0.66**	-	**0.55**	**0.58**	**0.72**	**0.334**
Iron	ug/L	3749.14	**2040**	**1450**	**2020**	**1070**	**1150**	**1130**	**2360**
Lead	ug/L	0.18	**0.127**	**0.151**	-	**0.134**	**0.135**	**0.137**	**0.050**
Lithium	ug/L	32	-	-	<4.6	-	-	-	<8.0
Manganese	ug/L	273.16	**178**	**137**	**138**	**70.4**	**71.1**	**123**	**135**
Mercury	ng/L	7.24	**2.14**	**3.79**	-	**2.54**	**2.47**	**1.55**	**1.91**
Molybdenum	ug/L	4	-	-	**0.29**	-	-	-	<1.0
Nickel	ug/L	1.76	**0.78**	**1.18**	-	**0.82**	**0.69**	**0.98**	**1.36**
Selenium	ug/L	0.28	-	-	-	-	-	-	**0.074**
Silver	ug/L	0.8	-	-	<0.10	-	-	-	<0.20
Thallium	ug/L	1.5	-	-	<0.040	-	-	-	<1.0
Vanadium	ug/L	4	-	-	<1.4	-	-	-	<1.0
Zinc	ug/L	2.74	**1.99**	**2.2**	-	**2.35**	**2.76**	**3.3**	**0.47**
Major Anions									
Alkalinity, Bicarbonate	mg/L	58.08	**32.2**	**24.9**	**105**	**17.8**	**15.2**	**17.8**	**51.5**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	< 2.0	<2.0	<2.0	< 2.0	<2.0	<2.0
Chloride	mg/L	22.56	**8.7**	**8.7**	**8.6**	**6.9**	**6.2**	**8.2**	**17.0**
Fluoride	mg/L	0.4	< 0.10	< 0.10	**0.11**	<0.10	< 0.10	<0.10	<0.10
Nitrogen, Ammonia	mg/L	2.0	**0.087**	< 0.025	-	-	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	2.0	**0.107**	< 0.10	**32.0**	<100	**0.259**	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.10	< 0.10	**4.0**	<100	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	20.5	**9.9**	**7.9**	**8.0**	**8.4**	**5.8**	**13.3**	**14.3**
Sulfide	mg/L	20	< 0.20	< 0.20	**0.019**	<0.20	< 0.20	<0.20	<0.20
Major Cations									
Calcium	mg/L	17.7	**10.8**	**7.5**	**8.5**	**6.3**	**6.2**	**6.6**	**16.7**
Magnesium	mg/L	5.76	**3.1**	**2.5**	**2.5**	**1.9**	**1.9**	**2.2**	**4.9**
Potassium	mg/L	1.72	**0.85**	**0.88**	**0.90**	**0.63**	**0.87**	**0.73**	**1.2**
Sodium	mg/L	12.18	**5.7**	**7**	**7.3**	**6.7**	**4.9**	**9.2**	**12.2**
General									
Hardness	mg/L	62.63	**42**	**22**	**31300**	**23300**	**23.4**	**25.5**	**61.8**
Total Dissolved Solids	mg/L	133.98	**62**	**86**	<83.3	**70.0**	**48**	**47**	**106**
Total Suspended Solids	mg/L	4.01	< 3.3	< 3.3	**3.7**	<3.3	< 5.0	<5.0	**9.0**

Mine Permit Groundwater Quality Monitoring Data
WBR-001 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q13	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	10.62	6.96	6.4	10.39	NM	7.14	7.98
ORP	mV	-	138.6	230.9	205.1	315.9	NM	254.7	78.9
pH	SU	5.7-6.7	6.55	5.49	6.42	5.29	NM	5.29	6.09
Specific Conductance	uS/cm	-	96.9	103.2	91.7	72.6	NM	60.0	115.3
Temperature	C	-	0.11	18.91	17.1	0.206	NM	12.4	14.6
Turbidity	NTU	-	43.96	0.38	1.67	1.55	NM	0.77	7.79
Flow	cfs	-	-	-	-	-	-	-	-
Metals									
Aluminum	ug/L	200	-	-	**239**	-	NM	-	**128**
Antimony	ug/L	3.5	-	-	<0.80	-	NM	-	<1.0
Arsenic	ug/L	3.19	**1.8**	**1.4**	**1.6**	<1.0	NM	**1.2**	**1.8**
Barium	ug/L	17.17	-	-	**10**	-	NM	-	**8.4**
Beryllium	ug/L	2.5	-	-	<0.10	-	NM	-	<1.0
Boron	ug/L	40	-	-	**6.0**	-	NM	-	<10.0
Cadmium	ug/L	0.08	-	-	-	-	NM	-	**0.011**
Chromium	ug/L	1.58	-	-	**0.67**	-	NM	-	<1.0
Cobalt	ug/L	0.4	-	-	-	-	NM	-	**0.427**
Copper	ug/L	1.38	**0.97**	**0.77**	-	**1.13**	NM	**0.82**	**0.578**
Iron	ug/L	4873.2	**3460**	**1320**	**2010**	**1610**	NM	**1220**	**2220**
Lead	ug/L	2.29	**2.16**	**0.8**	-	**0.702**	NM	**0.666**	**0.641**
Lithium	ug/L	32	-	-	<4.6	-	NM	-	<8.0
Manganese	ug/L	770.15	**277**	**135**	**94.7**	**111**	NM	**73.6**	**179**
Mercury	ng/L	15.76	**8.75**	**7.11**	-	**5.23**	NM	<1.3	**6.39**
Molybdenum	ug/L	4.0	-	-	<0.20	-	NM	-	<1.0
Nickel	ug/L	2.97	**0.94**	**0.93**	-	**0.65**	NM	**0.79**	**0.646**
Selenium	ug/L	0.28	-	-	-	-	NM	-	**0.082**
Silver	ug/L	0.8	-	-	<0.10	-	NM	-	<0.20
Thallium	ug/L	1.5	-	-	<0.040	-	NM	-	<1.0
Vanadium	ug/L	1.73	-	-	<1.4	-	NM	-	<1.0
Zinc	ug/L	12.98	**7.78**	**5.93**	-	**5.38**	NM	**8.08**	**2.99**
Major Anions									
Alkalinity, Bicarbonate	mg/L	15.71	**10**	**5.5**	**7.0**	**4.0**	NM	<2.0	**5.6**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	< 2.0	<2.0	<2.0	NM	<2.0	<2.0
Chloride	mg/L	27.96	**19.4**	**21.5**	**9.2**	**14.5**	NM	**25.3**	**27.3**
Fluoride	mg/L	0.4	< 0.10	< 0.10	**0.082**	<0.10	NM	<0.10	<0.10
Nitrogen, Ammonia	mg/L	2.0	**0.259**	< 0.025	-	-	NM	< 0.025	**0.055**
Nitrogen, Nitrate	mg/L	2.0	<0.1	< 0.10	**16.0**	<100	NM	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.1	< 0.10	**6.0**	<100	NM	< 0.10	< 0.10
Sulfate	mg/L	4.0	< 10	< 2.0	<4.3	<5.0	NM	**2.6**	<1.0
Sulfide	mg/L	20	< 0.20	< 0.2	<0.011	<0.20	NM	<0.20	<0.20
Major Cations									
Calcium	mg/L	7.94	**4.9**	**3.7**	**4.4**	**3.7**	NM	**2.7**	**5.0**
Magnesium	mg/L	3.12	**2.0**	**1.6**	**1.7**	**1.4**	NM	**1.1**	**2.0**
Potassium	mg/L	1.64	**0.87**	**0.86**	**0.62**	**0.65**	NM	**0.63**	**0.58**
Sodium	mg/L	12.52	**8.4**	**9.7**	**4.5**	**6.8**	NM	**7.8**	**12.5**
General									
Hardness	mg/L	39.39	**60**	**12**	**17900**	**15100**	NM	**11.2**	**41.2**
Total Dissolved Solids	mg/L	200	**52**	**86**	**103**	**60.0**	NM	**49**	**115**
Total Suspended Solids	mg/L	13.2	**6.9**	**20.4**	**3.2**	<3.3	NM	<5.0	**6.0**

* - Lowest achievable Reporting Limit by laboratory due to matrix interference

Mine Permit Groundwater Quality Monitoring Data
WBR-002 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q3	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	1.45	8.53	7.14	10.2	6.78	6.68	4.4
ORP	mV	-	5.34	236.4	225.5	264.1	51.2	167.5	-39.9
pH	SU	6.2-7.2	6.23	6.44	6.35	5.80	6.45	6.03	6.53
Specific Conductance	uS/cm	-	252.9	146.1	202.9	152.9	247.6	105.7	216
Temperature	C	-	0.74	20.34	19.2	1.98	0.79	12.8	16.0
Turbidity	NTU	-	42.11	56.1	29.1	62.2	19.65	8.24	152
Flow	cfs	-	-	-	-	-	-	0.28	-
Metals									
Aluminum	ug/L	200	-	-	<31.0	-	-	-	**57.2**
Antimony	ug/L	3.5	-	-	<0.80	-	-	-	<1.0
Arsenic	ug/L	7.24	**5.1**	**3.2**	**2.7**	**1.7**	**7.5**	**1.9**	**12.9**
Barium	ug/L	16.12	-	-	**8.5**	-	-	-	**16.0**
Beryllium	ug/L	2.5	-	-	<0.10	-	-	-	<1.0
Boron	ug/L	18.24	-	-	**13.4**	-	-	-	**15.7**
Cadmium	ug/L	0.08	-	-	<0.012	-	-	-	<0.007
Chromium	ug/L	4.0	-	-	**0.26**	-	-	-	<1.0
Cobalt	ug/L	0.69	-	-	**0.245**	-	-	-	**0.231**
Copper	ug/L	1.86	**0.84**	**3.07**	**0.482**	**1.13**	**0.6**	**1.22**	**0.331**
Iron	ug/L	12928.4	**12600**	**6380**	**6930**	**3980**	**21800**	**2570**	**12500**
Lead	ug/L	0.49	**0.468**	**1.1**	**0.241**	**0.201**	**0.207**	**0.092**	**0.078**
Lithium	ug/L	32	-	-	<4.6	-	-	-	<8.0
Manganese	ug/L	708.9	**875**	**271**	**188**	**106**	**989**	**96.6**	**940**
Mercury	ng/L	2.99	**3.97**	**5.72**	**0.99**	**2.35**	**1.43**	<1.3	**1.08**
Molybdenum	ug/L	4.0	-	-	**0.35**	-	-	-	<1.0
Nickel	ug/L	2.55	**1.7**	**3.21**	**1.43**	**2.95**	**2.03**	**1.36**	**0.557**
Selenium	ug/L	0.28	-	-	**0.119**	-	-	-	**0.081**
Silver	ug/L	0.8	-	-	<0.10	-	-	-	<0.20
Thallium	ug/L	1.5	-	-	<0.040	-	-	-	<1.0
Vanadium	ug/L	4.0	-	-	<1.4	-	-	-	**1.1**
Zinc	ug/L	2.48	**4.03**	**9.7**	**0.45**	**2.9**	**2.67**	**3.37**	**0.61**
Major Anions									
Alkalinity, Bicarbonate	mg/L	37.7	**35.2**	**16.4**	**28**	**16.2**	**30.9**	**11.8**	**38.7**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	< 2.0	<2.0	<2.0	< 2.0	<2.0	<2.0
Chloride	mg/L	48.06	**46.5**	**28.1**	**35.5**	**31.5**	**38.3**	**25.3**	**32.8**
Fluoride	mg/L	0.4	< 0.10	< 0.10	**0.096**	< 0.10	< 0.10	<0.10	**0.12**
Nitrogen, Ammonia	mg/L	2.0	**0.437**	**0.0353**	**0.0046**	**0.0287**	**0.19**	<0.025	**0.464**
Nitrogen, Nitrate	mg/L	2.0	< 0.1	< 0.10	<0.0089	< 0.10	<0.050	<0.10	<0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.1	< 0.10	**0.007**	< 0.10	**0.01**	<0.10	<0.10
Sulfate	mg/L	4.0	< 10	< 1.0	<0.86	<5.0	**2.2**	**2.6**	**1.0**
Sulfide	mg/L	20	< 0.20	< 0.20	**0.018**	< 0.20	< 0.20	<0.20	<0.20
Major Cations									
Calcium	mg/L	9.7	**10.8**	**5.4**	**8.3**	6.4	**9.1**	**4.9**	**9.8**
Magnesium	mg/L	4.5	**5.2**	**2.9**	**4**	2.9	**4.4**	**2.3**	**4.0**
Potassium	mg/L	1.43	**1.8**	**2.1**	**1.2**	1.4	**1.8**	**1.4**	**1.8**
Sodium	mg/L	24.88	**22.5**	**14.6**	**17.9**	16.3	**20.0**	**16.0**	**17.1**
General									
Hardness	mg/L	45.64	**44**	**26**	**37.3**	**28.1**	**41**	**21.6**	**41.2**
Total Dissolved Solids	mg/L	200	**142**	**106**	**127**	**90**	**140**	**67**	**115**
Total Suspended Solids	mg/L	32.04	**14.4**	**12.2**	**4.4**	**3.7**	**43**	<5.0	**6.0**

* - Lowest achievable Reporting Limit by laboratory due to matrix interference

Mine Permit Groundwater Quality Monitoring Data
WBR-003 (Monitoring)

Parameter	Unit	Recommended Benchmark 2018 Q3	Q1 2018	Q2 2018	Q3 2018	Q4 2018	Q1 2019	Q2 2019	Q3 2019
Field									
D.O.	ppm	-	3.52	4.39	7.14	10.2	6.78	6.68	1.78
ORP	mV	-	32.9	188.2	225.5	264.1	51.2	167.5	-100.1
pH	SU	6.2-7.2	6.35	6.26	6.35	5.80	6.45	6.03	6.76
Specific Conductance	uS/m	-	249.6	126.0	202.9	152.9	247.6	105.7	310.6
Temperature	C	-	0.03	16.75	19.2	1.98	0.79	12.8	14.5
Turbidity	NTU	-	27.83	10.44	29.1	62.2	19.65	8.24	74.59
Flow	cfs	-	-	-	-	-	-	0.28	-
Metals									
Aluminum	ug/L	200	-	-	<31.0	-	-	-	**119**
Antimony	ug/L	3.5	-	-	<0.80	-	-	-	<1.0
Arsenic	ug/L	6.28	**3.5**	**2.0**	**2.7**	**1.7**	**7.5**	**1.9**	**17.7**
Barium	ug/L	26.55	-	-	**8.5**	-	-	-	**30.3**
Beryllium	ug/L	2.5	-	-	<0.10	-	-	-	<1.0
Boron	ug/L	13.09	-	-	**13.4**	-	-	-	**11.5**
Cadmium	ug/L	0.08	-	-	<0.012	-	-	-	<0.007
Chromium	ug/L	4.0	-	-	**0.26**	-	-	-	<1.0
Cobalt	ug/L	2.61	-	-	**0.245**	-	-	-	**1.7**
Copper	ug/L	0.2	**0.53**	**0.63**	**0.482**	**1.13**	**0.6**	**1.22**	**0.572**
Iron	ug/L	19898.23	**10700**	**4430**	**6930**	**3980**	**21800**	**2570**	**35400**
Lead	ug/L	0.29	**0.258**	**0.173**	**0.241**	**0.201**	**0.207**	**0.092**	**0.225**
Lithium	ug/L	32	-	-	<4.6	-	-	-	<8.0
Manganese	ug/L	2793.99	**1000**	**324**	**188**	**106**	**989**	**96.6**	**1550**
Mercury	ng/L	5.71	**2.63**	**3.38**	**0.99**	**2.35**	**1.43**	<1.3	**2.63**
Molybdenum	ug/L	4.0	-	-	**0.35**	-	-	-	**1.5**
Nickel	ug/L	2.42	**1.47**	**1.49**	**1.43**	**2.95**	**2.03**	**1.36**	**1.46**
Selenium	ug/L	0.28	-	-	**0.119**	-	-	-	**0.157**
Silver	ug/L	0.8	-	-	<0.10	-	-	-	<0.20
Thallium	ug/L	1.5	-	-	<0.040	-	-	-	<1.0
Vanadium	ug/L	4.0	-	-	<1.4	-	-	-	**2.0**
Zinc	ug/L	4.48	**3.48**	**2.65**	**0.45**	**2.9**	**2.67**	**3.37**	**55.5**
Major Anions									
Alkalinity, Bicarbonate	mg/L	88.2	**46**	**27.9**	**28**	**16.2**	**30.9**	**11.8**	**90.7**
Alkalinity, Carbonate	mg/L	8.0	< 2.0	< 2.0	<2.0	<2.0	< 2.0	<2.0	<2.0
Chloride	mg/L	42.42	**37.5**	**16.2**	**35.5**	**31.5**	**38.3**	**25.3**	**21.8**
Fluoride	mg/L	0.19	< 0.10	**0.13**	**0.096**	< 0.10	< 0.10	<0.10	**0.22**
Nitrogen, Ammonia	mg/L	2.0	**0.442**	**0.0585**	**0.0046**	**0.0287**	**0.19**	<0.025	**0.405**
Nitrogen, Nitrate	mg/L	2.0	< 0.1	< 0.10	<0.0089	< 0.10	<0.050	<0.10	<0.10
Nitrogen, Nitrite	mg/L	2.0	< 0.1	< 0.10	**0.007**	< 0.10	**0.01**	<0.10	<0.10
Sulfate	mg/L	4.0	< 10	< 1.0	<0.86	<5.0	**2.2**	**2.6**	<1.0
Sulfide	mg/L	20	< 0.20	< 0.20	**0.018**	< 0.20	< 0.20	<0.20	<0.20
Major Cations									
Calcium	mg/L	23.56	**12.5**	**7.2**	**8.3**	6.4	**9.1**	**4.9**	**25.3**
Magnesium	mg/L	9.59	**5.6**	**3.3**	**4**	2.9	**4.4**	**2.3**	**8.4**
Potassium	mg/L	2.27	**1.6**	**1.3**	**1.2**	1.4	**1.8**	**1.4**	**1.4**
Sodium	mg/L	21.5	**17.1**	**8**	**17.9**	16.3	**20.0**	**16.0**	**13.5**
General									
Hardness	mg/L	109.46	**48**	**24**	**37.3**	**28.1**	**41**	**21.6**	**97.7**
Total Dissolved Solids	mg/L	200	**175**	**130**	**127**	**90**	**140**	**67**	**198**
Total Suspended Solids	mg/L	27.28	**11.8**	**8.3**	**4.4**	**3.7**	**43**	<5.0	**39**

* - Lowest achievable Reporting Limit by laboratory due to matrix interference

Mine Permit Groundwater Quality Monitoring Data
HMWQ-004 (Monitoring)

Parameter	Unit	Recommended Benchmark 2014	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm	-	NM	NM	NM
ORP	mV	-	NM	NM	NM
pH	SU	5.69-6.69	NM	NM	NM
Specific Conductance	uS/m	-	NM	NM	NM
Temperature	C	-	NM	NM	NM
Turbidity	NTU	-	NM	NM	NM
Flow	cfs	-	-	-	-
Metals					
Aluminum	ug/L	200 (p)	NM	NM	NM
Antimony	ug/L	2.3	NM	NM	NM
Arsenic	ug/L	35	NM	NM	NM
Barium	ug/L	118	NM	NM	NM
Beryllium	ug/L	4.0 (p)	NM	NM	NM
Boron	ug/L	36	NM	NM	NM
Cadmium	ug/L	0.1	NM	NM	NM
Chromium	ug/L	14	NM	NM	NM
Cobalt	ug/L	3	NM	NM	NM
Copper	ug/L	11	NM	NM	NM
Iron	ug/L	73,409	NM	NM	NM
Lead	ug/L	2.1	NM	NM	NM
Lithium	ug/L	16	NM	NM	NM
Manganese	ug/L	2541	NM	NM	NM
Mercury	ng/L	43	NM	NM	NM
Molybdenum	ug/L	4.7	NM	NM	NM
Nickel	ug/L	5.6	NM	NM	NM
Selenium	ug/L	0.44	NM	NM	NM
Silver	ug/L	0.35	NM	NM	NM
Thallium	ug/L	4.0 (p)	NM	NM	NM
Vanadium	ug/L	39	NM	NM	NM
Zinc	ug/L	44	NM	NM	NM
Major Anions					
Alkalinity, Bicarbonate	mg/L	68	NM	NM	NM
Alkalinity, Carbonate	mg/L	8.0 (p)	NM	NM	NM
Chloride	mg/L	68	NM	NM	NM
Fluoride	mg/L	0.23	NM	NM	NM
Nitrogen, Ammonia	mg/L	1.9	NM	NM	NM
Nitrogen, Nitrate	mg/L	2.0 (p)	NM	NM	NM
Nitrogen, Nitrite	mg/L	2.0 (p)	NM	NM	NM
Sulfate	mg/L	4.0 (p)	NM	NM	NM
Sulfide	mg/L	20 (p)	NM	NM	NM
Major Cations					
Calcium	mg/L	21	NM	NM	NM
Magnesium	mg/L	8.1	NM	NM	NM
Potassium	mg/L	3.3	NM	NM	NM
Sodium	mg/L	49	NM	NM	NM
General					
Hardness	mg/L	88	NM	NM	NM
Total Dissolved Solids	mg/L	209	NM	NM	NM
Total Suspended Solids	mg/L	353	NM	NM	NM

Mine Permit Groundwater Quality Monitoring Data
HMP-009

Parameter	Unit	Recommended Benchmark 2018 *	Q1 2019	Q2 2019	Q3 2019
Field					
D.O.	ppm		NM	5.84	2.83
ORP	mV		NM	324.1	204
pH	SU	6.6-7.6	NM	6.78	7.28
Specific Conductance	uS/m		NM	654.95	209.4
Temperature	C		NM	11.24	13.7
Turbidity	NTU		NM	2.97	3.12
Flow	cfs		-	-	-
Metals					
Aluminum	ug/L	-	NM	-	<50.0
Antimony	ug/L	-	NM	-	<1.0
Arsenic	ug/L	6.0	NM	<1.0	**1.2**
Barium	ug/L	-	NM	-	**7.7**
Beryllium	ug/L	-	NM	-	<1.0
Boron	ug/L	-	NM	-	**21.0**
Cadmium	ug/L	-	NM	-	<0.007
Chromium	ug/L	-	NM	-	<1.0
Cobalt	ug/L	-	NM	-	**0.207**
Copper	ug/L	1300	NM	**1.77**	**1.13**
Iron	ug/L	1758.94	NM	**859.0**	**1280.0**
Lead	ug/L	6.36	NM	**0.131**	**0.047**
Lithium	ug/L	-	NM	-	<8.0
Manganese	ug/L	855.5	NM	**26.8**	**86.1**
Mercury	ng/L	1.24	NM	**1.63**	**2.36**
Molybdenum	ug/L	-	NM	-	1.4
Nickel	ug/L	172.08	NM	**3.13**	**3.18**
Selenium	ug/L	-	NM	-	**0.006**
Silver	ug/L	-	NM	-	<0.20
Thallium	ug/L	-	NM	-	<1.0
Vanadium	ug/L	-	NM	-	<1.0
Zinc	ug/L	64.27	NM	**2.88**	**0.48**
Major Anions					
Alkalinity, Bicarbonate	mg/L	100.8	NM	**21.3**	**59.9**
Alkalinity, Carbonate	mg/L	8	NM	<2.0	<2.0
Chloride	mg/L	37.3	NM	**6.0**	**15.5**
Fluoride	mg/L	2.73	NM	<0.10	<0.10
Nitrogen, Ammonia	mg/L	2	NM	<0.025	<0.025
Nitrogen, Nitrate	mg/L	0.16	NM	<0.10	<0.10
Nitrogen, Nitrite	mg/L	2	NM	<0.10	<0.10
Sulfate	mg/L	207.45	NM	**5.5**	**9.8**
Sulfide	mg/L	20	NM	<0.20	<0.20
Major Cations					
Calcium	mg/L	77.48	NM	**6.7**	**19.2**
Magnesium	mg/L	66.48	NM	**2.2**	**5.5**
Potassium	mg/L	86.72	NM	**0.7**	**1.4**
Sodium	mg/L	37.45	NM	**4.1**	**10.1**
General					
Hardness	mg/L	342.27	NM	**25.8**	**70.7**
Total Dissolved Solids	mg/L	529.47	NM	**27.0**	**108**
Total Suspended Solids	mg/L	13.20	NM	<5.0	**9.0**

* - Recommended Benchmarks are for Q2 - Insufficient Q3 Data to Develop Benchmarks