

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.44	0.3	1.22	0.38
ORP	mV	-	-239.2	-299.5	-241.5	-290.7
pH	SU	8.14-9.14	8.44	8.55	8.51	8.12
Specific Conductance	uS/cm	-	353.2	294.1	344.8	381.3
Temperature	C	-	7.1	9.3	10.6	7.4
Turbidity	NTU	-	2.98	3.3	2.9	1.7
Water Elevation	ft MSL	-	1467.56	1445.58	1444.77	1444.7
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	<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	<4.0
Iron	ug/L	1186.83	957	606	480	1190
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	23.04	-	-	13.2	-
Manganese	ug/L	200	< 50.0	<50.0	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	109.06	79.1	82.2	80.7	77.0
Alkalinity, Carbonate	mg/L	7.8	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	57.2	41.5	34.8	35.6	38.7
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	33.01	30.0	26.1	27.8	26.4
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	34.39	26.8	24.9	24.3	25.2
Magnesium	mg/L	14.63	11.2	10	10.4	10.2
Potassium	mg/L	6.17	1.8	1.9	1.7	1.9
Sodium	mg/L	28.01	22.9	20.1	21.3	27.9
General						
Hardness	mg/L	155.68	113	103	104	105

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.45	2.04	1.27	1.35
ORP	mV	-	-233.5	-217.2	-241.2	-257.3
pH	SU	8.06-9.06	8.50	8.44	8.47	8.45
Specific Conductance	uS/cm	-	405.4	345.6	398.2	407.1
Temperature	C	-	7.6	9.7	9.9	7.9
Turbidity	NTU	-	7.75	3.09	4.74	9.55
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	<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	<4.0
Iron	ug/L	56769.6	344	595	293	560
Lead	ug/L	15.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	17.39	-	-	12.1	-
Manganese	ug/L	672.84	< 50.0	<50.0	<50.0	<50.0
Mercury	ng/L	14.2	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	156.67	100	106	104	96.7
Alkalinity, Carbonate	mg/L	64.24	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	61.2	17.7	17.8	17.6	17.6
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.299	0.158	0.169	0.100	0.115
Nitrogen, Nitrate	mg/L	0.57	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.78	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	395.42	66.0	58.3	63.0	56.1
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	61.29	26.3	21.5	26.5	27.4
Magnesium	mg/L	25.82	9.9	7.9	9.7	9.5
Potassium	mg/L	16.88	2.9	3.1	3.3	3.2
Sodium	mg/L	134.27	38.7	43.0	40.0	36.8
General						
Hardness	mg/L	170.91	106	86.0	106	108

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.23	1.15	1.25	1.34
ORP	mV	-	-362.3	-243.8	-293.5	-341
pH	SU	8.4-9.4	8.96	8.63	8.76	8.62
Specific Conductance	uS/cm	-	237.9	139.1	218.5	245.8
Temperature	C	-	7.1	9.0	9.6	7.7
Turbidity	NTU	-	4.71	22.29	4.4	5.27
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	<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	<4.0
Iron	ug/L	1364.17	352	234	352	733
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	16.74	-	-	<10.0	-
Manganese	ug/L	80.14	51.4	<50.0	<50.0	66.7
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	121.72	87.9	68.0	75.2	99.3
Alkalinity, Carbonate	mg/L	17.08	5.6	<2.0	<2.0	<2.0
Chloride	mg/L	96.09	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.097	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	72.34	5.4	3.2	11.9	5.3
Sulfide	mg/L	2.47	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	34.03	24.3	17.6	23.2	26.5
Magnesium	mg/L	15.63	7.2	4.5	6.5	7.2
Potassium	mg/L	20.91	4.4	2.5	4.1	3.2
Sodium	mg/L	67.74	6.8	4.8	8.4	6.2
General						
Hardness	mg/L	146.74	90.4	62.5	84.9	95.8

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.31	0.28	1.27	1.34
ORP	mV	-	-238.2	-229.3	-175.4	-211.3
pH	SU	7.29-8.29	8.13	7.54	7.46	7.63
Specific Conductance	uS/cm	-	501.3	377.4	648.7	808.7
Temperature	C	-	7.1	7.4	9.4	8.9
Turbidity	NTU	-	66.7	56.23	55.58	64.21
Water Elevation	ft MSL	-	1531.54	1538.84	1538.22	1538.76
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	<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	<4.0
Iron	ug/L	2594.79	662	2290	2950	4580
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	333.37	264	457	602	661
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	141.40	81.4	80.9	70.9	75.2
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	34.7	26.1	20.5	28.0	97.1
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.083	0.0386	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	175.33	160	173	207	128
Sulfide	mg/L	0.52	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	71.88	38.1	33.6	40.9	50.3
Magnesium	mg/L	26.49	18.4	15.9	17.3	21.2
Potassium	mg/L	6.12	4.9	5.4	6.0	7.9
Sodium	mg/L	29.55	41.6	56.6	53.7	61.9
General						
Hardness	mg/L	296.9	171	149	174	213

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.32	0.21	2.25	1.49
ORP	mV	-	-105.2	-124.0	-85.1	-128.5
pH	SU	6.4-7.4	6.65	6.81	6.88	6.85
Specific Conductance	uS/cm	-	445.3	384.9	386.5	376.8
Temperature	C	-	7.3	9.1	10.6	8
Turbidity	NTU	-	3.82	3.12	4.57	0.52
Water Elevation	ft MSL	-	1533.32	1537.62	1536.52	1537.30
Metals						
Aluminum	ug/L	200	-	-	<50.0	-
Antimony	ug/L	4	-	-	<2.0	-
Arsenic	ug/L	8.8	7.8	7.0	6.0	5.5
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	<4.0
Iron	ug/L	22048.83	10200	10300	8740	7960
Lead	ug/L	9	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	14.39	-	-	<10.0	-
Manganese	ug/L	6267.76	6110	5530	4720	4240
Mercury	ng/L	4	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	214.17	155	153	142	132
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	18.35	19.8	18.0	15.4	13.9
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.041	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	12.26	14.9	14.2	14.1	12.1
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	45.93	45.6	43.6	38.6	37.8
Magnesium	mg/L	18.68	14.2	13.8	13.0	12.9
Potassium	mg/L	3.64	3.7	3.8	3.6	3.3
Sodium	mg/L	4.26	4.8	4.7	4.2	4.5
General						
Hardness	mg/L	203.47	172	166	150	148

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.37	1.52	1.27	1.41
ORP	mV	-	11.3	25.4	93.5	99.3
pH	SU	6.29-7.29	6.98	6.75	6.65	6.50
Specific Conductance	uS/cm	-	610.3	607.5	681.6	740.2
Temperature	C	-	7.1	10.4	9.2	8.38
Turbidity	NTU	-	1.96	2.54	2.17	0.54
Water Elevation	ft MSL	-	1532.35	1535.31	1534.79	1534.26
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	<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	<4.0
Iron	ug/L	481.9	< 200	<200	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	627.41	711	841	981	1090
Mercury	ng/L	37.3	10.4	6.86	19.8	14.2
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	372.91	155	243	238	257
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	21.5	16.5	13.1	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.56	0.233	0.215	0.310	0.284
Nitrogen, Nitrate	mg/L	0.08	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.40	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	136.69	133	109	95.1	95.7
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	65.21	51.4	59.9	48.8	59.8
Magnesium	mg/L	34.32	25.6	28.3	25.2	28.5
Potassium	mg/L	12.96	10.4	11.5	9.9	11.2
Sodium	mg/L	80.47	25.7	38.0	42.8	45.6
General						
Hardness	mg/L	321.93	234	266	226	267

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	6.68	2.71	7.35	4.93
ORP	mV	-	233.0	65.8	126.7	24.2
pH	SU	6.67-7.67	6.96	6.62	7.05	6.76
Specific Conductance	uS/cm	-	812.9	691.4	834.2	813.2
Temperature	C	-	9.2	11.0	10.8	7.7
Turbidity	NTU	-	1087.2	746.4	147.66	119.34
Water Elevation	ft MSL	-	1560.13	1567.71	1564.29	1563.83
Metals						
Aluminum	ug/L	200	-	-	1500	-
Antimony	ug/L	4	-	-	<2.0	-
Arsenic	ug/L	7.5	12.2	7.8	<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	28.32	37.3	28.4	6.0	5.3
Iron	ug/L	52956	128000	77000	8860	8840
Lead	ug/L	9	5.3	3.1	<3.0	<3.0
Lithium	ug/L	31.39	-	-	13.4	-
Manganese	ug/L	2789	1610	1980	718	1800
Mercury	ng/L	14.89	6.68	<3.1	1.55	5.30
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	44.7	38.1	<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	23.65	21.4	14.5	<10.0	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	480.97	374	371	383	381
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	191.74	< 10.0	<50.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.063	<0.025	<0.025	<0.025	<0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	138.86	75.6	66.0	76.0	67.1
Sulfide	mg/L	0.8	< 1.0	<1.0	<0.20	<0.20
Major Cations						
Calcium	mg/L	166.39	105	105	107	108
Magnesium	mg/L	65.48	60.3	52.8	42.1	41.7
Potassium	mg/L	8.30	8.2	7.9	7.1	7.2
Sodium	mg/L	7.71	9.9	10.4	9.9	16.2
General						
Hardness	mg/L	757.06	511	479	441	441

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019*	Q4 2019
Field						
D.O.	ppm	-	1.7	3.05	NM	2.13
ORP	mV	-	33.6	100.1	NM	7.5
pH	SU	5.4-6.4	6.03	6.11	NM	5.98
Specific Conductance	uS/cm	-	329.3	201.1	NM	356.2
Temperature	C	-	7.5	8.3	NM	8.8
Turbidity	NTU	-	3.67	272.87	NM	23.27
Water Elevation	ft MSL	-	1596.33	1595.5	1590.99	1594.49
Metals						
Aluminum	ug/L	200	-	-	NM	-
Antimony	ug/L	4.0	-	-	NM	-
Arsenic	ug/L	7.5	< 5.0	<5.0	NM	<5.0
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	<4.0
Iron	ug/L	4098.78	3190	1510	NM	<200
Lead	ug/L	9.0	< 3.0	<3.0	NM	<3.0
Lithium	ug/L	40	-	-	NM	-
Manganese	ug/L	1376.02	99.2	92.4	NM	54.3
Mercury	ng/L	10.07	< 1.0	<1.0	NM	<1.0
Molybdenum	ug/L	200	-	-	NM	-
Nickel	ug/L	185.91	90.7	91.0	NM	176
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	33.4
Major Anions						
Alkalinity, Bicarbonate	mg/L	85.44	33.3	<2.0	NM	49.7
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	NM	<2.0
Chloride	mg/L	184.87	15.5	19.2	NM	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	NM	<1.0
Nitrogen, Ammonia	mg/L	0.22	< 0.025	< 0.025	NM	< 0.025
Nitrogen, Nitrate	mg/L	3.8	< 0.10	< 0.10	NM	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	NM	< 0.10
Sulfate	mg/L	334.5	75.3	41.5	NM	109
Sulfide	mg/L	0.80	< 0.20	<0.20	NM	<0.20
Major Cations						
Calcium	mg/L	116.03	27.1	17.3	NM	40.3
Magnesium	mg/L	41.43	9.4	6.1	NM	12.9
Potassium	mg/L	5.21	2.1	1.5	NM	2.6
Sodium	mg/L	47.56	7.1	7.2	NM	13.6
General						
Hardness	mg/L	479.44	106	68.3	NM	154

* - 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	Q4 2019
Field						
D.O.	ppm	-	0.75	2.41	2.75	0.66
ORP	mV	-	226.1	231.7	237.6	163.6
pH	SU	5.46-6.46	5.78	5.57	5.47	5.48
Specific Conductance	uS/cm	-	381.1	1220.1	1278.4	1369.7
Temperature	C	-	5.1	7.7	12.9	6.52
Turbidity	NTU	-	1.30	1.7	2.76	17.74
Water Elevation	ft MSL	-	1532.35	1537.7	1536.81	1536.11
Metals						
Aluminum	ug/L	200	-	-	<50.0	-
Antimony	ug/L	4	-	-	<2.0	-
Arsenic	ug/L	7.5	< 5.0	<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	<4.0
Iron	ug/L	497.99	< 200	<200	<200	<200
Lead	ug/L	9	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	5262.51	102	236	307	381
Mercury	ng/L	8.44	< 1.0	1.44	1.50	1.16
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	117.82	50.5	64.5	62.1	60.0
Alkalinity, Carbonate	mg/L	8	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	22.96	63.3	345	333	333
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.402	< 0.025	<0.050	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	1.87	1.16	1.27	1.44	0.985
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	85.65	21.3	20.0	33.9	43.2
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	43.04	29.6	73.9	58.8	60.3
Magnesium	mg/L	18.63	12.0	25.6	19.4	19.8
Potassium	mg/L	8.95	4.1	8.9	9.4	10.1
Sodium	mg/L	11.68	21.4	111	136	147
General						
Hardness	mg/L	199.04	123	290	227	232
Silica	mg/L	-	-	-	18.1	18.2

**Mine Permit Groundwater Quality Monitoring Data
MW-701 UFB**

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.24	0.25	1.25	1.31
ORP	mV	-	223.4	-113.8	-153.4	-228.5
pH	SU	6.71-7.71	7.55	6.57	6.98	7.23
Specific Conductance	uS/cm	-	365.6	1867.8	5543.1	5298.3
Temperature	C	-	7.56	7.4	9.5	7.2
Turbidity	NTU	-	41.77	41.11	24.24	19.16
Water Elevation	ft MSL	-	1532.63	1537.95	1537.02	1539.69
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	<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	<4.0
Iron	ug/L	24957.73	17500	48800	197000	201000
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	12.91	-	-	14.9	-
Manganese	ug/L	4677.42	1790	1870	16400	19300
Mercury	ng/L	4.0	< 1.0	3.37	4.35	2.12
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	161.71	147	112	259	242
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	48.85	14.0	238	576	615
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	1.75	< 0.025	0.089	0.1	0.1
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	52.19	2.9	619	1950	1650
Sulfide	mg/L	1.86	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	38.59	39.0	181	504	449
Magnesium	mg/L	16.16	13.8	71.4	162	151
Potassium	mg/L	8.53	4.3	8.2	19.3	18.3
Sodium	mg/L	33.46	6.1	90.1	530	430
General						
Hardness	mg/L	163.25	154	747	1930	1740
Silica	mg/L	-	-	-	32.9	19.5

**Mine Permit Groundwater Quality Monitoring Data
MW-702 QAL**

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.65	1.14	1.66	1.85
ORP	mV	-	216.7	221.4	70.3	159.8
pH	SU	8.81-9.91	7.30	6.83	6.92	6.73
Specific Conductance	uS/cm	-	363.9	380.1	406.4	436.6
Temperature	C	-	6.5	7.0	8.1	6.89
Turbidity	NTU	-	1.84	96.78	67.14	170.93
Water Elevation	ft MSL	-	1534.49	1537.05	1536.48	1537.11
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	<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	4.5
Iron	ug/L	800	< 200	<200	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	545.68	< 50.0	<50.0	59.1	61.7
Mercury	ng/L	3.55	1.52	<1.0	2.53	2.98
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	160.17	111	112	114	114
Alkalinity, Carbonate	mg/L	40.7	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	17.58	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.042	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	1.24	0.209	0.442	0.192	0.224
Nitrogen, Nitrite	mg/L	0.18	<0.10	<0.10	<0.10	<0.10
Sulfate	mg/L	133.19	65.7	91.4	79.3	90.9
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	78.82	27.7	28.5	30.5	29.7
Magnesium	mg/L	14.06	10.4	14.3	12.3	11.7
Potassium	mg/L	22.00	7.5	5.4	4.6	4.0
Sodium	mg/L	60.14	28.0	33.6	33.0	42.8
General						
Hardness	mg/L	251.25	112	130	127	122

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	2.59	0.26	3.01	1.42
ORP	mV	-	-147.3	-264.2	-151.4	-151.1
pH	SU	7.11-8.11	7.91	8.19	7.92	7.53
Specific Conductance	uS/cm	-	278.5	219.3	265.4	309.5
Temperature	C	-	5.34	8.5	9.3	7.1
Turbidity	NTU	-	4.77	3.21	4.93	2.31
Water Elevation	ft MSL	-	1515.42	1509.57	1510.72	1523.54
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	<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	<4.0
Iron	ug/L	1328.38	669	1280	536	844
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	12.91	-	-	<10.0	-
Manganese	ug/L	118.08	92.0	97.0	84.4	86.3
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	111.84	89.5	87.2	92.7	91.8
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.087	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	36.1	37.4	32.7	35.0	36.1
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	38.98	30.8	28.5	32.2	32.3
Magnesium	mg/L	11.74	9.7	8.8	9.9	9.7
Potassium	mg/L	11.24	3.1	3.3	3.1	3.0
Sodium	mg/L	5.20	3.2	3.0	3.3	9.0
General						
Hardness	mg/L	139.94	117	107	121	121

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	5.49	6.01	6.11	6.65
ORP	mV	-	311.6	297.8	182.3	261.2
pH	SU	6.3-7.3	5.69	5.98	6.11	5.82
Specific Conductance	uS/cm	-	175.9	147.7	185.0	193.0
Temperature	C	-	5.7	6.9	7.3	6.0
Turbidity	NTU	-	2.3	2.42	2.75	0.67
Water Elevation	ft MSL	-	1534.86	1536.49	1536.39	1535.66
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	<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	<4.0
Iron	ug/L	286.57	< 200	<200	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	106.54	< 50.0	<50.0	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	92.34	50.8	47.7	46.8	47.9
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.082	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	1.81	1.76	1.92	1.91	2.22
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	40.56	27.7	19.1	26.8	31.9
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	31.29	18.6	16.7	17.4	19.3
Magnesium	mg/L	9.83	8.0	6.9	7.8	8.5
Potassium	mg/L	2.57	1.6	1.5	1.4	1.5
Sodium	mg/L	7.74	2.0	1.7	1.7	2.4
General						
Hardness	mg/L	115.53	79.4	70.0	75.3	83.2

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.35	0.31	1.98	0.40
ORP	mV	-	-240.1	-238.0	-198.4	-244.0
pH	SU	7.44-8.44	8.32	8.20	8.07	7.91
Specific Conductance	uS/cm	-	294.3	243.6	286.4	324.6
Temperature	C	-	5.4	7.1	9.3	6.8
Turbidity	NTU	-	3.38	1.91	3.70	2.01
Water Elevation	ft MSL	-	1532.03	1536.57	1530.25	1535.72
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	<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	<4.0
Iron	ug/L	1902.7	1290	1130	1510	1280
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	199.79	187	195	207	188
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	111.44	76.6	77.2	80.0	78.1
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.75	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	49.32	52.0	38.5	50.5	50.2
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	42.87	31.1	32.0	33.3	31.9
Magnesium	mg/L	13.90	10.4	10.0	11.1	10.4
Potassium	mg/L	4.23	2.3	2.3	2.4	2.2
Sodium	mg/L	17.31	2.9	2.8	3.1	3.5
General						
Hardness	mg/L	173.44	121	121	129	123

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.24	1.26	1.26	0.27
ORP	mV	-	-229.1	-236.6	-228.1	-233.5
pH	SU	8.08-9.08	8.28	8.83	8.30	8.00
Specific Conductance	uS/cm	-	265.4	245.2	278.7	313.6
Temperature	C	-	5.9	7.4	8.2	6.8
Turbidity	NTU	-	4.06	29.21	5.13	11.15
Water Elevation	ft MSL	-	1532.56	1538.59	1537.42	1537.52
Metals						
Aluminum	ug/L	200	-	-	<50.0	-
Antimony	ug/L	4	-	-	<2.0	-
Arsenic	ug/L	7.5	< 5.0	<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	<4.0
Iron	ug/L	2081.98	467	<200	618	556
Lead	ug/L	9	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	28.08	-	-	<10.0	-
Manganese	ug/L	94.53	70.2	<50.0	88.8	83.0
Mercury	ng/L	4	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	92.11	75.6	80.7	78.2	75.1
Alkalinity, Carbonate	mg/L	10.41	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	96.57	11.1	25.8	12.0	10.9
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.076	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	43.42	36.9	13.2	34.9	37.1
Sulfide	mg/L	0.8	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	33.74	25.8	16.0	26.9	27.5
Magnesium	mg/L	12.29	10.6	8.3	10.8	10.7
Potassium	mg/L	7.73	3.2	6.4	3.5	3.2
Sodium	mg/L	51.07	7.6	20.2	7.6	7.3
General						
Hardness	mg/L	134.66	108	74.2	112	113

*- Diver failed on 3/22/18, replaced 5/16/18

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

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.38	0.22	1.26	0.27
ORP	mV	-	-303.1	-262.1	-214.4	-250.6
pH	SU	8.89-9.89	10.18	8.43	8.60	8.47
Specific Conductance	uS/cm	-	292.5	254.3	294.9	334.4
Temperature	C	-	5.2	7.00	8.2	6.8
Turbidity	NTU	-	22.73	1.74	2.51	1.04
Water Elevation	ft MSL	-	1532.25	1535.23	1534.30	1534.55
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	<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	<4.0
Iron	ug/L	861.32	< 200	231	<200	<200
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	19.81	-	-	<10.0	-
Manganese	ug/L	200	< 50.0	<50.0	<50.0	<50.0
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	87.85	52.8	80.5	78.7	76.2
Alkalinity, Carbonate	mg/L	38.7	21.4	<2.0	<2.0	<2.0
Chloride	mg/L	20	15.2	14.7	14.3	14.2
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.12	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.86	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	72.78	29.5	38.3	39.2	41.0
Sulfide	mg/L	1.27	0.29	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	27.00	18.6	28.0	26.8	27.2
Magnesium	mg/L	17.28	7.8	10.4	10.8	10.7
Potassium	mg/L	29.63	20.1	3.8	4.4	5.0
Sodium	mg/L	16.16	11.5	6.5	6.6	7.2
General						
Hardness	mg/L	139.55	78.5	113	111	112

**Mine Permit Groundwater Quality Monitoring Data
MW-704 QAL (Monitoring)**

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm		1.39	1.3	1.23	1.36
ORP	mV		141.5	-7.6	191.6	76.7
pH	SU	5.43-6.43	5.68	6.51	5.73	5.69
Specific Conductance	uS/cm		392.2	448.6	537.9	607.6
Temperature	C		6.2	7.5	11.0	9.32
Turbidity	NTU		5.42	4.71	21.00	5.23
Water Elevation	ft MSL		1532.48	1535.35	1534.58	1535.04
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	<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	<4.0
Iron	ug/L	84519.23	< 200	21600	<200	11300
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	8782.76	622	2870	815	2080
Mercury	ng/L	34.7	< 1.0	3.82	2.64	3.81
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	264.36	60.4	128	87.2	124
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	23.77	21.8	20.2	65.9	76.3
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.19	<0.050	0.70	<0.050	0.591
Nitrogen, Nitrate	mg/L	1.47	0.71	0.328	0.109	0.601
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	44.8	96.8	57.0	68.0	47.8
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Calcium						
Calcium	mg/L	47.35	37.6	44.8	46.9	51.8
Magnesium						
Magnesium	mg/L	14.76	14.2	15.8	18.0	18.3
Potassium						
Potassium	mg/L	6.10	2.6	3.7	3.2	4.2
Sodium						
Sodium	mg/L	32.26	16.3	19.3	23.1	25.9
General						
Hardness	mg/L	191.15	152	177	191	205

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm		1.38	1.32	1.35	1.42
ORP	mV		-148.1	-166.7	-119.4	-151.2
pH	SU	6.4-7.4	6.79	6.87	6.76	6.88
Specific Conductance	uS/cm		562.1	582.9	852.0	900.2
Temperature	C		7.1	7.7	9.5	8.69
Turbidity	NTU		8.01	5.75	3.93	3.10
Water Elevation	ft MSL		1533.00	1535.9	1535.13	1535.66
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	<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	<4.0
Iron	ug/L	44051.82	893	44800	69100	69100
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	30.14	-	-	<10.0	-
Manganese	ug/L	1384.15	50.9	1200	1380	1410
Mercury	ng/L	1.4	< 1.0	<1.0	1.52	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	198.18	119	187	166	190
Alkalinity, Carbonate	mg/L	8.0	2.2	<2.0	<2.0	<2.0
Chloride	mg/L	24.46	< 10.0	32.3	86.1	81.4
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.78	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.18	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	45.37	< 1.0	46.3	31.5	10.6
Sulfide	mg/L	0.49	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	66.63	22.3	68.0	66.3	73.2
Magnesium	mg/L	14.04	11.3	18.0	21.0	21.5
Potassium	mg/L	5.28	2.6	3.5	3.6	3.8
Sodium	mg/L	43.16	10.4	18.7	25.6	28.3
General						
Hardness	mg/L	226.12	102	244	252	271

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.24	1.4	1.18	1.29
ORP	mV	-	-246.7	-258.1	-251.3	-245.9
pH	SU	8.2-9.2	8.09	8.28	8.28	8.15
Specific Conductance	uS/cm	-	349	253.8	400.6	413.4
Temperature	C	-	7.1	10.0	10.3	9.0
Turbidity	NTU	-	15.68	14.22	16.45	2.06
Water Elevation	ft MSL	-	1533.45	1532.96	1531.84	1532.61
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	<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	<4.0
Iron	ug/L	3308.59	1190	943	1390	1560
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	28.25	-	-	15.1	-
Manganese	ug/L	95.14	136	72.5	161	161
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	152.81	158	110	165	168
Alkalinity, Carbonate	mg/L	13.4	< 2.0	2.6	<2.0	<2.0
Chloride	mg/L	40	13.1	10.4	14.8	16.4
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	20.79	12.2	9.2	13.5	14.2
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	33.39	40.7	23.5	44.8	45.0
Magnesium	mg/L	15.62	17.1	15.1	18.6	18.1
Potassium	mg/L	12.01	5.7	6.4	5.8	5.6
Sodium	mg/L	15.49	4.9	4.8	4.9	10
General						
Hardness	mg/L	156.51	172	121	188	187

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.25	1.68	1.25	1.41
ORP	mV	-	-263.4	-216.6	-245.4	-137.1
pH	SU	8.13-9.13	8.18	8.00	8.44	7.68
Specific Conductance	uS/cm	-	232.1	246.3	264.5	264.8
Temperature	C	-	7.3	9.2	10.1	8.5
Turbidity	NTU	-	80.33	82.93	24.66	17.32
Water Elevation	ft MSL	-	1529.94	1529.62	1529.72	1529.95
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	<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	<4.0
Iron	ug/L	9645	882	930	950	805
Lead	ug/L	12.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	12.9	-
Manganese	ug/L	58	50.9	58.6	61.0	58.2
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	129	119	126	129	124
Alkalinity, Carbonate	mg/L	32.0	2.6	<2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	4.0	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.04	< 0.025	< 0.025	< 0.025	< 0.025
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	6	< 1.0	<1.0	1.0	1.1
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	27.00	22.5	22.8	23.4	24.9
Magnesium	mg/L	14.00	11.4	11.3	11.8	12.1
Potassium	mg/L	4.00	2.6	2.6	2.6	2.6
Sodium	mg/L	14.00	10.5	10.6	11.0	11.7
General						
Hardness	mg/L	111.00	103	104	107	112

* - Diver failed 9/6/17, replaced 3/15/18

**Mine Permit Groundwater Quality Monitoring Data
MW-705 QAL (Monitoring)**

Parameter	Unit	Recommended Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.02	0.47	1.21	1.39
ORP	mV	-	-8.3	-64.4	-26.9	-28.8
pH	SU	5.67-6.67	6.51	6.29	6.31	6.02
Specific Conductance	uS/cm	-	276.7	369.8	199.6	236.6
Temperature	C	-	4.2	8.9	13.4	8.3
Turbidity	NTU	-	2.01	2.30	2.42	1.08
Water Elevation	ft MSL	-	1536.78	1537.96	1536.33	1537.31
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	<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	5.1
Iron	ug/L	12956.53	10100	13600	5300	8250
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	1535.09	1000	1470	498	830
Mercury	ng/L	1.8	< 1.0	<1.0	1.42	4.28
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	85.4	68.8	31.1	37.8	54.7
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	51.62	52.8	72.1	23.9	21.8
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.132	0.138	0.189	0.071	0.094
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	21.2	6.1	23.8	10.4	9.0
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	23.88	17.5	22.7	11.7	13.6
Magnesium	mg/L	10.91	8.0	9.6	4.6	5.7
Potassium	mg/L	3.03	2.8	2.7	2.6	2.3
Sodium	mg/L	16.56	16.4	25.1	13.5	19.2
General						
Hardness	mg/L	109.66	76.6	96.5	48.1	57.5

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	0.77	0.29	1.28	1.48
ORP	mV	-	-70.2	-179.9	-132.4	-123.6
pH	SU	6.59-7.59	7.19	7.2	7.15	7.04
Specific Conductance	uS/cm	-	303.4	287.0	345.6	344.6
Temperature	C	-	6.1	9.1	10.7	7.5
Turbidity	NTU	-	20.17	5.35	3.40	2.25
Water Elevation	ft MSL	-	1536.82	1540.24	1538.45	1539.24
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	<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	<4.0
Iron	ug/L	13309.31	7740	10400	9750	8620
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	13.19	-	-	<10.0	-
Manganese	ug/L	972.64	1060	989	1050	1010
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	117.78	77.3	90.3	88.4	83.8
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	35.98	36.2	33.0	38.8	41.1
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.1	< 0.025	0.030	0.026	0.029
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	14.23	2.4	3.3	3.0	4.2
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	26.00	25.9	26.6	28.5	28.6
Magnesium	mg/L	13.29	13.3	14.2	14.8	14.3
Potassium	mg/L	4.01	3.8	3.3	3.8	4.1
Sodium	mg/L	3.37	3.2	3.0	3.5	3.9
General						
Hardness	mg/L	127.17	119	125	132	130

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.92	0.5	1.79	2.12
ORP	mV	-	68.6	79.8	90.1	57.9
pH	SU	-	5.95	5.80	5.78	5.81
Specific Conductance	uS/cm	-	874.1	831.3	881.5	829.6
Temperature	C	-	8.1	9.5	10.1	8.1
Turbidity	NTU	-	4.17	3.43	5.69	1.74
Water Elevation	ft MSL	-	1561.82	1566.96	1563.44	1562.77
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	<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	<4.0
Iron	ug/L	8029.11	2760	3280	2540	2860
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	17.21	-	-	<10.0	-
Manganese	ug/L	23484.14	11600	11000	11600	11000
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	27.04	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	131.77	73.0	78.5	73.8	73.9
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	165.11	123	118	118	111
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.88	0.391	0.512	0.420	0.431
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	433.53	189	176	191	168
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	132.61	68.4	60.8	65.9	64.7
Magnesium	mg/L	43.54	27.2	24.6	26.2	25.2
Potassium	mg/L	5.64	4.6	4.0	4.6	4.5
Sodium	mg/L	139.93	44.9	42.7	47.1	54.7
General						
Hardness	mg/L	619.10	283	253	273	265

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

Parameter	Unit	Recommended				
		Benchmark 2018	Q1 2019	Q2 2019	Q3 2019	Q4 2019
Field						
D.O.	ppm	-	1.64	0.37	1.55	1.60
ORP	mV	-	-123.4	-131.5	-112.9	-115.6
pH	SU	6.43-7.43	6.9	7.13	7.04	6.97
Specific Conductance	uS/cm	-	360.2	303.7	328.8	319.7
Temperature	C	-	6.7	7.5	9.3	6.6
Turbidity	NTU	-	2.63	1.79	3.19	0.56
Water Elevation	ft MSL	-	1583.73	1583.63	1581.74	1581.76
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	<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	<4.0
Iron	ug/L	7115.36	4350	4290	3980	4110
Lead	ug/L	9.0	< 3.0	<3.0	<3.0	<3.0
Lithium	ug/L	40	-	-	<10.0	-
Manganese	ug/L	1127.81	970	892	893	917
Mercury	ng/L	4.0	< 1.0	<1.0	<1.0	<1.0
Molybdenum	ug/L	200	-	-	<50.0	-
Nickel	ug/L	80	< 20.0	<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	<10.0
Major Anions						
Alkalinity, Bicarbonate	mg/L	168.29	158	163	158	157
Alkalinity, Carbonate	mg/L	8.0	< 2.0	<2.0	<2.0	<2.0
Chloride	mg/L	40	< 10.0	<10.0	<10.0	<10.0
Fluoride	mg/L	2.5	< 1.0	<1.0	<1.0	<1.0
Nitrogen, Ammonia	mg/L	0.32	0.259	0.294	0.287	0.299
Nitrogen, Nitrate	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Nitrogen, Nitrite	mg/L	0.4	< 0.10	< 0.10	< 0.10	< 0.10
Sulfate	mg/L	9.35	1.4	<1.0	<1.0	<1.0
Sulfide	mg/L	0.80	< 0.20	<0.20	<0.20	<0.20
Major Cations						
Calcium	mg/L	45.91	42.6	41.8	43.1	43.4
Magnesium	mg/L	13.49	11.7	11.6	11.4	11.6
Potassium	mg/L	2.93	2.2	2.2	2.4	2.5
Sodium	mg/L	3.62	3.0	3.0	3.1	9.0
General						
Hardness	mg/L	162.23	155	152	154	156