**Basin Watershed Monitoring** 

### **Data Summary Report**

2016-2020



Crystal Mine Adit, 2009

prepared by

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# Basin Watershed Monitoring Data Summary Report 2016–2020

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### **1.0 Introduction**

The Bullion and Crystal mines lie within the Basin Watershed Operable Unit (OU2) of the Basin Mining Area National Priorities List (also known as Superfund) Site. Interim Records of Decision (RODs) were issued by the Environmental Protection Agency (EPA), with State of Montana and U.S. Forest Service concurrence, for remediation and adit discharge treatment at the Bullion and Crystal sites in April 2015 (EPA, 2015a,b). During the fall of 2015, EPA Removal Action Team successfully opened the Bullion Mine adit, establishing a free-flowing drain system. Initial testing following the adit opening indicated that both water chemistry and water quantity changed from previous monitoring.

EPA installed a pumping well into the mine adit as part of the adit-opening, which serves as a monitoring point to measure the water level inside the mine.

EPA and Montana Department of Environmental Quality (DEQ) are developing plans for passive water treatment and contracted with the Montana Bureau of Mines and Geology (MBMG) to perform specific site-monitoring activities to better characterize site conditions, including measurement of discharge from flumes installed downgradient of the adits, and geochemical sampling of adit water. Work performed by the MBMG was conducted under DEQ Contract 415008, following the project Quality Assurance Project Plan (QAPP, MBMG, 2018). All water samples collected were analyzed in the MBMG analytical laboratory, following EPA procedures listed in the QAPP. No monitoring or sampling activities took place during 2019 due to a late renewal of the DEQ contract and an early snow that prevented site access; however, transducers left in-place from 2018 continued to collect data at the three flumes. Due to the large amount of data collected, data from the fall of 2018 to the spring of 2019 was overwritten. Data from May 2019 to July 2020 were recovered and were comparable to previous data collected by the MBMG from 2016 to 2018.

#### 2.0 Purpose and Objectives

The purpose of the MBMG's monitoring and sampling activities was to provide technical assistance and updated flow and chemistry data to DEQ and EPA to assist with ongoing treatment design within the Boulder River Operable Unit (Bullion and Crystal mine sites).

The MBMG was tasked to:

- Reinstall the pressure transducers and the two fiberglass flumes in the Bullion Mine discharge; one flume is located near the discharge point from the adit and the other just above the site discharge to Jack Creek.
- 2. Reinstall the fiberglass flume and install a pressure transducer in the Crystal Mine discharge.
- Monitor the water level in the Bullion Mine pumping well and any additional wells as requested by DEQ. A pressure transducer was installed in the well for continuous waterlevel monitoring.
- 4. Collect quarterly inorganic samples for major ions and trace metals from the Bullion Mine and Crystal Mine discharge for both dissolved and total recoverable fractions.
- Periodically install *in situ* monitors for collection of pH, specific conductance (SC), temperature, dissolved oxygen (DO), and oxidization-reduction potential (ORP) of the discharge water.

#### 3.0 Background and Site Description

The Basin Mining District consists of approximately 300 abandoned hard-rock mine sites within its 77-mi<sup>2</sup> watershed (fig. 1; EPA, 2013). The Bullion Mine and Crystal Mine are the two major threats to surface-water quality in the district. EPA listed the Basin Mining Area to the Superfund National Priorities List in October 1999. Remedial Investigations and Feasibility Studies were completed followed by the issuance of Interim RODs for both sites in April 2015.

The Bullion Mine is the largest and most productive abandoned/inactive mine in the Basin Mining District, operating periodically from 1897 to 1974. The mine development consisted of three levels, connected by stopes and inclines, with about 4,500 ft of total workings (Metesh and others, 1994). The mine produced approximately 30,000 tons of ore containing gold, silver, copper, lead, and zinc (Metesh and others, 1994). Acid mine drainage from the lower adit is the main source of metal impacts to Jack Creek, a tributary to Basin Creek. EPA identified aluminum, arsenic, antimony, cadmium, copper, iron, lead, silver, and zinc as contaminants of concern (COC).

The Crystal Mine operation consists of both underground workings and open pits, operating periodically from 1883 to 1984. Total ore production was reported to have been approximately 22,500 tons, consisting of gold, silver, copper, lead, and zinc (Metesh and others,

1995). Underground workings consist of two adits with total workings of 6,000 ft over 200–300 vertical ft. Acid mine drainage from the adit contains elevated concentrations of several COCs and drains to Uncle Sam Gulch, a tributary to Cataract Creek.

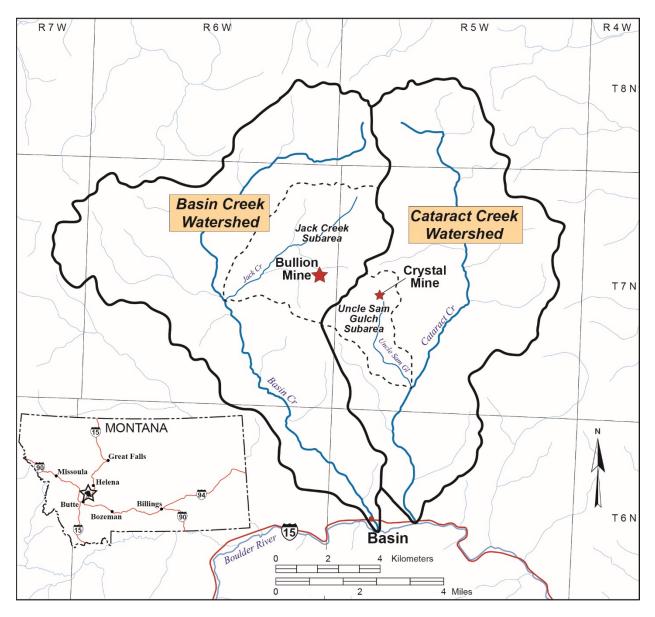


Figure 1. Site location map.

### 4.0 Summary of Adit Discharge Flow Monitoring

Flumes for monitoring discharge from the Bullion and Crystal mines were installed along with pressure transducers to measure discharge from the mine adits. Two flumes were installed at the Bullion site, one near the mine adit (upper Bullion) and the other above the confluence of the adit discharge with Jack Creek (lower Bullion). Table 1 contains information on the flume sizes, and figures 2 and 3 show the flume installations. The Crystal Mine flume is located a short distance below the adit discharge. All three transducers were programmed to collect data every 15 min.

Flume LocationGWIC IDFlume SizeUpper Bullion Mine, near Adit1284690.4HSLower Bullion Mine2851070.5HCrystal Mine, near Adit2570680.5H

Table 1. Basin drainage flume locations, GWIC ID, and size.



Figure 2. Upper Bullion (top) and lower Bullion (bottom) flumes.



Figure 3. Crystal Mine flume located approximately 20 yards downgradient of the adit.

Due to harsh site conditions, i.e., low pH water, high iron concentrations, and sedimentation problems, transducers become encrusted and flumes can become clogged with sediment, affecting data quality. This is especially true at the upper Bullion site, which is adjacent to the access road and receives large amounts of sediment following storm events and spring snowmelt (fig. 4). The discharge data from the upper Bullion site likely overestimates flow due to sedimentation during storm events, in addition to fouling issues. The lower Bullion site also has problems with probe fouling. Figure 5 shows site transducers following deployment from late fall through winter. To reduce fouling issues, new transducers are installed at the beginning of each field season and again in the late fall. Snow and cold temperatures also affect data collection (fig. 6). As a result of the harsh site conditions, there are large periods of questionable flow data from late fall to mid-spring. Obvious periods of bad or questionable data have been removed from the site hydrographs for the upper and lower Bullion sites. Fewer periods of questionable data were noted at the Crystal site, which is less impacted by both chemical fouling and sedimentation. Figures 7–9 are the long-term flow hydrographs for each site, while table 2 presents flow statistics. Appendix 1 contains yearly hydrographs for each site.



Figure 4. Upper Bullion flume filled with sediment after summer rain event.



Figure 5. Transducers showing various levels of fouling, from left to right: lower Bullion, upper Bullion, and Crystal.



Figure 6. Winter conditions at lower Bullion Mine flume.

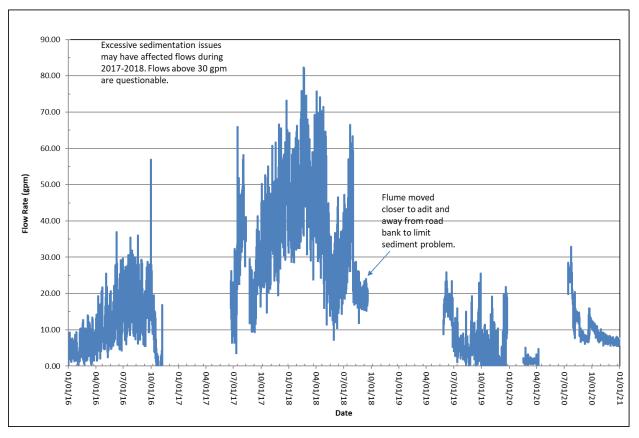


Figure 7. Upper Bullion Mine flow hydrograph.

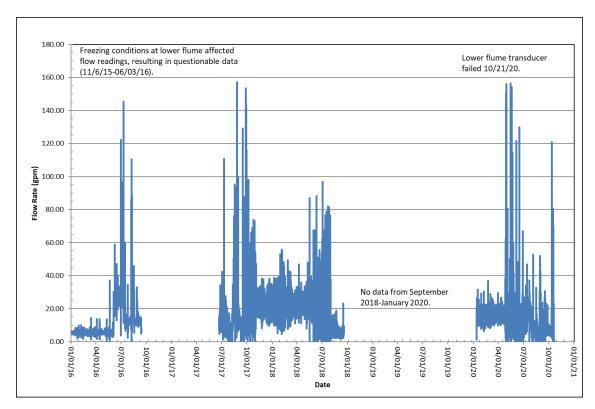


Figure 8. Lower Bullion Mine flow hydrograph.

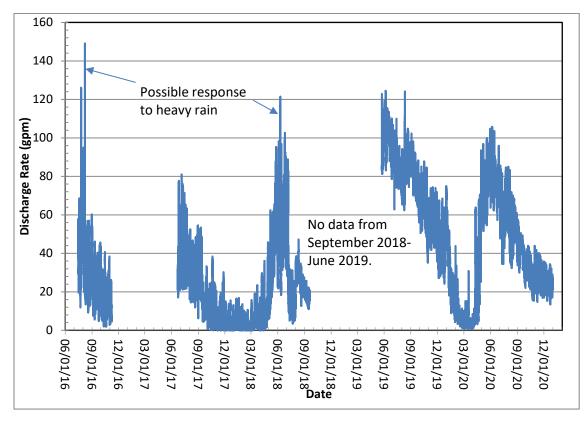


Figure 9. Crystal Mine flow hydrograph.

Flow Rate (gpm)	Upper Bullion	Lower Bullion	Crystal	
Mean	19.0	16.6	32.8	
Minimum	0.02	1.0	0.01	
Maximum	82.3	157	149	
Std Dev.	16.8	11.7	26.5	
Number of Readings	107,414	89,054	87,835	

Table 2. Bullion and Crystal Mine flow statistics (2016-2020), gallons per minute.

### 5.0 Summary of Adit Discharge in situ Physical Parameter Monitoring

Hydrolab Data Sondes were used for the *in situ* monitoring, which consisted of pH, SC, temperature (temp), luminescent dissolved oxygen (LDO), and ORP, reported as Eh. Sondes were calibrated prior to deployment following manufacturer's specifications. Certified standards were used for calibration of pH, SC, and Eh. Sondes were cleaned and probes inspected after deployment and repaired as necessary. Measurements were taken on time intervals that varied from 60 to 120 min. Monitoring intervals were increased from 60 to 120 min to increase battery life and deployment time. Due to harsh site conditions, i.e., low pH water, high iron concentrations, and sedimentation problems, several probes failed (broke or encrusted with iron oxides) throughout the period of monitoring (fig. 10).



Figure 10. Example of probe fouling due to encrustation.

#### 5.1 Bullion Mine

Physical parameter monitoring was performed above the upper flume and just below the lower flume in the discharge water from the Bullion Mine Adit during 2016, 2017, and 2018. Monitoring in 2020 was limited to one site, located just below the lower flume (fig. 2). Tables 3 and 4 show the statistics for the various parameters monitored by location and year. Appendix 2 contains graphs of physical parameter monitoring at the upper and lower monitoring sites for each year.

2016 (7/15–9/26/16)	pH SC (units) (µS/cm)		Temp LDO (°C) (mg/L)		ORP (mV)
Mean	2.47	1461	5.03	4.87	507
Min	1.83	1345	4.88	2.36	472
Max	2.92	1590	5.28	6.77	553
Std Dev	0.38	84.32	0.08	1.02	19.31
Number	998	989	998	442	998
2017 (8/30–11/3/17)	pH (units)	SC (µS/cm)	Temp (°C)	LDO (mg/L)	ORP (mV)
Mean	2.45	1305	4.79	1.57	756
Min	2.37	1204	3.79	0.58	680
Max	2.65	1404	5.80	5.89	805
Std Dev	0.05	53.93	0.28	1.41	39.06
Number	778	778	778	778	778
2018 (8/1–10/31/18)	pH (units)	SC (µS/cm)	Temp (°C)	LDO (mg/L)	ORP (mV)
Mean	2.80	1450	5.01	3.89	708
Min	2.08	1332	4.94	0.29	666
Max	2.87	1624	5.11	7.27	752
Std Dev	0.14	77.76	0.05	1.88	27.10
Number	1129	2,033	2,033	1,915	2,033

Note. No 2019 or 2020 monitoring data.

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Table 4. Lower Bullion *in situ* monitoring summary.

Note. No 2019 monitoring data.

2020 (8/6/20–11/31/20)	рН (units)	SC (µS/cm)	Temp (°C)	LDO (mg/L)	ORP (mV)
Mean	3.02	1178	4.12	7.87	675
Min	2.59	602	-0.06	5.70	634
Max	3.44	1,510	18.67	11.0	794
Std Dev	0.29	90	4.60	0.87	39
Number	1,201	789	1,201	862	1,201

#### 5.2 Crystal Mine

Physical parameter monitoring was performed in the discharge water from the Crystal Mine Adit during 2018 and 2020. Due to harsh site conditions, i.e., low pH water, high iron concentrations, and sedimentation problems, several probes failed (broke or encrusted with iron oxides) throughout the period of monitoring. Statistics for the various parameters monitored by year are shown in table 5. Graphs of physical parameters measured for each year are contained in appendix 3.

2018 (9/18/18–11/2/18)	pH (units)	SC (µS/cm)	Temp (°C)	LDO (mg/L)	ORP (mV)	
Mean	4.75	768	4.85	7.90	461	
Min	4.38	697	3.36	7.70	451	
Max	4.81	796	6.07	8.10	476	
Std Dev	0.03	18	0.35	0.07	5.64	
Number	1,066	1,066	1,066	972	1,066	
2020 (9/22/20-11/03/20)	pH (units)	SC (µS/cm)	Temp (°C)	LDO (mg/L)	ORP (mV)	
Mean	4.27	671	4.79	7.85	478	
Min	3.41	643	2.39	7.59	460	
Max	4.86	691	6.42	8.09	499	
Std Dev	0.51	13	0.55	2.87	12	
Number	499	499	499	499	499	

#### **<u>6.0 Water-Quality Sampling</u>**

Dissolved and total recoverable water-quality samples were collected once or twice a year from 2016 to 2020 (except 2019) from the upper and lower Bullion Mine monitoring sites, while samples were collected in 2018 and 2020 from the Crystal Mine discharge. Due to limited site access, all the water-quality samples were collected in the summer through late fall/early winter. Sample collection and analysis procedures are contained in the project QAPP. COC concentrations vary for some analytes, while remaining consistent for others. Table 6 contains statistics for the 9 COCs (includes both dissolved, as measured using a 0.45-µm filter, and total recoverable, as most of the metals are in the dissolved fraction). One or more of the samples collected at each of the three sites exceeded the DEQ-7 human health (surface water) and aquatic life standards (table 7; DEQ, 2019). Appendix 4 contains results of all samples collected.

The dissolved concentrations of arsenic, cadmium, zinc, and iron for the upper and lower Bullion Mine show the variability of these elements over time (figs. 11, 12). Generally, the lower concentrations were observed in samples collected later in the sampling season for a given year. Comparing the concentrations in figures 11 and 12 shows the decrease in concentrations between the upper and lower sites. The average decrease in iron concentrations from the upper to the lower Bullion sampling site was about 20 percent for the samples collected from 2016 to 2020. Similar average concentration decreases were observed for aluminum (6 percent), arsenic (21 percent), cadmium (8 percent), copper (9 percent), lead (8 percent), antimony (35 percent), and zinc (7 percent). Only four samples at both sites had measurable silver concentrations.

Concentrations of most analytes at the Crystal Mine were lower in 2020 than in 2018, based on collection of three samples (fig. 13).

Table 6. Statistics for the Contaminants of Concern for the Bullion and Crystal Mine sites including both	
dissolved and total recoverable concentrations.	

	AI	As	Ag*	Cd	Cu	Fe	Pb	Sb	Zn
Upper Bullion	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Mean	9,832	2,375	0.6	243	8,903	116,000	245	15	27,446
Min	8,214	556	0.5	188	5,616	76,000	171	2.6	22,298
Max	11,853	5,556	0.7	312	11,556	181,000	354	42	31,255
Number	18	18	2	18	18	18	18	18	18
Lower Bullion									
Mean	9,653	2,015	1.39	234	8,322	102,290	235	11	26,085
Min	6,593	420	1.39	176	4,300	64,200	154	3.4	18,885
Max	11,550	4,364	1.39	308	10,645	150,280	324	26	31,030
Number	12	12	1	12	12	12	12	12	12
Crystal									
Mean	9,402	346	0.25	542	9,904	49,800	119	5.7	42,013
Min	4,140	107	0.25	368	6,007	40,700	70	2.2	37,042
Max	13,814	807	0.25	684	13,817	66,500	184	11.4	51,420
Number	6	6	1	6	6	6	6	6	6

\*Most Ag concentrations were below detection and not considered in the statistical analysis. All other COC concentrations were above detection limits.

Table 7. Human health (surface water) and aquatic life exceedances, DEQ-7 standard (shown in µg/L).

COC	Al	As	*Ag	*Cd	*Cu	Fe	*Pb	Sb	*Zn
(HH, A, C)	(NA,	(10,	(100,	(5,	(1,300,	(NA,	(15,	(5.6,	(7,400,
	750,	340,	0.374,	0.49,	3.79,	ŇA,	13.98,	NA,	37, 37)
	87)	150)	NA)	0.25)	2.85)	1,000)	0.545)	NA)	-
Upper	A, C	HH, A,	Α	HH, A,	HH, A,	С	HH, A,	HH	HH, A,
Bullion		С		С	С		С		С
Lower	A, C	HH, A,	А	HH, A,	HH, A,	С	HH, A,	HH	HH, A,
Bullion		С		С	С		С		С
Crystal	A, C	HH, A,		HH, A,	HH, A,	С	HH, A,	HH	HH, A,
-		С		С	С		С		С

*Note.* NA, no applicable standard; HH, human health; A, acute aquatic; C, chronic aquatic \*Aquatic standard based on hardness @ 25 mg/L.

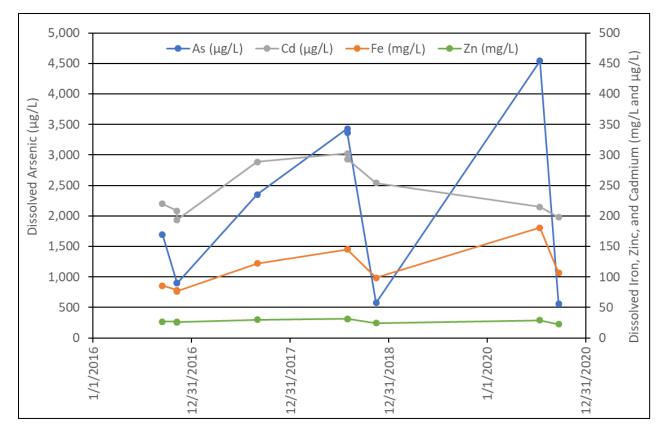


Figure 11. Dissolved concentrations of arsenic, cadmium, zinc, and iron from the Upper Bullion Mine sampling location from 2016 to 2020.

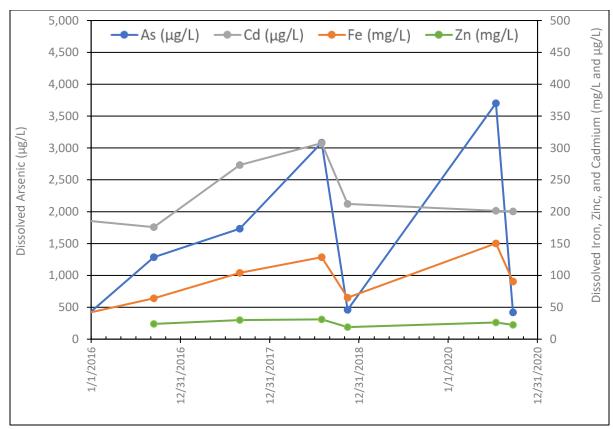


Figure 12. Dissolved concentrations of arsenic, cadmium, zinc, and iron from the Lower Bullion Mine sampling location Mine from 2016 to 2020.

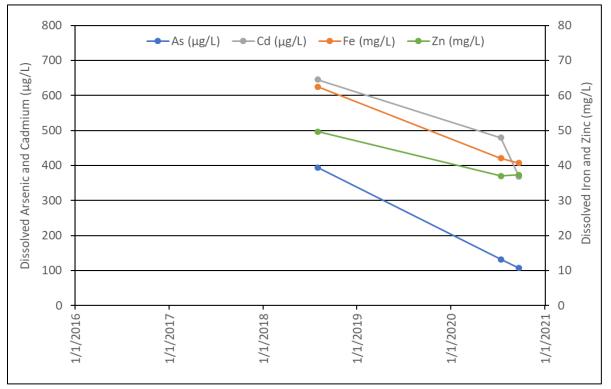


Figure 13. Dissolved concentrations of arsenic, cadmium, zinc, and iron from the Crystal Mine from 2016 to 2020.

### 7.0 Chemical Data Quality

Four duplicate samples (two dissolved and two total recoverable) were collected from the upper Bullion Mine site to evaluate data reproducibility (table 8). All of the relative percent differences between duplicate elemental sets were below 10 percent and most were below 5 percent.

Date	Ag	Al	As	Cd	Cu	Fe	Pb	Sb	Zn
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)
11/7/2016	<0.25U	8638.5	896.64	208.26	8185.5	78.38	185.68	2.8	26535
11/7/2016	<0.25U	8405.5	896.23	193.59	7823.5	76.41	170.63	2.64	25545
RPD		2.70	0.05	7.04	4.42	2.51	8.11	5.71	3.73
8/1/2018	<0.25U	11600	3428.22	302.46	10800	145.4	324.97	26.52	31255
8/1/2018	<0.25U	11580	3359.38	293.31	10740	145.05	320.06	29.15	31165
RPD		0.17	2.01	3.03	0.56	0.24	1.51	9.92	0.29
11/7/2016*		8607.25	1326.44	207.81	8099.67	77.09	192.49	4.17	26450
11/7/2016*		8582.75	1345.13	188.35	8077.83	78.055	195.97	4.37	26440
RPD		0.28	1.41	9.36	0.27	1.25	1.81	4.80	0.04
8/1/2018*		11402.5	4290	306.4	10730	146.225	350.88	29.25	31165
8/1/2018*		11325	4217	311.94	10640	145.65	353.78	29.6	31010
RPD		0.68	1.70	1.81	0.84	0.39	0.83	1.20	0.50

Table 8. COC concentrations for four duplicate samples collected from the upper Bullion Mine site with relative percent difference (RPD) calculations.

\*Total recoverable analytical data

#### **8.0 Summary of Bullion Mine Well—Water-Level Monitoring**

As part of the 2015 site activities, EPA installed a pumping well that intercepted the Bullion Mine adit and installed casing to make it a permanent monitoring well. The MBMG installed a transducer and direct read cable in September 2016; the transducer was programmed to collect data hourly. Figure 11 shows water levels and temperature from September 2016 through December 2020. During much of 2017 and early 2018 the water level increased in the adit, followed by an almost instantaneous decrease in mid-May 2018. Minor temperature changes occurred with the mid-May water-level decline. These changes may be related to some minor blockage of the adit discharge.

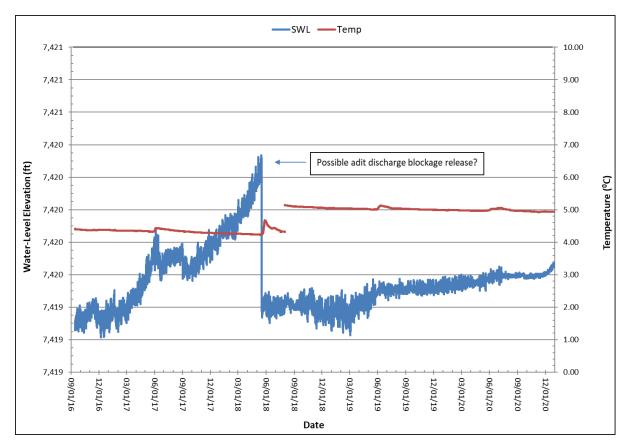


Figure 14. Bullion Mine water-level and temperature graph, 2016–2020.

#### 9.0 Summary

Seasonal monitoring of quantity and quality of water discharging from the Bullion Mine has been conducted since 2016, with the exception of 2019, when only limited flow data were collected. Crystal Mine monitoring consisted of adit discharge flow monitoring during the same time period, with monitoring of quality and physical parameter monitoring occurring in 2018 and 2020. Monitoring typically begins in mid- to late June, continuing to late October. The remote location of the sites and high metal concentrations present unique challenges.

Average discharge from the Bullion adit over the period of monitoring was 19 gpm. Snowmelt and runoff from precipitation impacted flows and caused sedimentation issues, especially at the upper flume. The upper flume was relocated closer to the adit in late 2018, improving data collection; however, sedimentation issues continued. Iron oxide build-up was an issue that caused probe fouling during long periods of deployment, i.e., during winter and spring months (November–May). The average discharge at the lower Bullion Mine flume was slightly less than the upper flume, at approximately 16 gpm. Sedimentation issues were less at this site; however, storm runoff was noted to have possibly increased flows following summer storm events. Occurrence of increased flows were checked against precipitation records for Butte and Helena.

The average discharge from the Crystal Mine was almost 33 gpm, with discharge rates increasing in the spring and following summer rain events. Sedimentation was not as significant a problem at this site, nor was probe fouling.

Physical parameter monitoring proved to be a challenge due to some of the same constraints noted with flow monitoring, specifically sedimentation and probe fouling issues at both Bullion sites and a number of probe failures. Fewer problems were encountered at the Crystal Mine site.

Bullion Mine seasonal average pH values were similar between the upper and lower flumes in 2016 and 2018, ranging from 2.47 to 2.91. During the 2017 monitoring period, pH values showed a marked increase at the downgradient location, 2.45 vs. 3.57.

Seasonal average SC and temperature values were more consistent throughout the monitoring period, averaging between 1,300 and 1,500 µmhos/cm at the upper flume location and between 1,000 and 1,400 µmhos/cm at the lower site. Temperature values were consistently colder at the upper flume site, ranging from 4.7°C to 5.0°C. Temperatures were higher at the lower site, ranging from 3.3°C to 8.3°C. Diurnal temperature variations occurred at the lower site throughout the period of monitoring, reflecting daily ambient temperature changes.

Dissolved oxygen seasonal average concentrations varied between 1.5 mg/L and 4.87 mg/L at the upper flume and between 2.6 mg/L and 7.58 mg/L at the lower flume.

Seasonal average ORP values (measured as Eh) varied between 500 mV and 725 mV at both the upper and lower flume sites.

Physical parameter seasonal average data were much more consistent at the Crystal Mine site, with pH values ranging from 4.27 to 4.75 and SC from 670 µmhos/cm to 770 µmhos/cm, while temperature varied from 4.7°C to 4.9°C. Seasonal average LDO and ORP were about 7.9 mg/L and 470 mV, respectively.

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Water-level monitoring in the Bullion Mine pumping well showed minor increases during the winter and spring time period, possibly from ice or snow blockage. Maximum waterlevel changes occurred during the spring of 2018.

Water-quality data indicate that most of the metal concentrations for the nine COCs are in the dissolved form and exceed the DEQ-7 standards for human health and aquatic life some or all of the time at both the Bullion and Crystal Mine sites. Concentrations of arsenic, cadmium, copper, iron, lead, and zinc are very high, ranging from 5 to greater than 10 times the DEQ-7 standards.

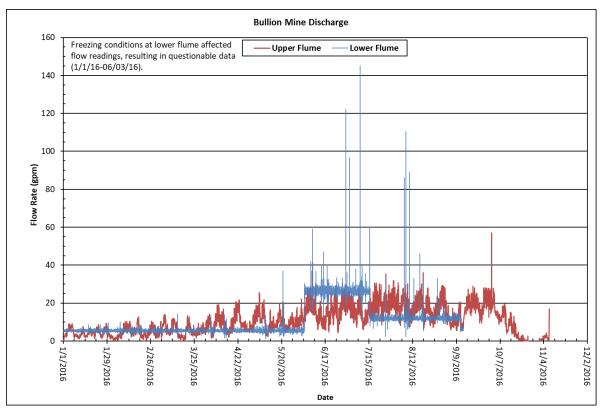
There appears to be a seasonal trend in concentrations from the Bullion Mine, with higher concentrations observed earlier in the sampling season. Additionally, there was a reduction in average concentration of COCs between the upper and lower Bullion Mine monitoring sites.

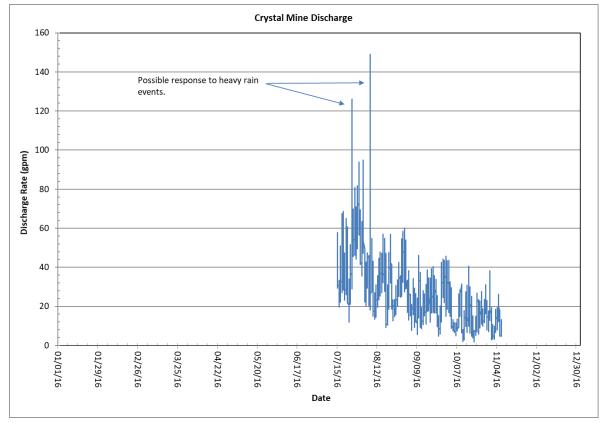
Concentrations of most analytes at the Crystal Mine were lower in 2020 than in 2018, based on collection of three samples.

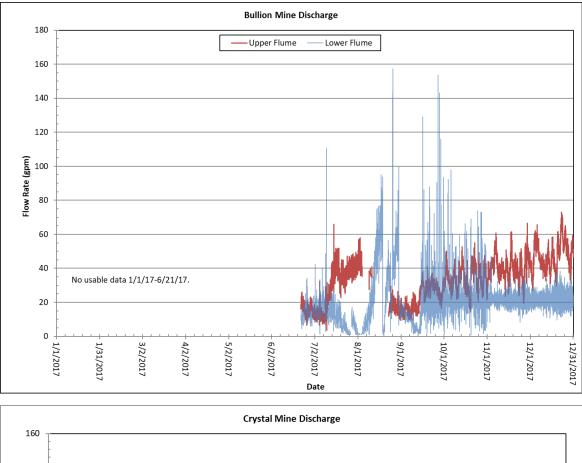
#### **10.0 References**

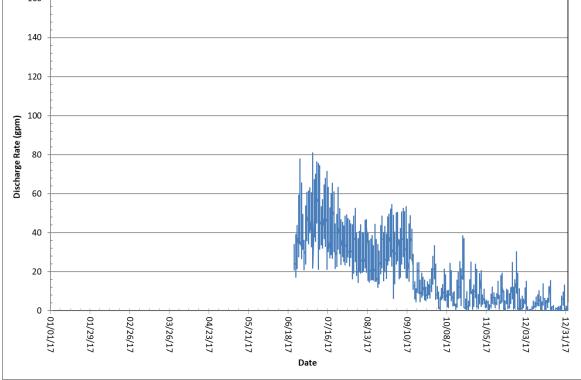
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- Metesh, J.J., Lonn, J., Duaime, T.E, and Wintergerst, R., 1994, Abandoned-inactive mines program report, Deerlodge National Forest, Basin Creek drainage, volume I: Montana Bureau of Mines and Geology Open-File Report 321, 131 p.
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- Montana Department of Environmental Quality (DEQ), 2019, Circular DEQ-7, Montana Numeric Water Quality Standards, June 2019.

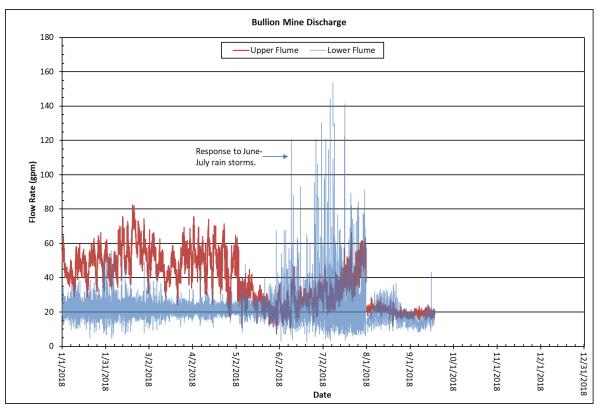
# Appendix 1: Bullion and Crystal Mines—Yearly Discharge Graphs

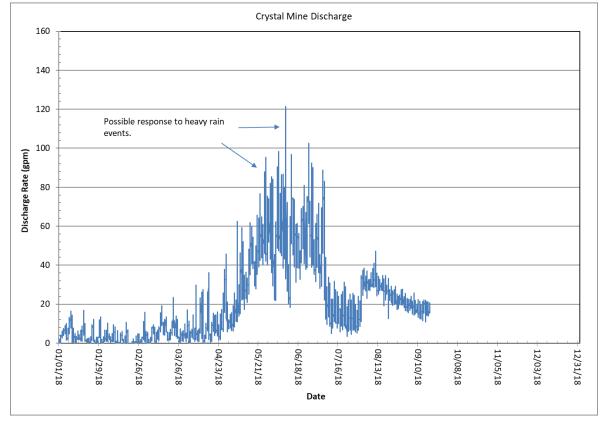


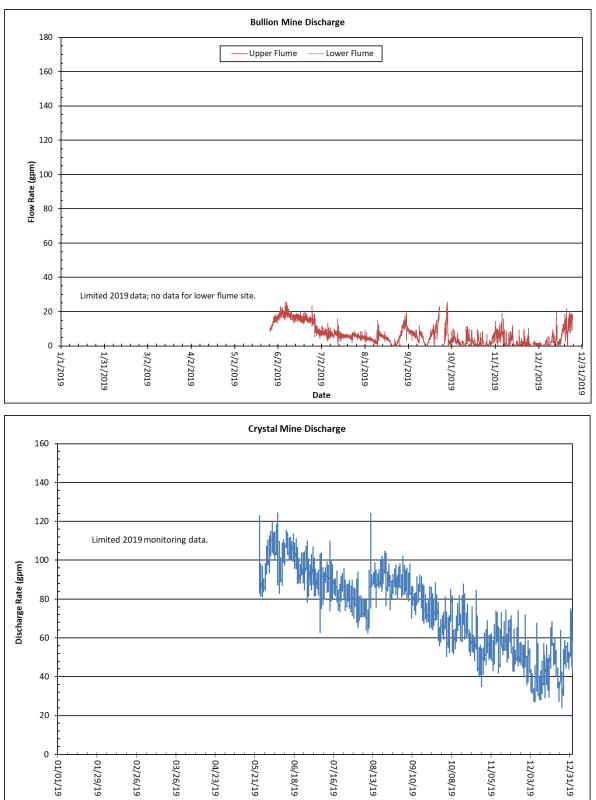




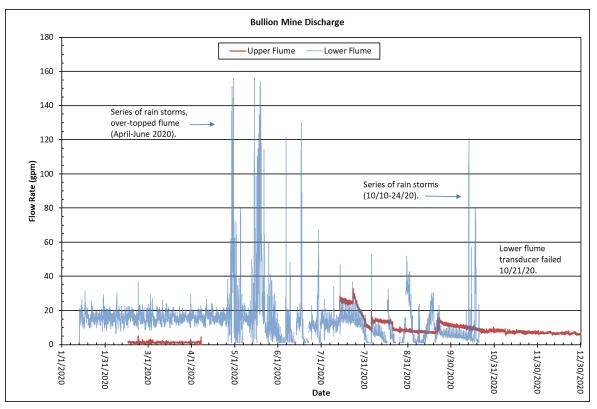


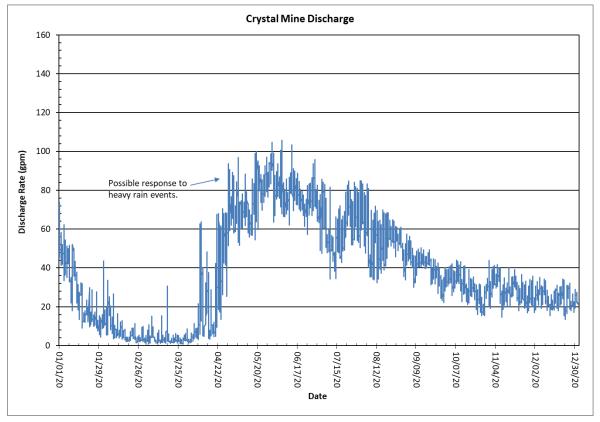




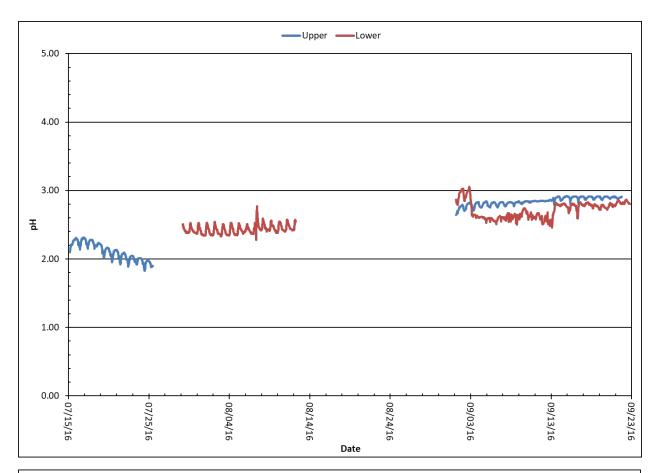


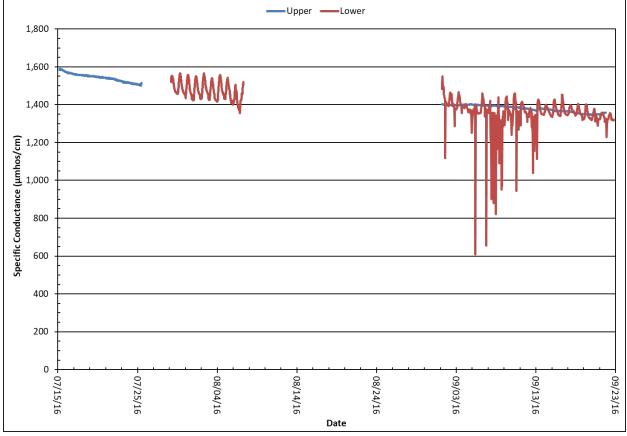
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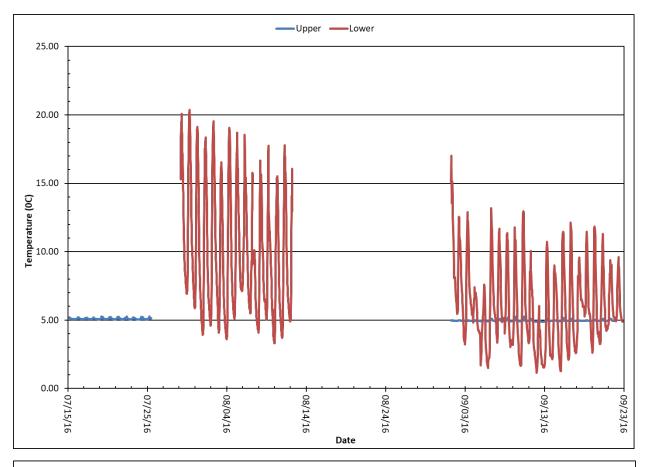


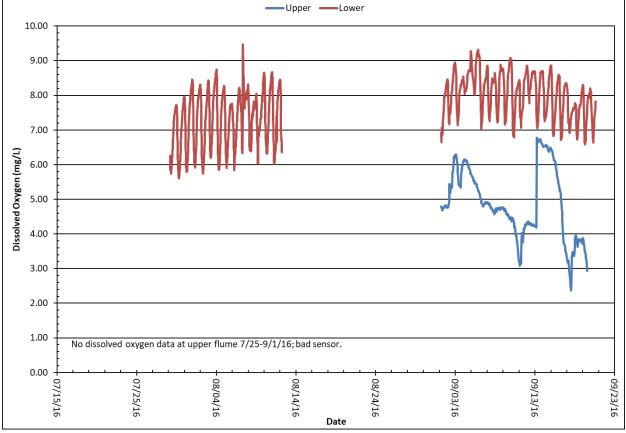


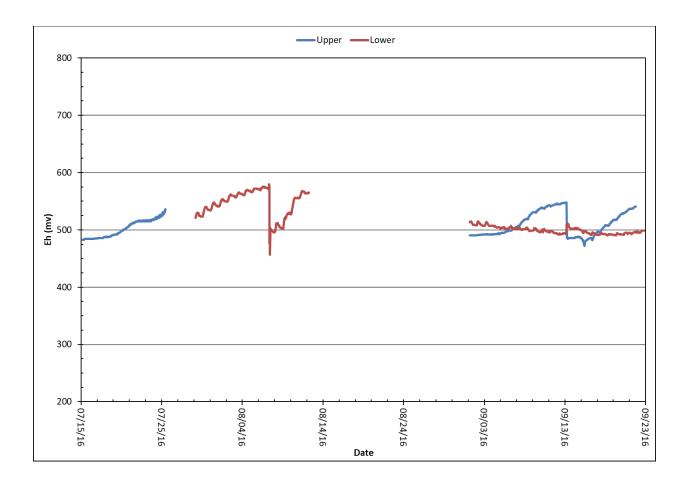
**Appendix 2: Bullion Mine, Upper and Lower Flumes—Yearly Physical Parameter Graphs** 

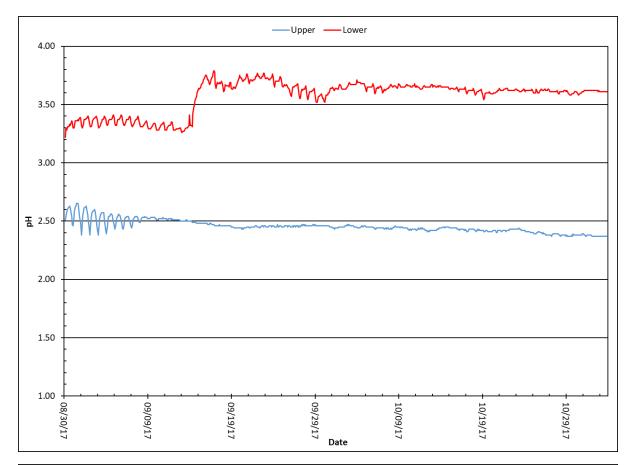


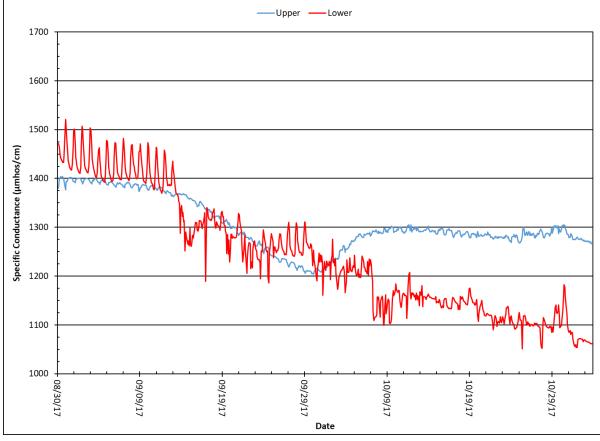


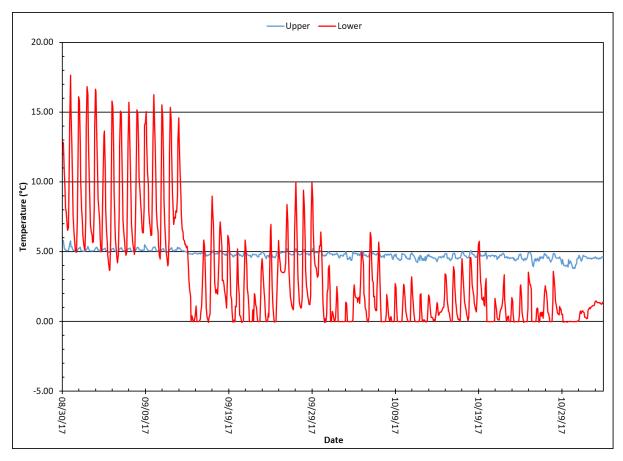


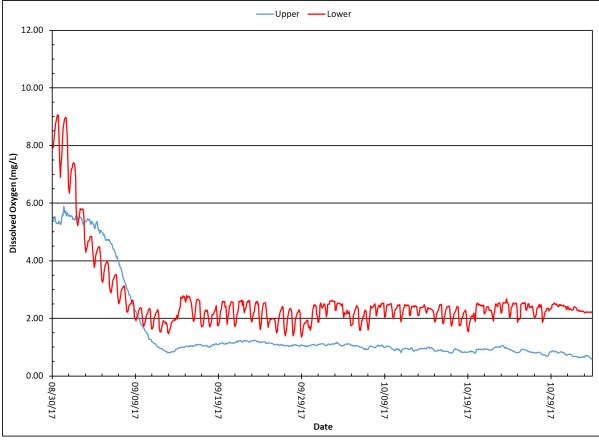


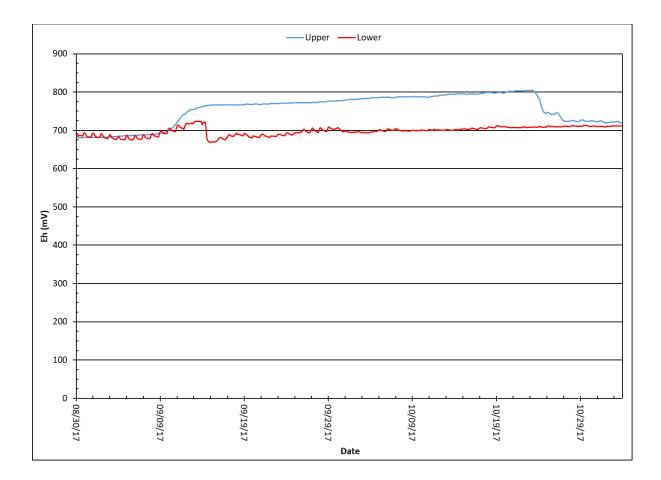


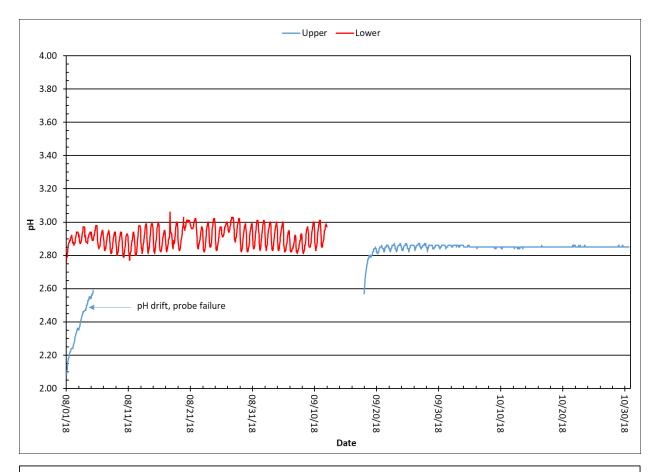


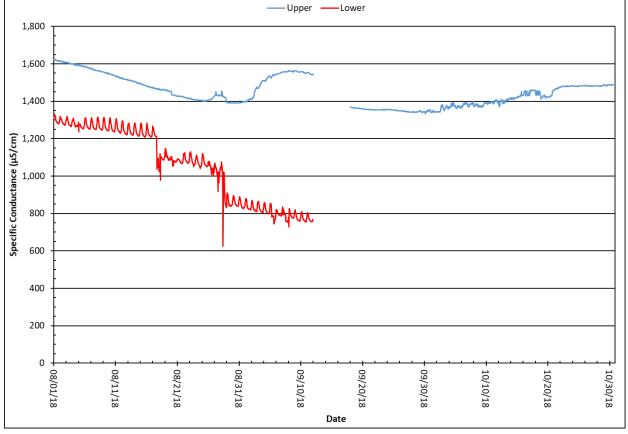


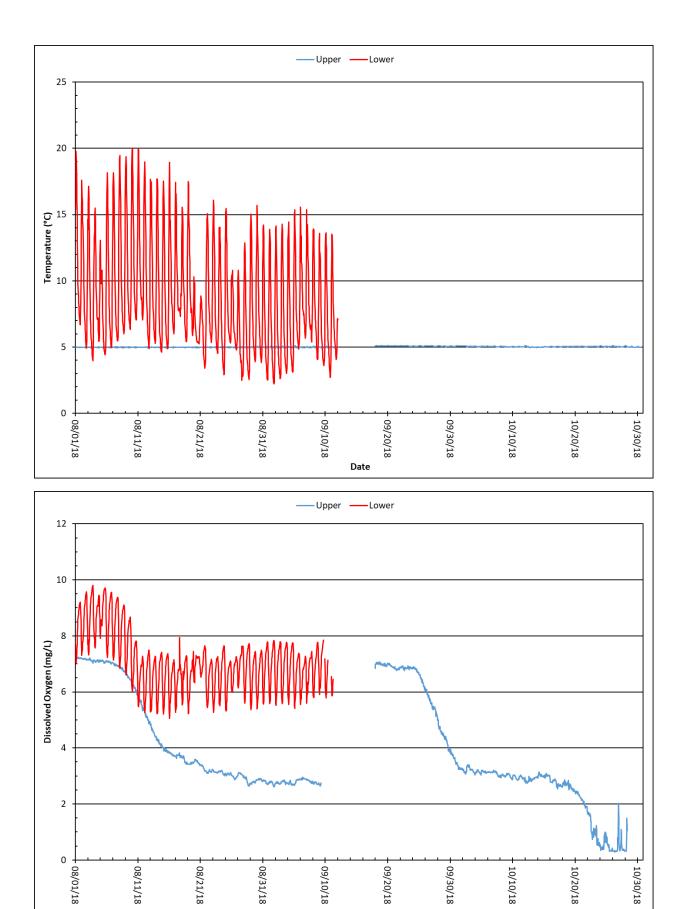






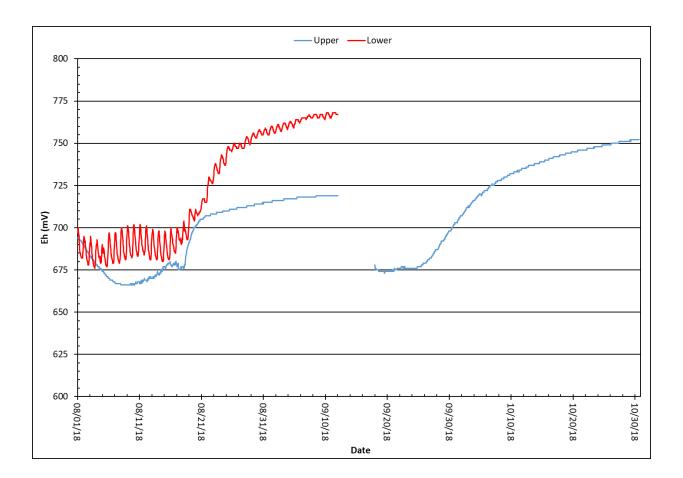


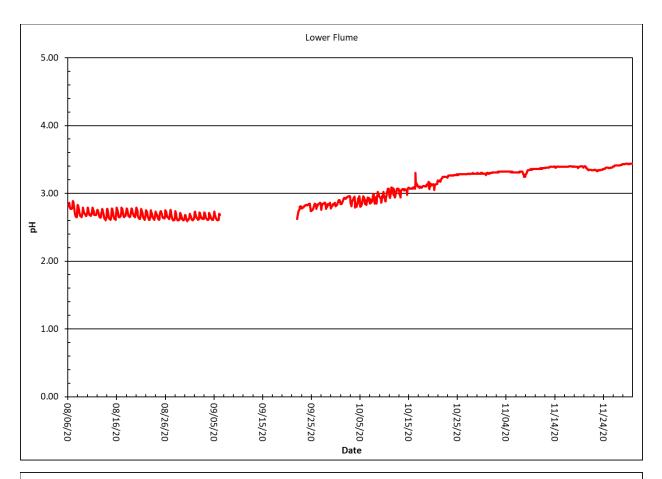


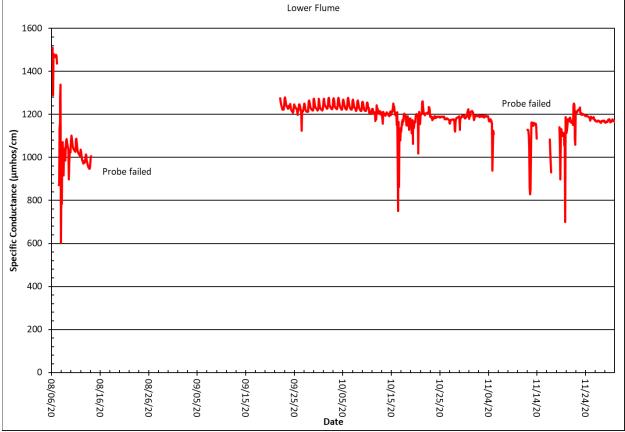


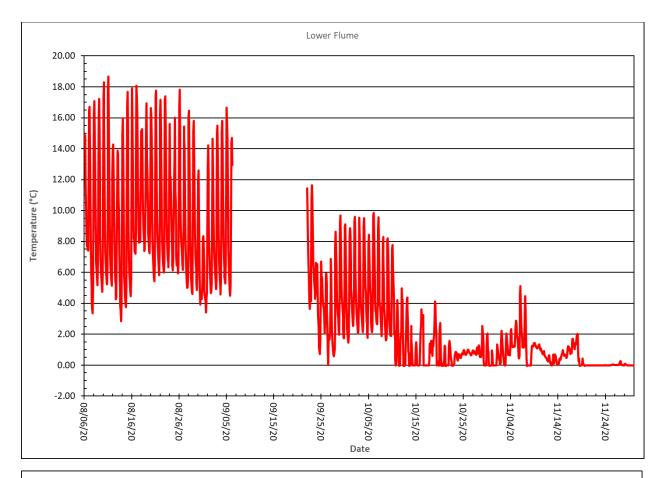


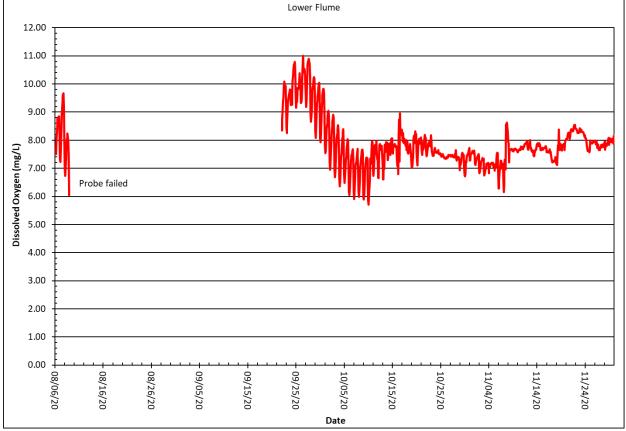
Date

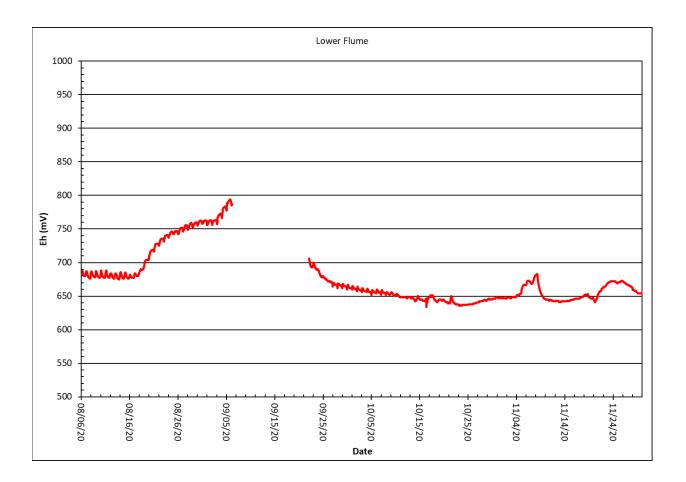




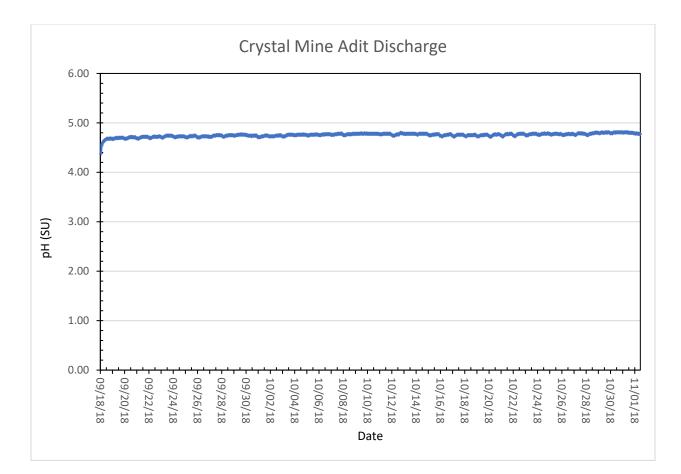


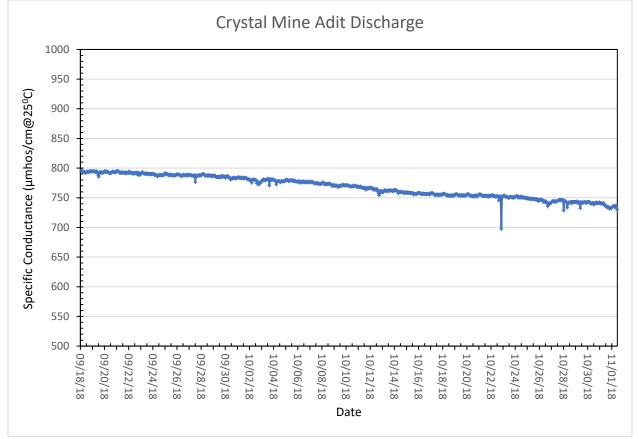


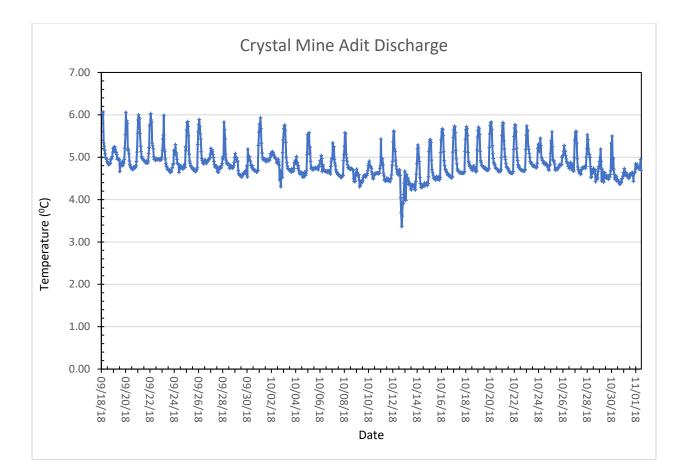


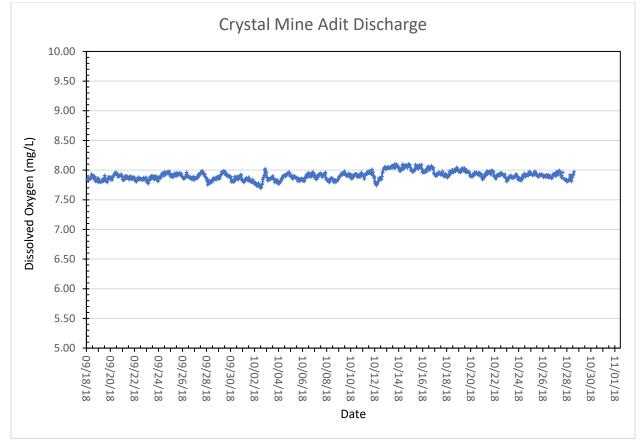


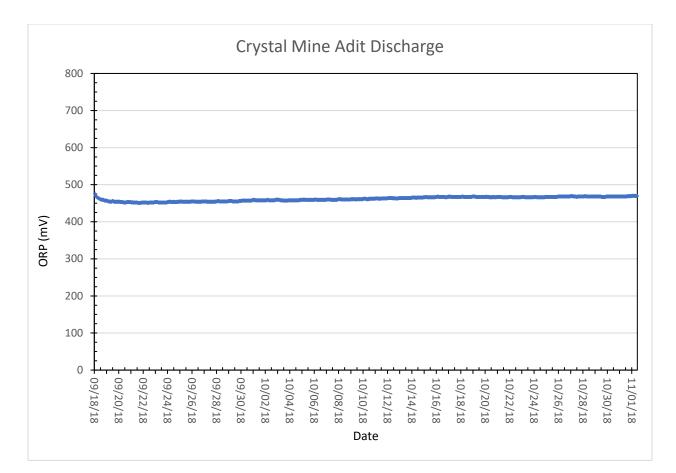
# Appendix 3: Crystal Mine—Yearly Physical Parameter Graphs

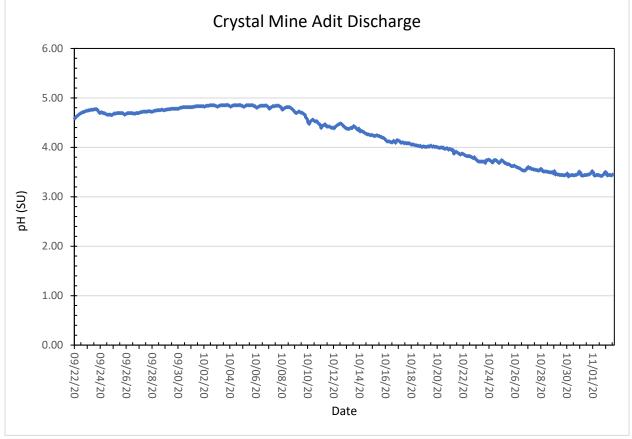


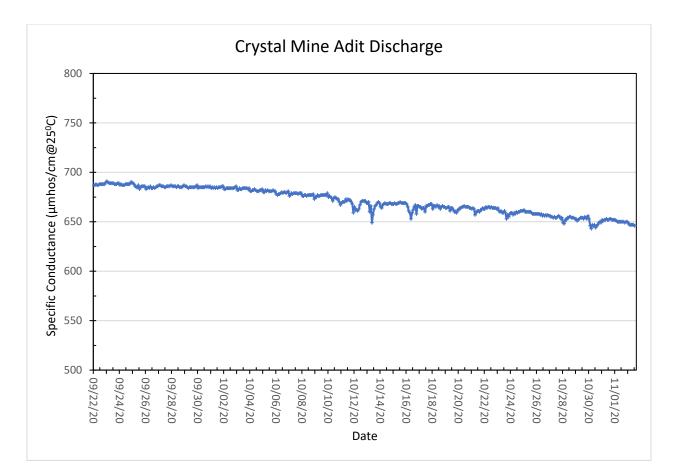


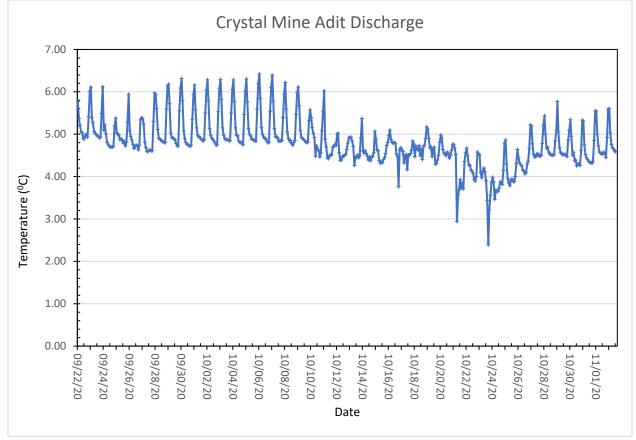


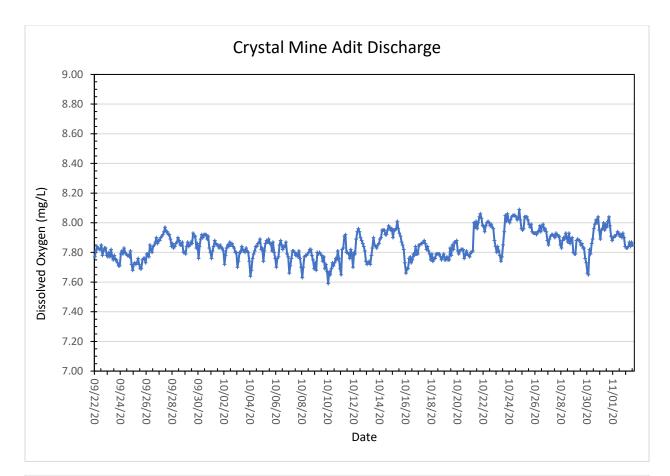


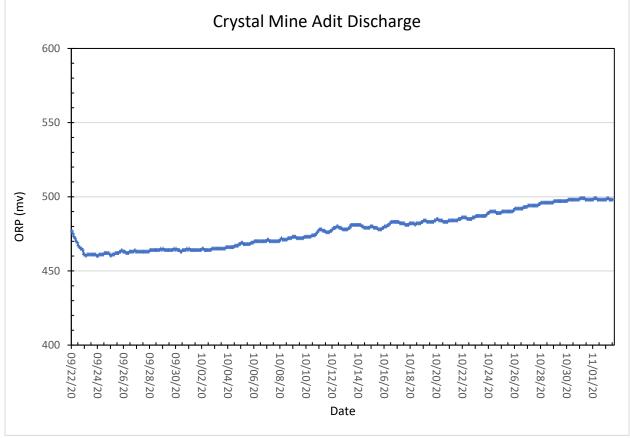












# Appendix 4: Water-Quality Results

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

					Location	n Information						
Sample Id/Site Id:	Sample Id/Site Id: 222065 / 128469							9/1	3/2016 12:54:00	PM		
Location (TRS):		0	7N 06W	13 DC	DB	Agency/Sa	mpler:	ME	BMG / GARY IC	COPINI		
Latitude/Longitude:		4	6° 21' 25	5" N 112	2° 17' 40" V	W Field Numl	ber:	UP	PER BULLION			
Datum:		N	AD27			Lab Date:		10/	19/2016 6:51:15	PM		
Altitude:		7	500			Lab/Analys	st:	MF	BMG / TIMMEF	. JACKIF	Ę	
County/State:			EFFERS	ON / M	Т	Sample Me			AB / ru:1 ra:0 fi			
Site Type:			AINE DE			Procedure '		0	SSOLVED			
Geology:					01	Total Dept	• 1	NR				
USGS 7.5' Quad:		р	BASIN 7	1/21		SWL-MP (	· /	NR				
-		E	DASIIN /	1/2			,					
PWS Id:			LEODO	<b></b>		Depth Wat	er Enters (T	t): NR				
Project:		Ľ	DLFORS	T, BAS	IN_WTRS							
			mg/L	me		Ion Results			mg/L	ma	eq/L	
Calcium (Ca	ц)	93.0		4.642		arbonate (HCO3	)		0.000	0.000		
Magnesium	/	29.8		2.457		oonate (CO3)	/		0.000	0.000		
Sodium (Na	,	5.62		0.244		oride (Cl)			0.790	0.022		
Potassium (I	ς)	3.14		0.080		ate (SO4)			785.100 <0.010 U	16.354 0.000		
Iron (Fe) 85.643 3.067 Nitrate Manganese (Mn) 15.089 0.549 Fluorid												
5					ophosphate (as	P)		<0.020 U	0.000			
Total Cations 13.222						Total A	Anions		16.393	3		
			~ `			ent Results (µg	,		~ • •	~ `		
Aluminum (Al): Antimony (Sb):	9,494.500 5.200	Cesium (C Chromiun			470 ).250 U	Molybdenum ( Nickel (Ni):	Mo):	1.150 J 60.230	Strontium () Thallium ()		316.1 <0.25	
Arsenic (As):	3.200 1,694.030	Cobalt (C	· · ·		)7.890 )7.890	Niobium (Nb):		<0.250 L	· · · · · · · · · · · · · · · · · · ·	/	<0.23 7.460	
Barium (Ba):	12.410	Copper (C			390.500	Neodymium (1		18.840	Tin (Sn):		<0.25	
Beryllium (Be):	1.220 J	Gallium (	/		090 J	Palladium (Pd)	· ·	0.860 J	Titanium (T	ïi):	9.680	
Boron (B):	54.260	Lanthanu	· /		7.210	Praseodymium	· /	4.730	Tungsten (V	/	< 0.25	
Bromide (Br):	<10.000 U	Lead (Pb)			0.480	Rubidium (Rb	):	14.780	Uranium (U		186.3	
Cadmium (Cd):	220.020	Lithium (	/		.510 J	Silver (Ag):		<0.250 L	```	V):	1.540	
Cerium (Ce):	40.020	Mercury (	пд):	N	ĸ	Selenium (Se)		<0.250 U	J Zinc (Zn): Zirconium (	Zr):	<0.25	59.600 50 U
			Fie	d Che	mistry and	l Other Analyti	cal Results	5	Zircomum (	21).	-0.20	
**Total Dissolved So	olids (mg/L):	1096.53	Field Ha	ardness	as CaCO3	(mg/L):	NR	Ammonia	(mg/L):			NR
**Sum of Diss. Cons	tituents (mg/L):	1096.53	Hardnes	ss as Ca	CO3:		355.17	T.P. Hydr	ocarbons (µg/L)	:		NR
Field Conductivity (µ	umhos):	1320	Field A	lkalinity	as CaCO3	8 (mg/L):	NR	PCP (µg/I	L):			NR
Lab Conductivity (µr	nhos):	1556	Alkalini	ity as Ca	aCO3 (mg/	L):	0	Phosphoru	is, TD (mg/L):			<0.030 U
Field pH:		2.97	Ryznar	Stabilit	y Index:		16.063	Field Nitra	ate (mg/L):			NR
Lab pH:		2.9	Sodium	Adsorp	tion Ratio:		0.1385	Field Diss	olved O2 (mg/L	):		7.600
Water Temp (°C):		5.17	Langlie	r Satura	tion Index:		-6.581		oride (mg/L):			NR
Air Temp (°C):		NR	Nitrite (	mg/L a	s N):			Field Red	ox (mV):			680
Nitrate + Nitrite (mg/	'L as N)	NR	Hydrox	ide (mg	/L as OH):		0.000	Lab, Disso	olved Organic C	arbon (mg	,	NR
Total Kjeldahl Nitrog	gen (mg/L as N)	NR	Lab, Di	ssolved	Inorganic	Carbon (mg/L):	NR	Lab, Total	Organic Carbon	n (mg/L):		NR
Total Nitrogen (mg/I	L as N)	NR	Acidity	to 4.5 (	mg/L CaC0	03)	291.000	Acidity to	8.3 (mg/L CaC	D3)		497.000
As(III) ( $\mu$ g/L)		NR	As(V) (	μg/L)			NR	Total Susp	o Solids (mg/L)			NR
Qual C 11						Notes						
Sample Condition:												
LICIU NCHIATKS:												

Field Remarks:

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

			Locat	ion Information						
Sample Id/Site Id:		222066 / 2	28469	Sample Date:	:	9/13/2	2016 12:54:00	PM		
Location (TRS):		07N 06W	13 DCDB	Agency/Sam	pler:	MBM	IG / GARY IC	COPINI		
Latitude/Longitude:		46° 21' 25	" N 112° 17' 40	"W Field Numbe	r:	UPPE	ER BULLION			
Datum:		NAD27		Lab Date:		10/19	/2016 6:51:15	5 PM		
Altitude:		7500		Lab/Analyst:			IG / TIMMER		E	
County/State:		JEFFERS	ON / MT	Sample Meth			B/ru:0 ra:1 ft		<u> </u>	
Site Type:		MINE DR		Procedure Ty		0	AL RECOVEI			
		MINE DE	AINAGE	2	•		AL KEUUVEI	NADLE		
Geology:		D		Total Depth (		NR				
USGS 7.5' Quad:		BASIN 7	1/2'	SWL-MP (ft)		NR				
PWS Id:				Depth Water	Enters (f	t): NR				
Project:		DLFORS'	Γ, BASIN_WTF							
		a.		or Ion Results			π		π	
Calcium (C	<b>a</b> )	<b>mg/L</b> 93.260	meq/L 4.654	Bicarbonate (HCC	12)		mg/L NR	me 0.000	eq/L	
Magnesium		30.240	2.488	Carbonate (CO3)	(3)		NR	0.000		
Sodium (Na		5.540	0.241	Chloride (Cl)			NR	0.000		
Potassium (	(K)	3.110	0.080	Sulfate (SO4)			NR	0.000		
Iron (Fe)		87.368	3.129	Nitrate (as N)			NR	0.000		
Manganese		14.844	0.540	Fluoride (F)	<b>D</b> )		NR	0.000		
Silica (SiO	2) Total Ca	NR	Orthophosphate (a	/	l Anions	NR	0.000 0.000			
	i otai Ca	tuons	13.202 Trace Ele	ment Results (µg/L		1 / tinons		0.000		
Aluminum (Al):	8,669.940	Cesium (Cs):	4.470	Molybdenum (M		1.950	Strontium (S	Sr):	323.56	50
Antimony (Sb):	7.040	Chromium (Cr):	<0.250 U	Nickel (Ni):		63.320	Thallium (T		< 0.250	) U
Arsenic (As):	2,392.740	Cobalt (Co):	210.210	Niobium (Nb):		<0.250 U	Thorium (Th	h):	6.620	
Barium (Ba):	13.270	Copper (Cu):	8,921.700	Neodymium (Nd	):	19.060	Tin (Sn):		< 0.250	
Beryllium (Be): Boron (B):	1.230 J 57.450	Gallium (Ga): Lanthanum (La):	1.340 17.320	Palladium (Pd): Praseodymium (F	<b>)</b> ).	0.910 J 4.700	Titanium (T Tungsten (V		22.440	
Bromide (Br):	57.450 NR	Lead (Pb):	202.490	Rubidium (Rb):	-1):	4.700	Uranium (U		184.33	
Cadmium (Cd):	208.980	Lithium (Li):	26.760	Silver (Ag):		NR	Vanadium (	/	17.300	
Cerium (Ce):	39.880	Mercury (Hg):	NR	Selenium (Se):		<0.250 U	Zinc (Zn):	• )•	26,578	
							Zirconium (	Zr):	< 0.250	) U
			•	nd Other Analytica			(T.)			
**Total Dissolved S			rdness as CaCO	3 (mg/L):	NR	Ammonia (m	0 )			NR
**Sum of Diss. Con	( U	, ,	as CaCO3:	2 (		T.P. Hydroca	arbons (μg/L):			NR
Field Conductivity (	•		calinity as CaCC		NR	PCP ( $\mu g/L$ ):				NR
Lab Conductivity (µ	imhos):		y as CaCO3 (mg	g/L):	NR	Phosphorus,	ίų,			0.040 J
Field pH: Lab pH:		2.97 Ryznar S NR Sodium	Adsorption Ratio			Field Nitrate Field Dissolv				NR 7.600
Water Temp (°C):		Ų	Saturation Index	K:	-9.480 NR	Field Chlorid Field Redox	( U )			NR 680
Air Temp (°C):	/L ND	NR Nitrite (n	-	\.			· /		-/T ).	
Nitrate + Nitrite (mg			le (mg/L as OH		NR NR		ed Organic Ca		/L):	NR
Total Kjeldahl Nitro	0 (0	, · · ·	U	c Carbon (mg/L):			rganic Carbon			NR
Total Nitrogen (mg/	L as in j	•	o 4.5 (mg/L CaO	.03)	NR	2	3 (mg/L CaCC	))		NR
As(III) ( $\mu$ g/L)		NR As(V) (µ	g/L)	Notes	NR	Total Susp S	onds (mg/L)			NR
Sample Condition:				110105						
E' 11 D 1										

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

				]	Location	Information					
Sample Id/Site Id:	ample Id/Site Id: 222217 / 128469						te:	11/	7/2016 11:53:0	0 AM	
Location (TRS):			07N 06W	13 DCDE	3	Agency/Sa	mpler:	MI	BMG / THOMS	SON, CON	VIE
Latitude/Longitude:			46° 21' 2:	5" N 112°	17' 40" V	V Field Numł	ber:	UP	PER BULLIO	Ν	
Datum:			NAD27			Lab Date:		11/	21/2016 7:55:1	0 PM	
Altitude:			7500			Lab/Analys	st:	MI	BMG / TIMME	R, JACKIE	
County/State:			JEFFERS	SON / MT		Sample Me			AB / ru:1 ra:1		
Site Type:				RAINAGE	l	Procedure 7		U	SSOLVED		
Geology:						Total Deptl	21	NR			
USGS 7.5' Quad:			BASIN 7	1/2'		SWL-MP (		NR			
PWS Id:						Depth Wate	/				
Project:				T, BASIN	WTRSI	1	er Enters (1	<i>(</i> ). Iti			
Hoject.			DLFORS	I, DASIN	_	Ion Results					
			mg/L	meq/I		Ion Results			mg/L	me	q/L
Calcium (Ca	a)	95.	750	4.778		rbonate (HCO3	)		0.000	0.000	
Magnesium			690	2.525		onate (CO3)			0.000	0.000	
						ride (Cl)		0.020			
						ate (SO4) ate (as N)			711.500 <0.010 U	14.821 0.000	
						ride (F)					
Silica (SiO2) 32.940 Orth						ophosphate (as	P)		<0.020 U	0.000	
<b>Total Cations</b> 13.017								Anions		14.866	i
		Trace Elemer				ent Results (µg/					
Aluminum (Al):	8,638.500	Cesium (		4.30		Molybdenum (	Mo):				308.520
Antimony (Sb): Arsenic (As):	2.800 896.640	Chromiu Cobalt (0		0.95 188.		Nickel (Ni): Niobium (Nb):		59.170 <0.250 U	Thallium ( Thorium (		<0.250 U 5.790
Barium (Ba):	10.120	Copper (			5.500	Neodymium (NO).		<0.230 C 17.580	Tin (Sn):	111).	<0.250 U
Beryllium (Be):	1.110 J	Gallium	· · · ·	0.90		Palladium (Pd)	/	0.850 J	Titanium (	Ti):	10.420
Boron (B):	49.300	Lanthanu	< /	15.9		Praseodymium		4.290	Tungsten (	· ·	<0.250 U
Bromide (Br):	<10.000 U	Lead (Pb	»):	185.	680	Rubidium (Rb)	):	13.510	Uranium (	Ú):	165.680
Cadmium (Cd):	208.260	Lithium	(Li):	23.8	50 J	Silver (Ag):		<0.250 U	U Vanadium	(V):	0.630 J
Cerium (Ce):	36.580	Mercury	(Hg):	NR		Selenium (Se):		<0.250 U			26,535.000
			E:	d Chami	atur and	Other Analyti	aal Dagult		Zirconium	(Zr):	<0.250 U
**Total Dissolved Second	olide (mg/L):	1016.8		irdness as (	•	•	NR	s Ammonia	(mg/L):		NR
**Sum of Diss. Cons				s as CaCO	`	ing/L).	365.41		ocarbons (µg/L)	).	NR
Field Conductivity ()		1293		kalinity as		(mg/L)·	NR	PCP (µg/L		).	NR
Lab Conductivity (µ	,	1545		ty as CaCC			0		s, TD (mg/L):		<0.030 U
Field pH:		3.15		Stability In	( U		15.928	Field Nitra			NR
Lab pH:		3.01		Adsorption			0.1138		olved O2 (mg/I	_):	7.700
Water Temp (°C):		5.14		Saturation			-6.459		ride (mg/L):	,	NR
Air Temp (°C):		NR	U	mg/L as N				Field Redo	· • • /		668
Nitrate + Nitrite (mg	/L as N)	NR		de (mg/L a			0.000		lved Organic C	arbon (mg/	L): NR
Total Kjeldahl Nitro	,		2	, U	,	arbon (mg/L):	NR		Organic Carbo	Ϋ́	NR
Total Nitrogen (mg/l		NR		to 4.5 (mg/	e	ίų,	360.000		8.3 (mg/L CaC	ιų,	610.000
As(III) (µg/L)	,	NR	As(V) (			*	NR		Solids (mg/L)	,	NR
				<b>C</b> /	I	Notes		1	(3)		
Sample Condition:											
Field Remarks:											

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

				l	Location	Information					
Sample Id/Site Id:	Sample Id/Site Id: 222218 / 128469							11/	7/2016 11:53:00	AM	
Location (TRS):		0	7N 06W	13 DCDB	3	Agency/San	npler:	ME	BMG / THOMSO	N, CONN	IE
Latitude/Longitude:		4	6° 21' 2:	5" N 112° 1	17' 40" W	/ Field Numb	er:	UP	PER BULLION	DUP	
Datum:		Ν	JAD27			Lab Date:		11/	21/2016 7:55:10	PM	
Altitude:		7	500			Lab/Analys	t:	ME	BMG / TIMMER	, JACKIE	
County/State:		J	EFFERS	SON / MT		Sample Met			AB / ru:1 ra:1 fu		
Site Type:				RAINAGE		Procedure T		0	SSOLVED		
Geology:						Total Depth	• 1	NR			
USGS 7.5' Quad:		F	BASIN 7	1/2'		SWL-MP (f		NR			
PWS Id:		-	/10111 /	1/2		Depth Wate	,				
Project:		г	N FODS	T, BASIN	WTDSL	1	I Lineis (i	<i>i</i> ). INK			
riojeci.		L	JLFUKS	I, DASIN	_	ID Ion Results					
		1	mg/L	meq/L		Ion Results			mg/L	meq	/L
Calcium (C	a)	93.2		4.652		bonate (HCO3)	1		0.000	0.000	,
Magnesium		30.3 6.17		2.495 0.268		onate (CO3)			0.000	0.000	
Sodium (Na		ride (Cl) 0.700 0.020 te (SO4) 719.600 14.98									
						te (SO4) te (as N)			/19.600 <0.010 U	14.989 0.000	
							ide (F) 0.340				
Silica (SiO2) 32.590 Orth						ophosphate (as I	<b>?</b> )		<0.020 U	0.018 0.000	
	Total Cati	ons		12.730			Total A	Anions		15.027	
	0 405 500	Trace Element						0.000	<u> </u>		01 270
Aluminum (Al): Antimony (Sb):	8,405.500 2.640	Cesium ( Chromiur		3.840 0.850		Molybdenum (1 Nickel (Ni):	Mo):	0.660 J 54.460	Strontium (S Thallium (T	291.370 <0.250 U	
Arsenic (As):	2.640 896.230	Cobalt (C		173.9		Niobium (Nb):		<0.250 L	(	/	.480
Barium (Ba):	8.650	Copper (C				Neodymium (N	(d):	16.170	Tin (Sn):	<0.250 U	
Beryllium (Be):	1.010 J	Gallium (	Ga):	0.850	0 J	Palladium (Pd):	:	0.740 J	Titanium (T	i): 1	0.240
Boron (B):	48.690	Lanthanu		14.69		Praseodymium		3.930	Tungsten (V		<0.250 U
Bromide (Br):	<10.000 U	Lead (Pb)		170.6		Rubidium (Rb)	:	12.420	Uranium (U	,	54.050
Cadmium (Cd):	193.590 33.510	Lithium ( Mercury (	/	22.30 NR		Silver (Ag): Selenium (Se):		<0.250 L <0.250 L	(		0.570 J 25,545.000
Cerium (Ce):	33.310	Mercury (	ng).	INK		Selemuni (Se).		<0.230 C	Zirconium (		<0.250 U
			Fie	eld Chemis	stry and	Other Analytic	al Results	8	(		
**Total Dissolved S	olids (mg/L):	1019.33	Field H	ardness as	CaCO3 (	mg/L):	NR	Ammonia	(mg/L):		NR
**Sum of Diss. Con	stituents (mg/L)	: 1019.33	Hardne	ss as CaCC	03:		357.59	T.P. Hydr	ocarbons (µg/L):		NR
Field Conductivity (	µmhos):	1293	Field A	lkalinity as	s CaCO3	(mg/L):	NR	PCP (µg/I	L):		NR
Lab Conductivity (µ	mhos):	1552	Alkalin	ity as CaC	O3 (mg/L	L):	0	Phosphoru	ıs, TD (mg/L):		<0.030 U
Field pH:		3.15	Ryznar	Stability In	ndex:		15.981	Field Nitra	ate (mg/L):		NR
Lab pH:		2.98	Sodium	Adsorptio	n Ratio:		0.1381	Field Diss	olved O2 (mg/L)	):	7.700
Water Temp (°C):		5.14	Langlie	r Saturatio	n Index:		-6.500	Field Chlo	oride (mg/L):		NR
Air Temp (°C):		NR	Nitrite	(mg/L as N	I):			Field Red	ox (mV):		668
Nitrate + Nitrite (mg	, ,	NR		ide (mg/L			0.000		olved Organic Ca	ί	·
Total Kjeldahl Nitro					0	Carbon (mg/L):	NR		Organic Carbor		NR
Total Nitrogen (mg/	L as N)	NR	Acidity	to 4.5 (mg	∥L CaCO	3)	256.000		8.3 (mg/L CaCO	03)	480.000
As(III) (µg/L)		NR	As(V) (	μg/L)		<b>.</b> .	NR	Total Susp	o Solids (mg/L)		NR
Samula Canditi					Γ	Notes					
Sample Condition: Field Remarks:											
rield Kemarks:											

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

U

				Locat	ion Ir	nformation							
Sample Id/Site Id:			222219 / 1	28469		Sample Date	:	1	1/7/2	2016 11:53:00 A	M		
Location (TRS):			07N 06W	13 DCDB		Agency/Sam	pler:	Ν	ИВМ	IG / THOMSON	I, CON	NIE	
Latitude/Longitude:			46° 21' 25	" N 112° 17' 40	" W	Field Numbe	er:	τ	JPPE	R BULLION			
Datum:			NAD27			Lab Date:		1	1/21	/2016 7:55:11 F	M		
Altitude:			7500			Lab/Analyst	:	Ν	ИВМ	IG / TIMMER,	JACKI	Е	
County/State:			JEFFERS	ON / MT		Sample Met				B / ru:0 ra:1 fu:0			
Site Type:			MINE DR			Procedure T		U		AL RECOVERA			
Geology:				- maron		Total Depth			JR I	in rando vina	1022		
USGS 7.5' Quad:			BASIN 7	1/21		SWL-MP (ft			VR.				
-			DASIN /	1/2			·		JR				
PWS Id:			DIFORM			Depth Water	Enters	(π): N	чĸ				
Project:			DLFORST	F, BASIN_WTH									
			mg/L	Maj meg/L	or lo	n Results				mg/L	m	eq/L	
Calcium (Ca	a)	c	95.740	4.777	Bica	arbonate (HCC	03)			NR	0.000	;ų/L	
Magnesium	/		30.790	2.534		bonate (CO3)				NR	0.000		
Sodium (Na			5.490	0.239		oride (Cl)				NR	0.000		
Potassium (	K)		2.900	0.074		fate (SO4)				NR	0.000		
Iron (Fe)	<b>A</b> ()		77.090	2.761		rate (as N)				NR	0.000		
Manganese (Mn) 15.465 0.563 Silica (SiO2) NR				0.563		oride (F)				NR	0.000		
Total Cations 12.981					Oru	hophosphate (a		al Anions		NR	$0.000 \\ 0.000$		
	i otai Ca	tions			ment	Results (µg/I		ai / tinons			0.000		
Aluminum (Al):	8,607.250	Cesium (	(Cs):	4.380		olybdenum (M	/	1.470		Strontium (Sr	):	323.0	650
Antimony (Sb):	4.170	Chromiu	m (Cr):	1.390	Ni	ckel (Ni):	<i>.</i>	59.380		Thallium (Tl)		< 0.2	50 U
Arsenic (As):	1,326.440	Cobalt (0	Co):	190.850	Ni	obium (Nb):		< 0.250	U	Thorium (Th)	:	5.030	0
Barium (Ba):	10.510	Copper (		8,099.670		odymium (No	l):	18.050		Tin (Sn):		< 0.2	
Beryllium (Be):	1.060 J	Gallium	< /	1.100 J		lladium (Pd):		0.920 J	ſ	Titanium (Ti)		11.02	
Boron (B):	56.030	Lanthanu		16.270		aseodymium (	Pr):	4.320		Tungsten (W)		< 0.2	
Bromide (Br):	NR	Lead (Pb	/	192.490		ibidium (Rb):		14.330		Uranium (U):		166.9	
Cadmium (Cd): Cerium (Ce):	207.810 36.860	Lithium Mercury		23.580 J NR		lver (Ag): lenium (Se):		NR <0.250	II	Vanadium (V Zinc (Zn):	):	0.710	50.000
Certuin (Ce).	30.800	wiercury	(11g).	INK	30	ieinuni (se).		<0.230	0	Zirconium (Zi	·):	<0.2	
			Fie	d Chemistry a	nd O	ther Analytic	al Resu	lts					
**Total Dissolved S	olids (mg/L):	NR	Field Hard	lness as CaCO3	(mg/	′L):	NR	Ammonia	(mg	/L):			NR
**Sum of Diss. Cons	stituents (mg/L)	): NR	Hardness	as CaCO3:			365.79	T.P. Hydro	ocarł	oons (µg/L):			NR
Field Conductivity (	µmhos):	1293	Field Alka	alinity as CaCO	3 (mg	g/L):	NR	PCP (µg/L	.):				NR
Lab Conductivity (µ	mhos):	NR	Alkalinity	as CaCO3 (mg	/L):		NR	Phosphoru	ıs, Tl	D (mg/L):			<0.030 1
Field pH:		3.15	Ryznar St	ability Index:			18.938	Field Nitra	ate (r	ng/L):			NR
Lab pH:		NR	Sodium A	dsorption Ratio	:		0.1138	Field Diss	olve	d O2 (mg/L):			7.700
Water Temp (°C):		5.14	Langlier S	aturation Index	:		-9.469	Field Chlo	oride	(mg/L):			NR
Air Temp (°C):		NR	Nitrite (m	g/L as N):			NR	Field Red	ox (n	nV):			668
Nitrate + Nitrite (mg	/L as N)			e (mg/L as OH)			NR	Lab, Disso	olved	Organic Carbo	n (mg/l	L):	NR
Total Kjeldahl Nitro	gen (mg/L as N	) NR	Lab, Diss	olved Inorganic	Carb	on (mg/L):	NR	Lab, Total	l Org	anic Carbon (m	g/L):		NR
Total Nitrogen (mg/l	0 . 0	NR		4.5 (mg/L CaC			NR		0	(mg/L CaCO3)	0 /		NR
As(III) (µg/L)	,		As(V) (µg		- /		NR			ids (mg/L)			NR
( ) ( 0 -)			( ) (PE	, ,	No	tes	-			( 6-)			
Sample Condition:													

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

U

				Locati	ion In	nformation							
Sample Id/Site Id:		2	222220 / 1	28469		Sample Date	:		11/7/2	2016 11:53:00	AM		
Location (TRS):		(	07N 06W	13 DCDB		Agency/Sam	pler:		MBM	IG / THOMSO	N, CON	NIE	
Latitude/Longitude:		4	46° 21' 25	" N 112° 17' 40	" W	Field Numbe	er:		UPPE	ER BULLION I	DUP		
Datum:		1	NAD27			Lab Date:			11/21	/2016 7:55:11	PM		
Altitude:		7	7500			Lab/Analyst			MBM	IG / TIMMER,	JACKI	Ę	
County/State:			EFFERS	ON / MT		Sample Met				B / ru:0 ra:1 fu		_	
Site Type:				AINAGE		Procedure T		e		AL RECOVER			
Geology:		1		MINIOL		Total Depth			NR	IL RECOVER	DLL		
		т		1/21					NR				
USGS 7.5' Quad:		1	BASIN 7	1/2		SWL-MP (ft	/						
PWS Id:						Depth Water	Enters	(π):	NR				
Project:		I	DLFORST	Γ, BASIN_WTF									
			ma/I	Maj meq/L	or Io	n Results				mg/L		q/L	
Calcium (Ca	a)	96	<b>mg/L</b> 5.330	4.807	Bicz	arbonate (HCC	33)			NR	0.000	:q/L	
Magnesium			).800	2.535		bonate (CO3)	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			NR	0.000		
Sodium (Na			270	0.229		oride (Cl)				NR	0.000		
Potassium (		2.	990	0.076		fate (SO4)				NR	0.000		
Iron (Fe)	,	78	3.055	2.795	Nitr	ate (as N)				NR	0.000		
Manganese	(Mn)	15	5.545	0.566	Fluc	oride (F)				NR	0.000		
Silica (SiO2		N	R		Orth	nophosphate (a	as P)			NR	0.000		
	Total Ca	tions		13.038				al Anions			0.000		
						Results (µg/I							
Aluminum (Al):	8,582.750	Cesium (C		4.520		olybdenum (M	lo):	3.160		Strontium (S		327.	
Antimony (Sb):	4.370	Chromiun	· · ·	1.310		ckel (Ni):		61.070		Thallium (Tl		0.56	
Arsenic (As):	1,345.130	Cobalt (Co		197.380		obium (Nb):	0	< 0.25		Thorium (Th	):	5.03	
Barium (Ba):	9.510	Copper (C		8,077.830		odymium (Nd	l):	18.770		Tin (Sn):			50 U
Beryllium (Be):	1.070 J	Gallium (O	/	1.040 J		lladium (Pd):	<b>D</b> \	0.870		Titanium (Ti		10.5	
Boron (B):	55.660	Lanthanur	· /	17.040		aseodymium (	Pr):	4.550		Tungsten (W			50 U
Bromide (Br):	NR	Lead (Pb)		195.970		bidium (Rb):		14.750	0	Uranium (U)		173.	
Cadmium (Cd):	188.350	Lithium (I	/	23.190 J		ver (Ag):		NR	0.11	Vanadium (V	):	0.92	
Cerium (Ce):	38.810	Mercury (	Hg):	NR	Se	lenium (Se):		< 0.25	00	Zinc (Zn): Zirconium (Z	(r).		40.000 50 U
			Fiel	ld Chemistry a	nd O	ther Analytic	al Resu	lts		Lineonium (L		0.2	
**Total Dissolved S	olids (mg/L):	NR I	Field Hard	iness as CaCO3	(mg/	′L):	NR	Ammoni	a (mg	/L):			NR
**Sum of Diss. Cons	stituents (mg/L)	): NR I	Hardness	as CaCO3:			367.31	T.P. Hyd	rocarl	oons (µg/L):			NR
Field Conductivity (	umhos):	1293 1	Field Alka	alinity as CaCO	3 (mg	g/L):	NR	PCP (µg/	′L):				NR
Lab Conductivity (µ	mhos):	NR A	Alkalinity	as CaCO3 (mg	/L):		NR	Phosphor	rus, T	D (mg/L):			< 0.030 1
Field pH:	,	3.15	Ryznar St	ability Index:	,		18.932	Field Nit	rate (1	ng/L):			NR
Lab pH:			•	dsorption Ratio						d O2 (mg/L):			7.700
Water Temp (°C):				Saturation Index				Field Chl					NR
Air Temp (°C):			0	g/L as N):	•		-9.400 NR	Field Red					668
1 . ,				<i>c</i> ,						<i>,</i>	6 1		
Nitrate + Nitrite (mg	,			e (mg/L as OH):			NR			l Organic Carb	, U	_):	NR
Total Kjeldahl Nitro		<i>,</i>		olved Inorganic		on (mg/L):	NR		-	anic Carbon (n	<b>U</b> /		NR
Total Nitrogen (mg/l	L as N)	NR A	Acidity to	4.5 (mg/L CaC	O3)		NR	Acidity to	o 8.3 (	(mg/L CaCO3)			NR
As(III) ( $\mu$ g/L)		NR A	As(V) (µg	y/L)			NR	Total Sus	sp Sol	ids (mg/L)			NR
					Not	tes							
Sample Condition:													

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

			Loca	ation Information					
Sample Id/Site Id:		225093 /	128469	Sample Da	te:	8/31/2	017 2:15:00 P	М	
Location (TRS):		07N 06W	13 DCDB	Agency/Sa	mpler:	MBM	G / ICOPINI,	GARY	
Latitude/Longitude:		46° 21' 25	5" N 112° 17' 4		•		R BULLION N		AIN
Datum:		NAD27		Lab Date:		9/29/2	017 7:19:33 A	М	
Altitude:		7500		Lab/Analys	st:	MBM	G / TIMMER,	JACKIE	
County/State:		JEFFERS	ON / MT		thod/Handl		3 / ru:1 ra:0 fu:		
Site Type:			RAINAGE	Procedure		U	DLVED	1 1011	
Geology:			UIIIIIIOE	Total Dept	••	NR			
USGS 7.5' Quad:		BASIN 7	1/2	SWL-MP (		NR			
		DASIN /	1/2		· ·				
PWS Id:		DIFORM			er Enters (ft	): NR			
Project:		DLFORS	T, BASIN_W						
		mg/L	Ma meq/L	ajor Ion Results			mg/L	mee	a/I
Calcium (C	a)	88.720	4.427	Bicarbonate (HCC	(3)	0	.000	0.000	ų/L
Magnesium	,	29.000	2.386	Carbonate (CO3)	5)		.000	0.000	
Sodium (Na		5.360	0.233	Chloride (Cl)			.760	0.021	
Potassium (	K)	2.870	0.073	Sulfate (SO4)		8	07.800	16.826	
Iron (Fe)		122.350	4.381 0.600	Nitrate (as N)			.040 J	0.003	
Manganese		16.475	Fluoride (F)	D)		.520	0.027		
Silica (SiO2	2) Total Cat	32.770	14.564	Orthophosphate (a		< Anions	0.020 U	0.000 16.878	
	Total Cat	10115		lement Results (µg		Amons		10.878	
Aluminum (Al):	10.825.000	Cesium (Cs):	5.200	Molybdenum		2.870	Strontium (S	Sr):	299.890
Antimony (Sb):	9.920	Chromium (Cr):	2.010	Nickel (Ni):		64.310	Thallium (T	,	<0.250 U
Arsenic (As):	2,353.190	Cobalt (Co):	227.160	Niobium (Nb	):	<0.250 U	Thorium (Th	ı):	9.400
Barium (Ba):	14.830	Copper (Cu):	10,635.00	2		23.620	Tin (Sn):		<0.250 U
Beryllium (Be):	1.900	Gallium (Ga):	1.680	Palladium (P	/	1.160 J	Titanium (Ti		13.500
Boron (B):	95.350	Lanthanum (La):	19.710	Praseodymiu		5.680	Tungsten (W		<0.250 U
Bromide (Br):	<10.000 U	Lead (Pb):	242.480	Rubidium (R	b):	14.860	Uranium (U		169.680
Cadmium (Cd): Cerium (Ce):	288.740 45.330	Lithium (Li): Mercury (Hg):	25.540 NR	Silver (Ag): Selenium (Se	).	0.690 J <0.250 U	Vanadium ( Zinc (Zn):		5.120 29,720.000
Certain (CC).	45.550	wereury (mg).	TUK	Scientum (Se		-0.250 0	Zirconium (Z		<0.250 U
			•	and Other Analyt					
**Total Dissolved S	( U )	1157.9 Field Ha		O3 (mg/L):	NR	Ammonia (m	0 /		NR
**Sum of Diss. Con	( U )			202 ( 7)	340.9	-	arbons (μg/L):		NR
Field Conductivity (	• •		kalinity as Ca		NR	PCP ( $\mu$ g/L):			NR
Lab Conductivity (µ	mhos):		ty as CaCO3 (1	0 /	0	Phosphorus,	ίų γ		0.050 J
Field pH:		-	Stability Index		16.194	Field Nitrate			NR
Lab pH:			Adsorption Ra		0.1178		ved O2 (mg/L)	( <b>:</b>	5.400
Water Temp (°C):		U	Saturation Inc	lex:	-6.692	Field Chloric	( U )		NR
Air Temp (°C):		```````````````````````````````````````	mg/L as N):			Field Redox	(mV):		680
Nitrate + Nitrite (mg	g/L as N)	NR Hydroxi	de (mg/L as O	H):	0.000	Lab, Dissolv	ed Organic Ca	rbon (mg/	/L): NR
Total Kjeldahl Nitro	gen (mg/L as N)	) NR Lab, Dis	ssolved Inorgan	nic Carbon (mg/L):	NR	Lab, Total O	rganic Carbon	(mg/L):	NR
Total Nitrogen (mg/	L as N)	NR Acidity	to 4.5 (mg/L C	aCO3)	291.000	Acidity to 8.2	3 (mg/L CaCC	)3)	477.000
As(III) ( $\mu$ g/L)		NR As(V) (	ug/L)		NR	Total Susp S	olids (mg/L)		NR
~ . ~				Notes					
Sample Condition:	CLEAR								
Field Remarks:	SAMPLE C	COLLECTED FROM	M UPPER FLU	JME					
Lah Remarks									

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

			Locatio	on Information					
Sample Id/Site Id:		225095 / 12	28469	Sample Date:	:	8/31/2	017 2:15:00 P	М	
Location (TRS):		07N 06W 1	3 DCDB	Agency/Sam	pler:	MBM	G / ICOPINI,	GARY	
Latitude/Longitude:		46° 21' 25"	N 112° 17' 40"	W Field Numbe	r:	UPPE	R BULLION N	MINE DR	AIN
Datum:		NAD27		Lab Date:		9/29/2	017 7:19:35 A	М	
Altitude:		7500		Lab/Analyst:		MBM	G / TIMMER,	JACKIE	
County/State:		JEFFERSC	N / MT	Sample Meth			3 / ru:0 ra:1 fu:		
Site Type:		MINE DRA		Procedure Ty		0	L RECOVER		
Geology:				Total Depth (		NR			
USGS 7.5' Quad:		BASIN 7 1	/2'	SWL-MP (ft)		NR			
PWS Id:		Dilbii() I	-	Depth Water					
Project:		DI FORST	BASIN WTR	1	Linters (1	<i>ij.</i> Ink			
Hojeet.		DEFORST	_	r Ion Results					
		mg/L	meq/L	i ion results			mg/L	meq	/L
Calcium (Ca	/	88.840	4.433	Bicarbonate (HC	/		NR	0.000	
Magnesium		29.070	2.392	Carbonate (CO3)			NR	0.000	
Sodium (Na		5.450	0.237	Chloride (Cl)			NR	0.000	
Potassium (	К)	2.920 122.250	0.075 4.378	Sulfate (SO4)			NR NR	$0.000 \\ 0.000$	
Iron (Fe) Manganese	(Mn)	16.420	0.598	Nitrate (as N) Fluoride (F)			NR	0.000	
Silica (SiO2		NR	0.578	Orthophosphate (	as P)		NR	0.000	
Siller (5102	Total Ca		14.532	Orthophosphate		d Anions	THE	0.000	
			Trace Elen	ient Results (µg/L	)				
Aluminum (Al):	10,530.000	Cesium (Cs):	5.000	Molybdenum (1	Mo):	2.840	Strontium (S	r):	313.540
Antimony (Sb):	12.410	Chromium (Cr):	3.440	Nickel (Ni):		68.580	Thallium (T	/	<0.250 U
Arsenic (As):	2,984.370	Cobalt (Co):	240.790	Niobium (Nb):		<0.250 U	Thorium (Th		10.570
Barium (Ba):	15.310	Copper (Cu):	10,495.000	Neodymium (N	/	23.690	Tin (Sn):		<0.250 U
Beryllium (Be):	1.980	Gallium (Ga):	2.170	Palladium (Pd)		1.310	Titanium (Ti		17.010
Boron (B):	99.110	Lanthanum (La):	21.900	Praseodymium	< /	5.610	Tungsten (W	/	<0.250 U
Bromide (Br):	NR 207.060	Lead (Pb):	269.700	Rubidium (Rb)		15.950 ND	Uranium (U) Vanadium (V		226.220
Cadmium (Cd): Cerium (Ce):	307.960 46.920	Lithium (Li): Mercury (Hg):	26.830 NR	Silver (Ag): Selenium (Se):		NR <0.250 U	Zinc (Zn):	,	4.620 29,490.000
Certuin (Ce).	40.920	Mercury (Hg).	INK	Selemuni (Se).		<0.230 0	Zinc (Zii). Zirconium (Z		<0.250 U
		Field	l Chemistry an	d Other Analytica	al Results	8	(	,	
**Total Dissolved S		NR Field Hard		(mg/L):	NR	Ammonia (mg			NR
**Sum of Diss. Cons	( U )					T.P. Hydrocar	rbons (µg/L):		NR
Field Conductivity (	/	1377 Field Alka	2		NR	PCP (µg/L):			NR
Lab Conductivity (µ	mhos):	2	as CaCO3 (mg/	(L):	NR	Phosphorus, 7			0.060 J
Field pH:		•	ability Index:			Field Nitrate (			NR 5 400
Lab pH: Water Temp (°C):		NR Sodium A 5.82 Langlier S	dsorption Ratio			Field Dissolve Field Chloride	( 0 )		5.400 NR
Air Temp (°C):		NR Nitrite (m			-9.501 NR	Field Redox (			680
Nitrate + Nitrite (mg	/L as N)	· ·	e (mg/L as OH):		NR		d Organic Car	bon (mg/I	
Total Kjeldahl Nitro	,	-	( U	Carbon (mg/L):	NR		ganic Carbon (	, U	NR
Total Nitrogen (mg/l		, ,	4.5 (mg/L CaC		NR		(mg/L CaCO3		NR
As(III) (µg/L)		NR As(V) (µg	τē	)	NR	Total Susp So	Č	,	NR
() (r. <del>0</del> -)		···· ··· ··· ··· ··· ··· ··· ··· ··· ·	,	Notes			(8)		
Sample Condition:	CLEAR								
Field Remarks:	SAMPLE C	COLLECTED FROM	UPPER FLUM	E					
Lab Remarks:									

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

				Loca	ation I	nformation							
Sample Id/Site Id:		28469		Sample Date	:	8/1	/201	8 12:10:00 PM	[				
Location (TRS):		(	07N 06W	13 DCDB		Agency/Sam	pler:			/ ICOPINI, G /DUAIME, TE		CGR	ATH,
Latitude/Longitude		4	6° 21' 25	" N 112° 17' 4	40" W	Field Numbe	er:	UP	PER	BULLION M	INE DR.	AIN	
Datum:		1	NAD27			Lab Date:		9/4	/201	8 10:45:04 AN	1		
Altitude:		7	500			Lab/Analyst:	:	ME	BMG	/ TIMMER, J	ACKIE		
County/State:		J	EFFERS	ON / MT		Sample Meth	10d/Handli	ng: GR	AB	/ ru:1 ra:0 fu:1	fa:1		
Site Type:				AINAGE		Procedure T		e		LVED			
Geology:						Total Depth		NR					
USGS 7.5' Quad:		Ŧ	BASIN 7	1/2'		SWL-MP (ft		NR					
PWS Id:		-				Depth Water	·						
Project:		I	DLFORST	, BASIN_W	FRSHF	1							
110,000		-				on Results							
			mg/L	meq/L	•					mg/L	meq	/L	
Calcium (C	/	81.7		4.081		bonate (HCO3	)		0.0		0.000		
Magnesium Sodium (Na		28.5 5.03		2.346 0.219		onate (CO3)			0.0	000 '30	0.000 0.021		
Potassium	/	2.90		0.219 Chloride (Cl) 0.074 Sulfate (SO4)						4.800	19.264		
Iron (Fe)	Iron (Fe) 145.400				5.207 Nitrate (as N)					.010 U	0.000		
Manganese (Mn) 17.495 Silica (SiO2) 35.120				0.637 Fluoride (F)					0.4		0.023		
Silica (SiO2) 35.120 Total Cations					Ortho	phosphate (as	/		<0	.020 U	0.000		
Total Cations				15.157 Traca F	lomont	t Doculte (ug/I	Total A	Anions			19.307		
Aluminum (Al):	11.600.000	Cesium (	Cs):	Trace Element Results (με 5.870 Molybdenum				2.330		Strontium (Sr	)· 2	274.9	20
Antimony (Sb):	26.520	Chromiu	/	2.320 Nickel (Ni):				74.800 Thallium (Tl): <0				< 0.25	
Arsenic (As):	3,428.220	Cobalt (C	co):	238.290 Niobium (Nb):				<0.250 U Thorium (Th): 10					0
Barium (Ba):	14.240	Copper (	/	10,800.0		Neodymium (N	21.910				< 0.25		
Beryllium (Be):	1.800	Gallium (		1.690		Palladium (Pd)		1.210 J Titanium (7 5.560 Tungsten (V				1.15	
Boron (B):	20.380 <10.000 U	Lanthanu	· /	18.340 324.970		Praseodymium Rubidium (Rb)		5.560 17.240		Tungsten (W)		<0.25 227.6	
Bromide (Br): Cadmium (Cd):	302.460	Lead (Pb)		324.970		Silver (Ag):	:	<0.250 1		Uranium (U): Vanadium (V		0.11	
Cerium (Ce):	41.510	Mercury		NR		Selenium (Se):		<0.250 1		Zinc (Zn):			5.000
			Fiel	d Chemistry	and O	ther Analytic	al Results			Zirconium (Zi	r): <	<0.25	0 U
**Total Dissolved S	olids (mg/L):	1294.95	Field Ha	urdness as Ca	CO3 (n	ng/L):	NR	Ammonia	a (mg	g/L):			NR
**Sum of Diss. Con	stituents (mg/L)	1294.95	Hardnes	s as CaCO3:			321.55	T.P. Hyd	rocai	rbons (µg/L):			NR
Field Conductivity (	μmhos):	1583	Field Al	kalinity as Ca	ICO3 (1	mg/L):	NR	PCP (µg/	L):				NR
Lab Conductivity (µ	mhos):	1789		ty as CaCO3	· • /	:	0			TD (mg/L):			0.060 J
Field pH:		2.15	Ryznar	Stability Inde	x:		16.205	Field Niti	rate (	(mg/L):			NR
Lab pH:		2.87		Adsorption R			0.1213	Field Dis	solve	ed O2 (mg/L):			7.300
Water Temp (°C):		6.26	U	Saturation In	ndex:		-6.667	Field Chl		ίų,			NR
Air Temp (°C):		NR	````	mg/L as N):				Field Red		,			694
Nitrate + Nitrite (mg	- ·	NR		de (mg/L as C			0.000			d Organic Car	ί, υ	'L):	NR
Total Kjeldahl Nitro				U		urbon (mg/L):	NR			ganic Carbon (	· • /		NR
Total Nitrogen (mg/	L as N)	NR		to 4.5 (mg/L 0	CaCO3	5)	444.000	5		(mg/L CaCO3	3)		769.000
As(III) (µg/L)		NR	As(V) (J	ıg/L)			NR	Total Sus	p So	lids (mg/L)			NR
Samula Condition	CLEAR				No	otes							
Sample Condition: Field Remarks:	CLEAR FLUME FU	ILL OF SE	DIMENT	-									
Lab Remarks:	I LOME FU												

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

		Locatio	on Information					
Sample Id/Site Id:	230898 / 12	8469	Sample Date	:	8/1/20	18 12:10:00 PM		
Location (TRS):	07N 06W 13	3 DCDB	Agency/Sam	pler:		G / ICOPINI, GAF E/DUAIME, TED	RY/MCGR	ATH,
Latitude/Longitude:	46° 21' 25" 1	N 112° 17' 40"	W Field Numbe	er:	UPPE	R BULLION MIN	E DRAIN	
Datum:	NAD27		Lab Date:		9/4/20	18 10:45:05 AM		
Altitude:	7500		Lab/Analyst:	:	MBM	G / TIMMER, JAC	CKIE	
County/State:	JEFFERSO	N/MT	Sample Meth			3 / ru:0 ra:1 fu:0 fa		
Site Type:	MINE DRA		Procedure Ty		C	L RECOVERABI		
Geology:	WINE DRA	INAGE	Total Depth		NR	IL RECOVERADI		
	DACDIZ 1/							
USGS 7.5' Quad:	BASIN 7 1/	2.	SWL-MP (ft	/	NR			
PWS Id:			Depth Water	Enters (1	ft): NR			
Project:	DLFORST,	BASIN_WTRS						
	π		r Ion Results				a	
Calcium (Ca)	<b>mg/L</b> 81.830	meq/L 4.083	Bicarbonate (HC	(03)		mg/L NR 0.0	<b>meq/L</b> 000	
Magnesium (Mg)	28.620	2.355	Carbonate (CO3)	/			000	
Sodium (Na)	4.430	0.193	Chloride (Cl)	,			000	
Potassium (K)	2.890	0.074	Sulfate (SO4)			NR 0.0	000	
Iron (Fe)	5.236	Nitrate (as N)				000		
Manganese (Mn)	17.920	0.652	Fluoride (F)				000	
Silica (SiO2)	NR	15 1 ( 1	Orthophosphate	· /	1 4		000	
1 otal	Cations	15.161 Trace Elem	ient Results (µg/L		al Anions	0.0	000	
Aluminum (Al): 11,402.500	Cesium (Cs):	5.910	Molybdenum (		2.700	Strontium (Sr):	283.3	370
Antimony (Sb): 29.250	Chromium (Cr):	3.420	Nickel (Ni):	,	73.870	Thallium (Tl):	< 0.2	
Arsenic (As): 4,290.000	Cobalt (Co):	245.170	Niobium (Nb):		<0.250 U	Thorium (Th):	11.50	
Barium (Ba): 14.300	Copper (Cu):	10,730.000	Neodymium (N	/	22.400	Tin (Sn):	< 0.2	
Beryllium (Be): 1.930	Gallium (Ga):	1.970	Palladium (Pd)		1.600	Titanium (Ti):	12.73	
Boron (B): 24.350 Bromide (Br): NR	Lanthanum (La): Lead (Pb):	18.630 350.880	Praseodymium Rubidium (Rb)	· /	5.690 17.430	Tungsten (W): Uranium (U):	<0.23 238.0	
Cadmium (Cd): 306.400	Lithium (Li):	34.230	Silver (Ag):	):	17.430 NR	Vanadium (V):	238.0	
Cerium (Ce): 42.260	Mercury (Hg):	NR	Selenium (Se):		<0.250 U	Zinc (Zn):		, 55.000
			()			Zirconium (Zr):	< 0.2	
		•	d Other Analytic					
**Total Dissolved Solids (mg/L):	NR Field Hard		(mg/L):	NR	Ammonia (mg			NR
**Sum of Diss. Constituents (mg/	,				T.P. Hydrocar	rbons (µg/L):		NR
Field Conductivity (µmhos):	1583 Field Alkal	inity as CaCO3	3 (mg/L):	NR	PCP (µg/L):			NR
Lab Conductivity (µmhos):	NR Alkalinity	as CaCO3 (mg/	'L):	NR	Phosphorus, 7	ГD (mg/L):		0.060 J
Field pH:	2.15 Ryznar Sta	bility Index:		19.074	Field Nitrate (	(mg/L):		NR
Lab pH:	NR Sodium Ad	sorption Ratio:		0.097	Field Dissolve	ed O2 (mg/L):		7.300
Water Temp (°C):	6.26 Langlier Sa	turation Index:		-9.537	Field Chloride	e (mg/L):		NR
Air Temp (°C):	NR Nitrite (mg	/L as N):		NR	Field Redox (	mV):		694
Nitrate + Nitrite (mg/L as N)	NR Hydroxide	(mg/L as OH):		NR	Lab, Dissolve	d Organic Carbon	(mg/L):	NR
Total Kjeldahl Nitrogen (mg/L as	N) NR Lab, Disso	ved Inorganic	Carbon (mg/L):	NR	Lab, Total Or	ganic Carbon (mg/	L):	NR
Total Nitrogen (mg/L as N)	NR Acidity to	4.5 (mg/L CaC0	03)	NR	Acidity to 8.3	(mg/L CaCO3)		NR
As(III) (µg/L)	NR As(V) (µg/	L)		NR	Total Susp So	olids (mg/L)		NR
			Notes		_			
Sample Condition: CLEAR								
E' 11D 1								

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A} = \text{Hydride}$  atomic absorption;  $\mathbf{E} = \text{Estimated}$  due to interference;  $\mathbf{H} = \text{Exceeded}$  holding time;  $\mathbf{J} = \text{Estimated}$  quantity above detection limit but below reporting limit;  $\mathbf{K} = \text{Na+K}$  combined;  $\mathbf{N} = \text{Spiked}$  sample recovery not within control limits;  $\mathbf{P} = \text{Preserved}$  sample;  $\mathbf{S} = \text{Method of standard}$  additions;  $\mathbf{U} = \text{Undetected}$  quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

				Location	n Information					
Sample Id/Site Id:		:	230900 / 128	3469	Sample Date:		8/1/20	18 12:10:00 PM		
Location (TRS):			07N 06W 13	DCDB	Agency/Samp	oler:		G / ICOPINI, GAI E/DUAIME, TED		RATH,
Latitude/Longitude:			46° 21' 25" N	N 112° 17' 40" N	W Field Number	:	UPPE	R BULLION MIN	E DRAIN	N DUP
Datum:		]	NAD27		Lab Date:		9/4/20	18 10:45:05 AM		
Altitude:			7500		Lab/Analyst:		MBM	G / TIMMER, JA	CKIE	
County/State:			JEFFERSON	I/MT	Sample Meth	od/Hand	ling: GRAF	3 / ru:0 ra:1 fu:0 fa	1:0	
Site Type:			MINE DRAI		Procedure Ty		-	L RECOVERAB		
Geology:					Total Depth (		NR			
USGS 7.5' Quad:		,	BASIN 7 1/2		SWL-MP (ft)	·	NR			
			DASIN / 1/2	2						
PWS Id:			DIFODOT		Depth Water	Enters (1	t): NR			
Project:			DLFORS1, I	BASIN_WTRS						
			mg/L	Major meg/L	· Ion Results			mg/L	meq/L	
Calcium (Ca	)	81	.380	4.061	Bicarbonate (HC	<b>D</b> 3)			000	
Magnesium	(Mg)		3.490	2.344	Carbonate (CO3)	,			000	
Sodium (Na)			770 820	0.207	Chloride (Cl)				000	
Potassium (k	0.072	Sulfate (SO4)				000				
Iron (Fe)	5.216	Nitrate (as N)				000				
Manganese ( Silica (SiO2)		N N	7.905 P	0.652	Fluoride (F) Orthophosphate (	nc D)			000 000	
Silica (SIO2)	, Total Ca		ĸ	15.104	Orthophosphate (		d Anions		000	
	i otai Ca	tions			ent Results (µg/L		a remons	0.	000	
Aluminum (Al):	11,325.000	Cesium (	(Cs):	6.060	Molybdenum (N	Ло):	2.950	Strontium (Sr):	286	.620
Antimony (Sb):	29.600	Chromiu	· /	3.340	Nickel (Ni):		73.470			
Arsenic (As):	4,217.000	Cobalt (		241.870	Niobium (Nb):	•	<0.250 U	Thorium (Th):	11.6	
Barium (Ba):	14.480	Copper (		10,640.000	Neodymium (N	d):	22.980	Tin (Sn):		250 U
Beryllium (Be): Boron (B):	2.020 22.000	Gallium Lanthanu	< / >	2.030	Palladium (Pd):	( <b>D</b> ).	1.830 5.770	Titanium (Ti): Tungsten (W):	12.7	
Bromide (Br):	22.000 NR	Lanthant Lead (Pb	· · ·	19.050 353.780	Praseodymium Rubidium (Rb):	· /	3.770 17.960	Uranium (U):		250 U .670
Cadmium (Cd):	311.940	Lithium	/	33.200	Silver (Ag):		NR	Vanadium (V):	10.0	
Cerium (Ce):	43.420	Mercury		NR	Selenium (Se):		<0.250 U	Zinc $(Zn)$ :		)10.000
		,	(8)					Zirconium (Zr):	1.10	
				•	l Other Analytica					
**Total Dissolved So				ess as CaCO3 (	(mg/L):	NR	Ammonia (mg	<i>,</i>		NR
**Sum of Diss. Cons			Hardness as				T.P. Hydrocar	bons (μg/L):		NR
Field Conductivity (µ	,			nity as CaCO3		NR	PCP (µg/L):			NR
Lab Conductivity (µn	nhos):	NR	-	s CaCO3 (mg/l	L):	NR	Phosphorus, 7	( U )		0.070 J
Field pH:			Ryznar Stab	•			Field Nitrate (	e ,		NR
Lab pH:				sorption Ratio:			Field Dissolve	ίų,		7.300
Water Temp (°C):			0	turation Index:			Field Chloride			NR
Air Temp (°C):			Nitrite (mg/	· ·		NR	Field Redox (	mV):		694
Nitrate + Nitrite (mg/	'L as N)	NR	Hydroxide (	(mg/L as OH):		NR	Lab, Dissolve	d Organic Carbon	(mg/L):	NR
Total Kjeldahl Nitrog	gen (mg/L as N)	NR	Lab, Dissol	ved Inorganic C	Carbon (mg/L):	NR	Lab, Total Or	ganic Carbon (mg	/L):	NR
Total Nitrogen (mg/L	. as N)	NR	Acidity to 4	.5 (mg/L CaCC	03)	NR	Acidity to 8.3	(mg/L CaCO3)		NR
As(III) (µg/L)		NR	$As(V) (\mu g/I)$	L)		NR	Total Susp So	lids (mg/L)		NR
					Notes					
Sample Condition:	CLEAR									

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

				Loc	ation I	nformation							
Sample Id/Site Id:		2	30903 / 3			Sample Date	:	8/	1/20	18 12:10:00 P	M		
Location (TRS):		C	07N 06W	13 DCDB		Agency/Sam				G / ICOPINI, E/DUAIME, 7		MCGR	ATH,
Latitude/Longitude:		4	6° 21' 25	" N 112° 17' 4	40" W	Field Numbe	er:			R BULLION		RAIN	DUP
Datum:		1	VAD27			Lab Date:		9/	4/20	18 10:45:06 A	М		
Altitude:			500			Lab/Analyst				G / TIMMER		7.	
County/State:				ON / MT		Sample Met				/ ru:1 ra:0 fu		_	
Site Type:				AINAGE		Procedure T		e		LVED	.1 14.1		
21		ľ		AINAOL				N N					
Geology:				1 /01		Total Depth	. ,						
USGS 7.5' Quad:		Ŀ	BASIN 7	1/2'		SWL-MP (ft	· · · · · · · · · · · · · · · · · · ·	N					
PWS Id:						Depth Water	Enters (ft)	): N	R				
Project:		I	DLFORS	Γ, BASIN_W									
			<b>/T</b>		lajor Io	n Results				<b>/</b>		/ <b>T</b>	
Calcium (C	a)	81.7	<b>mg/L</b>	meq/L 4.079	Bicar	bonate (HCO3	)		0	<b>mg/L</b> 000	<b>m</b> 0.000	eq/L	
Magnesium		28.8		2.372		onate (CO3)	)			000	0.000		
Sodium (Na		5.12	0	0.223		ide (Ĉl)				790	0.022		
Potassium (	K)	2.79		0.071		e (SO4)				58.100	19.95		
Iron (Fe)	$(\mathbf{M}_{\mathbf{r}})$	145.		5.194		e (as N)				050	0.004		
Manganese Silica (SiO2		17.5° 35.2		0.640		ide (F) phosphate (as	P)			450 ).020 U	0.024 0.000		
Silica (Sici	- ) Total Cat		20	15.165	ormo	phosphate (as	Total A	Anions		5.020 0	20.00		
				Trace E		Results (µg/I							
Aluminum (Al):	11,580.000	Cesium (		5.650		Molybdenum (	Mo):	2.190		Strontium (S		269.8	
Antimony (Sb): Arsenic (As):	29.150 3,359.380	Chromiu Cobalt (C		2.340 233.410		Nickel (Ni): Niobium (Nb):		71.520 <0.250		Thallium (T Thorium (T	/	<0.23 10.40	
Barium (Ba):	13.870	Copper (C		10,740.0		Neodymium (NO).		21.390		Tin (Sn):	u).	<0.2	
Beryllium (Be):	1.720	Gallium (		1.540		Palladium (Pd)		1.130 J		Titanium (T	ï):	10.14	
Boron (B):	18.750	Lanthanu	· · ·	17.790		Praseodymium		5.390		Tungsten (V		< 0.2	
Bromide (Br):	<10.000 U	Lead (Pb)		320.060		Rubidium (Rb)	):	16.350		Uranium (U	/	221.0	
Cadmium (Cd): Cerium (Ce):	293.310 40.090	Lithium ( Mercury		29.470 NR		Silver (Ag): Selenium (Se):		<0.250 <0.250		Vanadium ( Zinc (Zn):	V):	9.670	) 55.000
Certuin (Ce).	40.090	Wieldury	(11g).	INK		selemum (se).		<0.230	0	Zirconium (	Zr):	0.990	
			Fie	ld Chemistry	and O	ther Analytic	al Results				,		
**Total Dissolved S	olids (mg/L):	1329.05	Field H	ardness as Ca	CO3 (n	ng/L):	NR	Ammon	ia (n	ng/L):			NR
**Sum of Diss. Con	stituents (mg/L)	: 1329.05	Hardne	ss as CaCO3:			322.73	T.P. Hy	droca	arbons (µg/L)	:		NR
Field Conductivity (	µmhos):	1583		lkalinity as Ca	-	-	NR	PCP (µg					NR
Lab Conductivity (µ	mhos):	1782		ity as CaCO3	· • /	:	0			TD (mg/L):			0.050 J
Field pH:		2.15		Stability Inde			16.225	Field Ni		ίų,			NR
Lab pH:		2.85		Adsorption F			0.1211			ved O2 (mg/L	):		7.300
Water Temp (°C):		6.26	U	r Saturation I	ndex:		-6.688			le (mg/L):			NR
Air Temp (°C):		NR		mg/L as N):			<0.010 U			· /			694
Nitrate + Nitrite (mg	· /	NR	•	ide (mg/L as			0.000			ed Organic C	· ·	<i>c</i> ,	NR
Total Kjeldahl Nitro				ssolved Inorg		ίų,	NR			rganic Carbo		:	NR
Total Nitrogen (mg/	L as N)	NR	-	to 4.5 (mg/L	CaCO3	)	509.000			3 (mg/L CaC	03)		819.000
As(III) (µg/L)		NR	As(V) (	µg/L)	NT -	tos	NR	Total Si	ısp S	olids (mg/L)			NR
Sample Condition:	CLEAR				No	tes							
Field Remarks:	CLEAK												
Lab Remarks:													

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

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#### Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information													
Sample Id/Site Id:         235390 / 128469         Sample Date:         11/15/2018 1:12:00 PM													
Location (TRS):		(	)7N 06W	13 DCDB		Agency/Sa	mpler:		MBM STEV	G / ICOPINI, C E	GARY/N	ICGRA	ГН,
Latitude/Longitude:		4	46° 21' 2:	5" N 112° 1	7' 40" \	W Field Num	ber:		UPPE	R BULLION M	1INE DI	RAIN	
Datum:		1	NAD27			Lab Date:			12/13	/2018 7:54:02 A	M		
Altitude:		-	7500			Lab/Analys	st:		мвм	G / TIMMER,	JACKIE		
County/State:				SON / MT		Sample Me				3 / ru:1 ra:0 fu:			
Site Type:				RAINAGE		Procedure		e		OLVED	1 14.1		
Geology:		1		AINAOL		Total Dept	21		NR	JEVED			
61		т		1/21									
USGS 7.5' Quad:		1	BASIN 7	1/2									
PWS Id: Depth Water Enters (ft): NR													
Project: DLFORST, BASIN_WTRSHD													
			ma/I	meq/L		· Ion Results				ma/I	-	аЛ	
Calcium (Ca	)	83.4	<b>mg/L</b> 190	4.166		arbonate (HCO3	6		0	<b>mg/L</b> .000	0.000	q/L	
Magnesium	/	27.4		2.257	bonate (CO3)	,			.000	0.000			
Sodium (Na)		oride (Cl)				.610	0.017						
Potassium (K) 2.640 0.068 Iron (Fe) 98.385 3.523						fate (SO4)				50.800	15.639		
Iron (Fe) 98.385 3.523 Manganese (Mn) 14.660 0.534						rate (as N) oride (F)				0.010 U .520	0.000 0.027		
Silica (SiO2		nophosphate (as	P)			.080 J	0.000						
× ,			· ·	Anions			15.684						
	ent Results (µg												
Aluminum (Al):	8,214.000 6.180	Cesium (	,	5.010 1.490		Molybdenum	(Mo):	1.560 62.03		Strontium (Sr Thallium (Tl)		280.110	
Antimony (Sb): Arsenic (As):	577.770	Chromiu Cobalt (C	· /	1.490		Nickel (Ni): Niobium (Nb)		< 0.25		Thailium (TI) Thorium (Th)		<0.250 4.270	0
Barium (Ba):	12.620	Copper (	/	5,616		Neodymium (1		15.97					U
Beryllium (Be):	1.410	Gallium (		1.320		Palladium (Pd		1.010		7.670			
Boron (B):	100.430	Lanthanu	· /	12.96		Praseodymium		3.820		Tungsten (W)		< 0.250	
Bromide (Br):	<10.000 U	Lead (Pb		214.4		Rubidium (Rb	):	15.19		Uranium (U):		122.960	)
Cadmium (Cd):	254.190	Lithium (		26.92	20	Silver (Ag):		< 0.25		Vanadium (V	):	3.630	000
Cerium (Ce):	29.340	Mercury		NR eld Chemis	try and	Selenium (Se) I Other Analyti		<0.25	00	Zinc (Zn): Zirconium (Z	r):	24,150.0 0.560 J	000
**Total Dissolved So	olids (mg/L):	1054.9		rdness as C	•	•	NR	Ammo	nia (m	g/L):		NI	R
**Sum of Diss. Cons				s as CaCO3			321.38		· ·	rbons (µg/L):		N	
Field Conductivity (µ	( U )			kalinity as (		(mg/L):	NR	PCP (µ		(18)		NI	
Lab Conductivity (µr	<i>,</i>			ty as CaCO		( U	0		<b>U</b> /	TD (mg/L):		<0	0.030 U
Field pH:	,	2.84	Ryznar S	Stability Inc	lex:	<i>,</i>	16.107	· ·		(mg/L):		NI	R
Lab pH:				Adsorption			0.1214	Field D	issolv	ed O2 (mg/L):		7.0	510
Water Temp (°C):		4.84	Langlier	Saturation	Index:		-6.578	Field C	hlorid	e (mg/L):		NI	R
Air Temp (°C):		:		<0.010 U	Field R	edox (	(mV):		67	7			
Nitrate + Nitrite (mg/	'L as N)	NR	Hydroxi	de (mg/L as	s OH):		0.000	Lab, D	issolve	ed Organic Carl	oon (mg/	L): NI	R
Total Kjeldahl Nitrog	gen (mg/L as N)	) NR	Lab, Dis	solved Inor	rganic C	Carbon (mg/L):	NR	Lab, To	otal Oi	ganic Carbon (	mg/L):	NI	R
Total Nitrogen (mg/L	as N)	NR	Acidity 1	to 4.5 (mg/l	L CaCC	03)	274.000	Acidity	to 8.3	(mg/L CaCO3	)	50	9.000
As(III) (µg/L)		NR	As(V) (µ	ıg/L)			NR	Total S	usp So	olids (mg/L)		NI	R
						Notes							
Sample Condition: Field Remarks: Lab Remarks:	CLEAR FLUME ST	AGE HIE	GHT 0.2	6									

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

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Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information												
Sample Id/Site Id:		235392 / 1	28469	Sample Dat	e:	11/1	5/2018 1:12:00 PM	[				
Location (TRS):		07N 06W	13 DCDB	Agency/Sar	npler:	MBN STE	MG / ICOPINI, GA VE	RY/MCGRATH,				
Latitude/Longitude:		46° 21' 25	" N 112° 17' 40"	W Field Numb	er:	UPP	ER BULLION MI	NE DRAIN				
Datum:		NAD27		Lab Date:		12/13	3/2018 7:54:03 AM	1				
Altitude:		7500		Lab/Analys	t:	MBN	AG / TIMMER, JA	CKIE				
County/State:		JEFFERS	ON / MT	Sample Met			B / ru:0 ra:1 fu:0 f					
Site Type:		MINE DR		Procedure T		U U	AL RECOVERAB					
51		WINE DI	AINAOL		~ 1	NR	AL RECOVERAD					
Geology:		DACDI 7	1/21	Total Depth								
USGS 7.5' Quad:		BASIN 7	1/2'	SWL-MP (f	<i>′</i>	NR						
PWS Id:				Depth Wate	er Enters	(ft): NR						
Project: DLFORST, BASIN_WTRSHD												
Major Ion Results												
Calcium (Ca	2)	mg/L 85.310	meq/L 4.257	Bicarbonate (H	CO3)		mg/L NR 0	meq/L .000				
Magnesium	/	28.120	2.314	Carbonate (CO3	/			.000				
Sodium (Na		4.790	0.208	Chloride (Cl)	- )			.000				
Potassium (	Ŕ)	2.940	0.075	Sulfate (SO4)			NR 0	.000				
Iron (Fe)		106.275	3.806	Nitrate (as N)				.000				
Manganese		15.215	0.554	Fluoride (F)				.000				
Silica (SiO2	) Total C	NR	13.086	Orthophosphate	· /	tal Anions		.000				
	Total C	ations		ent Results (µg/		dai Amons	0	.000				
Aluminum (Al):	8,233.500	Cesium (Cs):	4.740	Molybdenum (N		4.790	Strontium (Sr):	289.510				
Antimony (Sb):	7.540	Chromium (Cr):	1.850	Nickel (Ni):	<i>,</i>	62.520	Thallium (TI):	0.890 J				
Arsenic (As):	1,175.850	Cobalt (Co):	188.340	Niobium (Nb):		<0.250 U 14.810	Thorium (Th):	3.990				
Barium (Ba):	12.660	Copper (Cu):	5,699.000	Neodymium (N		Tin (Sn):	<0.250 U					
Beryllium (Be):	1.290	Gallium (Ga):	1.340	Palladium (Pd):		0.960 J	Titanium (Ti):	10.260				
Boron (B): Bromide (Br):	100.330 NR	Lanthanum (La): Lead (Pb):	12.020 177.710	Praseodymium Rubidium (Rb):	< /	3.570 15.770	Tungsten (W): Uranium (U):	<0.250 U 114.880				
Cadmium (Cd):	235.340	Lithium (Li):	26.620	Silver (Ag):		NR	Vanadium (V):	3.570				
Cerium (Ce):	27.340	Mercury (Hg):	NR	Selenium (Se):		<0.250 U	Zinc (Zn):	24,895.000				
().							Zirconium (Zr):	0.720 J				
			ld Chemistry an	•								
**Total Dissolved S			dness as CaCO3 (	(mg/L):	NR	Ammonia (mg	<i>,</i>	NR				
**Sum of Diss. Cons		,	as CaCO3:			T.P. Hydrocar	bons (µg/L):	NR				
Field Conductivity (	,		alinity as CaCO3		NR	PCP ( $\mu$ g/L):		NR				
Lab Conductivity (µ	mhos):	•	as CaCO3 (mg/I	_):	NR	Phosphorus, T	( U )	<0.030 U				
Field pH:		2.84 Ryznar St	•			Field Nitrate (		NR				
Lab pH:			dsorption Ratio:		0.12	Field Dissolve		7.610				
Water Temp (°C):		4.84 Langlier S			Field Chloride	( <b>U</b> )	NR					
Air Temp (°C):	/L	NR Nitrite (m	e ,		NR	Field Redox (	,	677				
Nitrate + Nitrite (mg	,	2	e (mg/L as OH):		NR		d Organic Carbon	( <b>U</b> )				
Total Kjeldahl Nitro		, .	olved Inorganic C		NR		ganic Carbon (mg/	/				
Total Nitrogen (mg/l	Las N)	•	4.5 (mg/L CaCC	(5)	NR	•	(mg/L CaCO3)	NR				
As(III) (µg/L)		NR As(V) (µg	yL)	Natas	NR	Total Susp So	nas (mg/L)	NR				
Sample Condition:	CLEAR			Notes								
Field Remarks:		TAGE HIEGHT 0.26	5									
i iciu Keillaiks.	I LUME S	FINCE INEQUIT 0.20	,									

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L = micrograms$  per Liter; ft = feet; NR = No Reading in GWIC

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Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information												
Sample Id/Site Id:		246203 /	128469	Sample Da	te:	7/14/2	020 12:34:00 F	РМ				
Location (TRS):		07N 06W	13 DCDB	Agency/Sa	mpler:	MBM	G / ICOPINI, C	JARY				
Latitude/Longitude	:		5" N 112° 17' 4	0,			R BULLION N		JME			
Datum:		NAD27		Lab Date:			020 8:27:23 A					
Altitude:		7500		Lab/Analys	at•		G / TIMMER,					
County/State:			SON / MT	Sample Me			3 / ru:1 ra:0 fu:					
Site Type:			RAINAGE	Procedure		e	DLVED	1 14.1				
• •		MINE DI	KAINAOE		• 1		DL V ED					
Geology:		DAGDI 7	1/01	Total Dept			NR					
USGS 7.5' Quad:		BASIN 7	1/2'	SWL-MP (	<i>′</i>	NR						
PWS Id:				Depth Wate	er Enters (f	ft): NR						
Project:		DLFORS	T, BASIN_WT									
		18		ijor Ion Results			/*		a.			
Calcium (C		<b>mg/L</b> 77.670	meq/L 3.876	Bicarbonate (HCO)	2)	0	<b>mg/L</b> 000	<b>meq</b> 0.000	/L			
Magnesium		28.170		Carbonate (CO3)	5)		000	0.000				
Sodium (Na		4.910		Chloride (Cl)			750	0.000				
Potassium (		2.730		Sulfate (SO4)			035.000	21.559				
Iron (Fe)		180.777	6.474	Nitrate (as N)		0.	060	0.004				
Manganese	· /	18.873		Fluoride (F)			0.600 0.032					
Silica (SiO		39.440		Orthophosphate (as			0.020 U	0.000				
	Total Cat	ions	16.217 Trace Fl	ement Results (µg		Anions		21.616				
Aluminum (Al):	11,794.970	Cesium (Cs):	Molybdenum		2.850	Strontium (S	r): 2	33.540				
Antimony (Sb):	38.300	Chromium (Cr):	5.000 2.630	Nickel (Ni):	()-	69.660	Thallium (Tl		0.250 U			
Arsenic (As):	4,543.130	Cobalt (Co):	242.350	Niobium (Nb	):	<0.250 U	Thorium (Th	): 7	.140			
Barium (Ba):	11.470	Copper (Cu):	11,556.36			21.160	Tin (Sn):		30.250 U			
Beryllium (Be):	1.460	Gallium (Ga):	1.650	Palladium (Po		1.240 J	Titanium (Ti		0.700			
Boron (B):	150.010	Lanthanum (La):	14.810	Praseodymiu	· · ·	4.500	Tungsten (W	/	0.250 U			
Bromide (Br): Cadmium (Cd):	<10.000 U 214.720	Lead (Pb): Lithium (Li):	285.500 33.800	Rubidium (Rl Silver (Ag):	b):	15.060 <0.250 U	Uranium (U) Vanadium (V		46.450 0.260			
Cadmium (Cd): Cerium (Ce):	34.730	Mercury (Hg):	55.800 NR	Selenium (Se	).	<0.250 U <0.250 U	Zinc (Zn):	/	8,927.600			
Contain (CO).	51.750			,	ć		Zirconium (Z		(0.250 U			
			·	and Other Analyti			(T.)		ND			
**Total Dissolved S		1442.12 Field H		O3 (mg/L):	NR 309.89	Ammonia (m			NR			
**Sum of Diss. Con Field Conductivity (	( U )		lkalinity as CaCO3:	CO2 (ma/L)	309.89 NR	T.P. Hydroca PCP (µg/L):	roons (µg/L):		NR NR			
Lab Conductivity (	• /		ity as CaCO3 (1		0	Phosphorus,	$\Gamma D (ma/L)$		<0.030 U			
Field pH:	lillios).		Stability Index:	U /	16.259	Field Nitrate	( U )		<0.030 U NR			
*		2	•		0.1236		ι υ ,					
Lab pH:			Adsorption Ra				ed O2 (mg/L):		7.870			
Water Temp (°C):		U	r Saturation Ind	lex:	-6.700	Field Chlorid			NR			
Air Temp (°C):	<b>/ ) )</b>		(mg/L as N):	TT)		Field Redox (		( <b>I</b> T	684			
Nitrate + Nitrite (mg		2	ide (mg/L as O	<i>'</i>	NR		d Organic Carl	, U	·			
Total Kjeldahl Nitro			•	nic Carbon (mg/L):			ganic Carbon (	- ·	NR			
Total Nitrogen (mg/	L as N)	•	to 4.5 (mg/L C	aCO3)	858.000		(mg/L CaCO3	)	1,270.000			
As(III) (µg/L)		NR $As(V)$ (	μg/L)	N. (	NR	Total Susp So	olids (mg/L)		NR			
Sample Condition	CIEAD	LIGHT RUST CO		Notes								
Sample Condition: Field Remarks:	FE(II) = 10		LUK									
Lab Pemarks:	FE(H) = 10	J MU/L										

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information														
Sample Id/Site Id:			246206 / 128	469	5	Sample Date	:		7/14/20	020 12:34:00	PM			
Location (TRS):			07N 06W 13	DCDB	1	Agency/Sam	pler:		MBMO	G / ICOPINI,	GARY			
Latitude/Longitude:			46° 21' 25" N	V 112° 17' 40"		Field Numbe	•		UPPE	R BULLION I	MINE FI	LUME		
Datum:			NAD27			Lab Date:				020 8:27:25 A				
Altitude:			7500		1	Lab/Analyst				G / TIMMER,		7.		
County/State:			JEFFERSON			Sample Metl		dling		3 / ru:0 ra:1 fu		_		
2								luning.		L RECOVER				
Site Type:			MINE DRAI	NAGE		Procedure T				L RECOVER	ABLE			
Geology:						Total Depth	· /		NR					
USGS 7.5' Quad:			BASIN 7 1/2		5	SWL-MP (ft	:):		NR					
PWS Id:					I	Depth Water	Enters	(ft):	NR					
Project: DLFORST, BASIN_WTRSHD														
					r Ion	Results								
G 1 : (G	``	-	mg/L	meq/L	р.					mg/L NR		eq/L		
Calcium (Ca)78.7703.931Bicarbonate (HCO3)Magnesium (Mg)27.8302.290Carbonate (CO3)											$0.000 \\ 0.000$			
Magnesium (Mg)         27.830         2.290           Sodium (Na)         4.820         0.210						oride (CO)	)			NR NR	0.000			
Potassium (	0.072		ate (SO4)				NR	0.000						
Iron (Fe)	6.345		ate (as N)				NR NR	0.000						
Manganese (Mn) 19.070 0.694 Silica (SiO2) NR						Fluoride (F) Orthophosphate (as P)					0.000			
Silica (SiO2	Orth	ophosphate		tal Anio		NR	$0.000 \\ 0.000$							
	Total Ca	tions		16.136 Trace Elem	ient R	Pesults (110/I		tai Anio	ons		0.000			
Aluminum (Al):	11,853.120	Cesium	(Cs):	5.010		olybdenum (		3.0	080	Strontium (S	Sr):	241.330	)	
Antimony (Sb):	42.310		um (Cr):	3.210		ckel (Ni):			.600	Thallium (T		< 0.250		
Arsenic (As):	5,555.840	Cobalt (		251.360		obium (Nb):			.250 U	Thorium (Th	n):	7.150		
Barium (Ba):	11.810	Copper		11,413.490		~ ``	lymium (Nd): 20.960				Tin (Sn): <			
Beryllium (Be):	1.440	Gallium		1.830		lladium (Pd)			800	Titanium (T		23.130	* *	
Boron (B): Bromide (Br):	156.270 NR	Lanthan Lead (P	um (La):	13.700 254.200		aseodymium bidium (Rb)			30 .750	Tungsten (W Uranium (U		<0.250 158.160		
Cadmium (Cd):	213.660	Lithium	/	35.010		ver (Ag):	).	NF		Vanadium (	, ,	9.550	)	
Cerium (Ce):	34.600	Mercury	< / >	NR		lenium (Se):			.250 U	Zinc (Zn):	• ).	29,330.	070	
		,	(8)					-		Zirconium (	Zr):	0.690 J		
			Field	Chemistry an	d Oth	er Analytic	al Resu	lts						
**Total Dissolved S	ίų,			ess as CaCO3 (	(mg/L	):	NR		nia (mg/I	·		NF		
**Sum of Diss. Con	( )		Hardness as					•	·	ons (µg/L):		NF	ł	
Field Conductivity (	• •			nity as CaCO3	· · ·	L):	NR	PCP (µ	<b>U</b> /			NF		
Lab Conductivity (µ	mhos):	NR	-	CaCO3 (mg/I	L):		NR		iorus, TD	ίς ο γ			.030 U	
Field pH:			Ryznar Stab	-					litrate (m	0 /		NF		
Lab pH:		NR		orption Ratio:						O2 (mg/L):			370	
Water Temp (°C):		uration Index:					Chloride (			NF				
Air Temp (°C):			Nitrite (mg/l			NR		Redox (m	<i>,</i>		68			
Nitrate + Nitrite (mg	· · · ·		•	ng/L as OH):			NR			Organic Carb	, U	·		
Total Kjeldahl Nitro				ed Inorganic C		n (mg/L):	NR		U	nic Carbon (n	<b>U</b> /	NF		
Total Nitrogen (mg/	L as N)	NR	•	5 (mg/L CaCC	)3)		NR	-		ng/L CaCO3)		NF		
As(III) (µg/L)		NR	As(V) (µg/L	)			NR	Total S	Susp Solid	ds (mg/L)		NI	ર	
Somela Carditia	CLEAD	LIGUT		<b>)</b>	Note	s								
Sample Condition: Field Remarks:			RUST COLOI	ι.										
riela Kemarks:	FE(II) = 10	5 MG/L												

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information													
Sample Id/Site Id:			Sample Date	e:	9	/22/2	020 12:15:00 F	M					
Location (TRS):		(	7N 06W	13 DCDB		Agency/San	npler:	Ν	/BM	G / ICOPINI, C	GARY		
Latitude/Longitude:		4	6° 21' 25	" N 112° 17' 4	0" W	Field Numb	er:	U	PPE	R BULLION M	1INE FL	UM	E
Datum:		1	NAD27			Lab Date:		1	1/9/2	020 10:14:47 A	М		
Altitude:		7	500			Lab/Analyst	:	Ν	1BM	G / TIMMER,	JACKIE	r	
County/State:		J	EFFERS	ON / MT		Sample Met		ing: G	RAE	3 / ru:1 ra:0 fu:	l fa:1		
Site Type:				AINAGE		Procedure T		e		DLVED			
Geology:						Total Depth (ft): NR							
USGS 7.5' Quad:			SWL-MP (ft): NR										
PWS Id:			Depth Wate	r Enters (ft	t): N	IR							
Project:		I	DLFORST	, BASIN WI	FRSHE	•		,					
Project: DLFORST, BASIN_WTRSHD Major Ion Results													
			mg/L	meq/L	•					mg/L		q/L	
Calcium (Ca	/	77.2		3.855		bonate (HCO3	5)			.000	0.000		
						inate (CO3)				.000	0.000		
Sodium (Na)         4.930         0.214         Chlor           Potassium (K)         2.840         0.073         Sulfat					ide (CI) ie (SO4)				.750 13.300	0.021			
					e (as N)				0.010 U	0.000			
					ide (F)				.560	0.029			
Silica (SiO2		phosphate (as	P)			0.020 U	0.000						
				Anions			16.992	2					
	Results (µg/												
Aluminum (Al):	8,623.450	Cesium (	/	6.130		lolybdenum (M	Mo):	1.380		Strontium (Sr	/	284.	
Antimony (Sb):	7.560	Chromiu	· · ·	1.090 J		ickel (Ni):		53.370		Thallium (Tl)			50 U
Arsenic (As): Barium (Ba):	556.050 13.590	Cobalt (C Copper (C		184.590 5,665.01		iobium (Nb): eodymium (N	d).	<0.250 16.340		Thorium (Th) Tin (Sn):	:	3.23	0 50 U
Beryllium (Be):	1.010 J	Gallium (		1.550		alladium (Pd):		1.000 J		Titanium (Ti)		12.4	
Boron (B):	144.200	Lanthanu		15.710		raseodymium		4.750		Tungsten (W)			50 U
Bromide (Br):	<10.000 U	Lead (Pb)		223.780		ubidium (Rb):		17.700		Uranium (U):		161.	
Cadmium (Cd):	197.730	Lithium (	Li):	32.890	Si	lver (Ag):		0.540 J	ſ	Vanadium (V	):	4.00	0
Cerium (Ce):	36.400	Mercury	(Hg):	NR	Se	Selenium (Se): <0.250 U Zinc (Zn):							18.220
			E: al	d Chamistan		than Analastia	al Daaulta			Zirconium (Z	r):	0.99	0 J
**Total Dissolved So	olide (mg/L).	1118 30		d Chemistry rdness as CaC		ther Analytic	NR	Ammon	ia (m	a/I )∙			NR
**Sum of Diss. Cons	( U )			s as CaCO3:	.05 (m	g/L).	297.97			rbons (µg/L):			NR
Field Conductivity (		1231		kalinity as Ca	CO3 (n	ng/L):	NR	PCP (µg		100115 (µg/ L).			NR
Lab Conductivity (µ1	,	1350		y as CaCO3 (	· · ·	0 /	0			TD (mg/L):			<0.030 U
Field pH:	,	2.79		Stability Index	· · ·		16.164	Field Ni		( U )			NR
Lab pH:		2.96	Sodium	Adsorption Ra	atio:		0.126	Field Di	ssolv	ed O2 (mg/L):			7.330
Water Temp (°C):	dex:		-6.602	Field Ch	nlorid	e (mg/L):			NR				
Air Temp (°C):		NR	Nitrite (1	ng/L as N):			<0.010 U	Field Re	edox (	(mV):			687
Nitrate + Nitrite (mg	/L as N)	NR	Hydroxi	de (mg/L as C	DH):		0.000	Lab, Dis	ssolve	ed Organic Car	bon (mg	/L):	NR
Total Kjeldahl Nitrog	gen (mg/L as N)	NR	Lab, Dis	solved Inorga	nic Car	bon (mg/L):	NR	Lab, Tot	tal Or	rganic Carbon (	mg/L):		NR
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L CaCO3							379.000	Acidity	to 8.3	(mg/L CaCO3	5)		721.000
As(III) (µg/L)		NR	As(V) (µ	ıg/L)			NR	Total Su	isp So	olids (mg/L)			NR
	Note												
Sample Condition:	CLEAR - S	LIGHT RU	JST COL	OR									

Field Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Lab Remarks:

Site Name: BULLION MINE - BBUS50H Compare to Water Quality Standards

Location Information												
Sample Id/Site Id:		249616 / 12	28469	Sample Date	e:	9/22/2	2020 12:15:00 F	РМ				
Location (TRS):		07N 06W 1	3 DCDB	Agency/San	npler:	MBM	IG / ICOPINI, O	GARY				
Latitude/Longitude:		46° 21' 25"	N 112° 17' 40"	W Field Numb	er:	UPPE	ER BULLION N	1INE FI	LUME			
Datum:		NAD27		Lab Date:			2020 10:14:48 A					
Altitude:		7500		Lab/Analyst			IG / TIMMER,		7.			
County/State:		JEFFERSO	N/MT	Sample Met			B / ru:1 ra:0 fu:		-			
2		MINE DRA		1		e						
Site Type:		WIINE DRA	IINAGE		Procedure Type: TOTAL RECOVERABLE							
Geology:				1	Total Depth (ft): NR							
USGS 7.5' Quad:		BASIN 7 1	/2'	SWL-MP (f	t):	NR						
PWS Id:				Depth Wate	r Enters	(ft): NR						
Project: DLFORST, BASIN_WTRSHD												
		_		r Ion Results			_		_			
C.1		mg/L	meq/L	D' L L L L L			mg/L		eq/L			
Calcium (Ca Magnesium	,	76.490 25.980	3.817 2.138	Bicarbonate (HC Carbonate (CO3			NR NR	$0.000 \\ 0.000$				
Sodium (Na		4.790	Chloride (Cl)	.)		NR	0.000					
Potassium (1		2.730	Sulfate (SO4)			NR	0.000					
Iron (Fe)	, ,	109.173	Nitrate (as N)			NR	0.000					
Manganese		14.328	0.522	Fluoride (F)			NR	0.000				
Silica (SiO2		NR		Orthophosphate			NR	0.000				
	Total C	ations	12.504	ant Docults (ug/		tal Anions		0.000				
Aluminum (Al):	8,600.820	Cesium (Cs):	5.170	ent Results (μg/ Molybdenum (Ν		1.830	Strontium (Sr	) <b>.</b>	289.730			
Antimony (Sb):	8,000.820	Chromium (Cr):	2.150	Nickel (Ni):	10).	56.830	Thallium (TI)		0.580 J			
Arsenic (As):	1,162.200	Cobalt (Co):	190.590	Niobium (Nb):		<0.250 U	Thorium (Th)		4.330			
Barium (Ba):	14.390	Copper (Cu):	5,759.330	Neodymium (No	d):	17.730	Tin (Sn):		<0.250 U			
Beryllium (Be):	1.190 J	Gallium (Ga):	1.430	Palladium (Pd):					14.280			
Boron (B):	148.820	Lanthanum (La):	13.960	Praseodymium (		4.210	Tungsten (W)	:	<0.250 U			
Bromide (Br):	NR	Lead (Pb):	236.960	Rubidium (Rb):		14.750	Uranium (U):		161.860			
Cadmium (Cd):	222.960	Lithium (Li):	31.070	Silver (Ag):		NR	Vanadium (V	):	4.550			
Cerium (Ce):	29.600	Mercury (Hg):	NR	Selenium (Se):		<0.250 U	Zinc (Zn): Zirconium (Zi	.).	22,297.880 1.420			
		Field	l Chemistry an	d Other Analytic	al Resu	lts			1.420			
**Total Dissolved So	olids (mg/L):	NR Field Hard	·	•	NR	Ammonia (mg	/L):		NR			
**Sum of Diss. Cons	stituents (mg/L	): NR Hardness a	s CaCO3:		297.93	T.P. Hydrocarl	bons (µg/L):		NR			
Field Conductivity (	umhos):	1231 Field Alkal	inity as CaCO3	(mg/L):	NR	PCP (µg/L):			NR			
Lab Conductivity (µ	mhos):	NR Alkalinity a	as CaCO3 (mg/I	L):	NR	Phosphorus, T	D (mg/L):		<0.030 U			
Field pH:	,	•	bility Index:	,	19.133	Field Nitrate (1			NR			
Lab pH:		•	sorption Ratio:		0.126	Field Dissolve	0,		7.330			
Water Temp (°C):		5.05 Langlier Sa	*			Field Chloride			NR			
Air Temp (°C):		NR Nitrite (mg			NR	Field Redox (n			687			
Nitrate + Nitrite (mg	/Las N)	、 U	(mg/L as OH):		NR		l Organic Carbo	n (mø/I				
Total Kjeldahl Nitro	,	•	ved Inorganic C	Carbon (mg/L).	NR		anic Carbon (m	ν U	NR			
Total Nitrogen (mg/I		· · · · · · · · · · · · · · · · · · ·	4.5 (mg/L CaCC		NR		(mg/L CaCO3)	g/L).	NR			
As(III) (µg/L)	2 40 1 1)	NR As(V) (µg/		,	NR	Total Susp Sol			NR			
το(111) (µg/L)		$1$ $(\mu g)$	L)	Notes	INIC	10tal Susp Sol	ius (iiig/ L)		INIX			
Sample Condition:	CLEAR -	SLIGHT RUST COLO	DR									

Sample Condition: Field Remarks:

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

Location Information													
Sample Id/Site Id: 222063 / 285107 Sample Date: 9/13/2016 11:20:00 AM													
Location (TRS):		0	7N 06W	/ 13 DCDE	3	Agency/Sa				G / GARY ICO			
Latitude/Longitude:				6" N 112°		0.1				ER BULLION			
Datum:			JAD83			Lab Date:				2016 6:51:15 I	РМ		
Altitude:			100			Lab/Analys	t.			G / TIMMER,			
County/State:				SON / MT		Sample Me				3 / ru:1 ra:0 fu:			
Site Type:				RAINAGE		Procedure 7		-		DLVED	1 14.1		
• •		N		KAINAUL			Total Depth (ft): NR						
Geology:						1							
USGS 7.5' Quad:						SWL-MP (	·		١R				
PWS Id:						Depth Wate	er Enters (f	t): N	١R				
Project: DLFORST, BASIN_WTRSHD													
						Ion Results				m a/I		~/T	
Calcium (C	a)	84.9	mg/L 50	meq/I 4.239		rbonate (HCO3	)		0	<b>mg/L</b> .000	me 0.000	ΨL	
Magnesium	onate (CO3)	)			.000	0.000							
						oride (Cl)			0.	.920	0.026		
						ate (SO4)				78.900	16.224		
						ate (as N)							
Silica (SiO	ride (F) ophosphate (as	D)			0.020 U	$0.016 \\ 0.000$							
511164 (510)	ophosphate (as		Anions		0.020 0	16.271							
Total Cations 11.484 Trace Element													
Aluminum (Al):	8,334.000	Cesium (0	/	3.890		Molybdenum (	Mo):	0.950.		Strontium (Sr	/	280.3	
Antimony (Sb):	3.570	Chromiur		< 0.2		Nickel (Ni):		61.150		Thallium (TI)			50 U
Arsenic (As): Barium (Ba):	1,285.750 11.000	Cobalt (C Copper (C	/	173.2	3.250	Niobium (Nb): Neodymium (N		<0.250 17.540		Thorium (Th) Tin (Sn):		6.900 < 0.2	0 50 U
Beryllium (Be):	1.280	Gallium (	,	0.930		Palladium (Pd)		0.860		Titanium (Ti)		-0.2 9.78	
Boron (B):	42.550	Lanthanu		16.68		Praseodymium		4.460		Tungsten (W			50 U
Bromide (Br):	<10.000 U	Lead (Pb)	:	173.9	980	Rubidium (Rb)	:	13.220	)	Uranium (U):		174.	140
Cadmium (Cd):	175.760	Lithium (		21.3	50 J	Silver (Ag):		< 0.250		Vanadium (V	/	1.03	
Cerium (Ce):	36.570	Mercury (	(Hg):	NR		Selenium (Se):		< 0.250	) U	Zinc (Zn):			40.490
			Fi	eld Chemi	strv and	Other Analyti	cal Result	s		Zirconium (Z	r):	<0.2	50 U
**Total Dissolved S	olids (mg/L):	1052.33		lardness as	•	•	NR	Ammon	ia (m	g/L):			NR
**Sum of Diss. Con	stituents (mg/L)	: 1052.33	Hardne	ss as CaCC	03:	( )	323.87	T.P. Hy	droca	rbons (µg/L):			NR
Field Conductivity (	µmhos):	1360	Field A	lkalinity as	CaCO3	(mg/L):	NR	PCP (µg	g/L):				NR
Lab Conductivity (µ	mhos):	1534	Alkalin	ity as CaC	O3 (mg/l	L):	0	Phospho	orus, '	TD (mg/L):			<0.030 U
Field pH:		2.84	Ryznar	Stability In	ndex:		16.082	Field N	itrate	(mg/L):			NR
Lab pH:		2.96	Sodium	n Adsorptio	n Ratio:		0.1451	Field D	issolv	ed O2 (mg/L):			9.450
Water Temp (°C):		6.6	Langlie	er Saturatio	n Index:		-6.561	Field Cl	nlorid	e (mg/L):			NR
Air Temp (°C):		NR	Nitrite	(mg/L as N	D:		<0.010 U	J Field Re	edox	(mV):			712
Nitrate + Nitrite (mg	g/L as N)	NR	Hydrox	ide (mg/L	as OH):		0.000	Lab, Di	ssolv	ed Organic Car	bon (mg/	/L):	NR
Total Kjeldahl Nitro	gen (mg/L as N)	) NR	Lab, D	issolved In	organic (	Carbon (mg/L):	NR	Lab, To	tal O	rganic Carbon	(mg/L):		NR
Total Nitrogen (mg/	L as N)	NR	Acidity	to 4.5 (mg	/L CaCO	03)	351.000	Acidity	to 8.3	3 (mg/L CaCO	3)		553.000
As(III) (µg/L)		NR	As(V)	(µg/L)			NR	Total St	isp So	olids (mg/L)			NR
					]	Notes							
Sample Condition:													
Field Remarks:													

Field Remarks:

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

Location Information													
Sample Id/Site Id: 222064 / 285107 Sample Date: 9/13/2016 11:20:00 AM													
Location (TRS):		07N	06W 13 DCDB	Agency/Sa	mpler:	MB	MG / GARY ICC	PINI					
Latitude/Longitude:		46° 2	1' 26" N 112° 17' 45	0 1		LOV	WER BULLION						
Datum:		NAD		Lab Date:		10/1	9/2016 6:51:15 F	РМ					
Altitude:		7100		Lab/Analy	st:	MB	MG / TIMMER,	JACKI	E				
County/State:		IEFE	ERSON / MT	Sample M			AB / ru:0 ra:1 fu:						
Site Type:			E DRAINAGE	Procedure		U	AL RECOVERA						
Geology:			Diamaron	Total Dept	•1	NR		IDEE					
<i>e.</i>				1		NR							
USGS 7.5' Quad:				SWL-MP	· /								
PWS Id:				Depth Wat	ter Enters	(ft): NR							
Project: DLFORST, BASIN_WTRSHD													
		m	Ma g/L meq/L	jor Ion Results			mg/L	ma	eq/L				
Calcium (C	a)	96.260		Bicarbonate (H0	203)		NR	0.000	; <b>4</b> /L				
Magnesium	/	30.440		Carbonate (CO3	,		NR	0.000					
Sodium (Na	5.730	Chloride (Cl)	<i>,</i>		NR	0.000							
Potassium (K) 3.090 0.079 Sulfa							NR	0.000					
Iron (Fe)		71.339		Nitrate (as N)			NR	0.000					
Manganese	14.966	Fluoride (F)	( <b>D</b> )		NR	0.000							
Silica (SiO2	2) Total Ca	NR	12.791	Orthophosphate		al Anions	NR	$0.000 \\ 0.000$					
	i otai Ca	ttions		ement Results (µg				0.000					
Aluminum (Al):	8,519.290	Cesium (Cs):	4.330	Molybdenum (		1.640	Strontium (Sr	):	327.430				
Antimony (Sb):	4.580	Chromium (Cr	): <0.250 U	Nickel (Ni):		63.670	Thallium (Tl)		<0.250 U				
Arsenic (As):	1,848.430	Cobalt (Co):	199.810	Niobium (Nb):		<0.250 U	Thorium (Th)	:	5.630				
Barium (Ba):	12.360	Copper (Cu):	8,733.510	Neodymium (N	/	19.220	Tin (Sn):		<0.250 U				
Beryllium (Be):	1.400	Gallium (Ga):	1.330	Palladium (Pd)		1.130 J	Titanium (Ti)		11.670				
Boron (B):	48.940	Lanthanum (La	/	Praseodymium		4.830	Tungsten (W)		<0.250 U				
Bromide (Br):	NR	Lead (Pb):	191.490	Rubidium (Rb)	):	16.080	Uranium (U):		177.730				
Cadmium (Cd): Cerium (Ce):	206.020 40.210	Lithium (Li): Mercury (Hg):	27.880 NR	Silver (Ag): Selenium (Se):		NR 1.080 J	Vanadium (V Zinc (Zn):	):	19.270 26,831.310				
Certuin (Ce).	40.210	Mercury (11g).	INK	Selellulli (Se).	•	1.080 J	Zirconium (Zi	r):	<0.250 U				
			Field Chemistry a	and Other Analyt	ical Resu	lts	2	.).	0.200 0				
**Total Dissolved S	olids (mg/L):	NR Field	Hardness as CaCO	3 (mg/L):	NR	Ammonia (m	g/L):		NR				
**Sum of Diss. Con	stituents (mg/L	): NR Hard	ness as CaCO3:		365.65	T.P. Hydroca	rbons (µg/L):		NR				
Field Conductivity (	µmhos):	1360 Field	Alkalinity as CaCC	03 (mg/L):	NR	PCP (µg/L):			NR				
Lab Conductivity (µ	mhos):		linity as CaCO3 (mg	g/L):	NR	Phosphorus,	TD (mg/L):		<0.030 U				
Field pH:		5	ar Stability Index:			Field Nitrate			NR				
Lab pH:		NR Sodi	um Adsorption Ratio	o:	0.1365	Field Dissolv	ed O2 (mg/L):		9.450				
Water Temp (°C):			lier Saturation Index	x:		Field Chlorid	e (mg/L):		NR				
Air Temp (°C):		NR Nitri	te (mg/L as N):		NR	Field Redox	(mV):		712				
Nitrate + Nitrite (mg	g/L as N)	NR Hydr	oxide (mg/L as OH	):	NR	Lab, Dissolve	ed Organic Carbo	n (mg/I	L): NR				
Total Kjeldahl Nitro	gen (mg/L as N	) NR Lab,	c Carbon (mg/L):	NR	Lab, Total Or	rganic Carbon (m	g/L):	NR					
Total Nitrogen (mg/	L as N)	NR Acid	ity to 4.5 (mg/L CaO	CO3)	NR	Acidity to 8.3	8 (mg/L CaCO3)		NR				
As(III) (µg/L)		NR As(V	/) (μg/L)		NR	Total Susp So	olids (mg/L)		NR				
		,		Notes		1							
Sample Condition:													
Field Remarks:													

Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

				Loca	tion In	nformation							
Sample Id/Site Id:		2	25092 / 2	85107		Sample Date	:	8/31	/2017 1:35:00	PM			
Location (TRS):		0	7N 06W	13 DCDB		Agency/Sam	pler:	MB	MG / ICOPINI	, GARY			
Latitude/Longitude:		4	6° 21' 26	" N 112° 17' 45	5" W	Field Numbe	·	LOV	VER BULLIO	N MINE E	RAIN	I	
Datum:			IAD83			Lab Date:		9/29	/2017 7:19:33	AM			
Altitude:		7	100			Lab/Analyst	:	MB	MG / TIMMEI	R. JACKIE	ţ		
County/State:			EFFERS	ON / MT		Sample Met			AB / ru:1 ra:0 f				
Site Type:				AINAGE		Procedure T		C	SOLVED				
Geology:		1	III VE DI	in a roll		Total Depth	- 1		NR				
USGS 7.5' Quad:						SWL-MP (ft	. ,	NR					
-						`	· · · · · · · · · · · · · · · · · · ·						
PWS Id: Depth Water Enters (ft): NR													
Project: DLFORST, BASIN_WTRSHD Major Ion Results													
Major Ion Results mg/L meq/L meq/L meq/L													
Calcium (Ca) 90.580 4.520 Bicarbonate (HCO3) 0.000 0.000													
Magnesium		29.6 5.48			onate (CO3)	<i>.</i>		0.000	0.000				
Sodium (Na		ride (Cl)			0.780	0.022							
Potassium (		te (SO4)			813.400	16.943	3						
Iron (Fe)		te (as N)			0.060 0.540	0.004 0.028							
Manganese Silica (SiO2		ride (F) ophosphate (a:	e P)		0.340 0.060 J	0.028							
5111ca (5102	Total Ca	34.2 tions	00	14.085	Offin	opnospilate (a	Total A	Anions	0.000 J	16.998	3		
					ement	Results (µg/I					-		
Aluminum (Al):							Mo):	4.070	Strontium	(Sr):	299.6	30	
Antimony (Sb):	6.490	Chromiur		1.620		Nickel (Ni):		68.180	Thallium (		< 0.25		
Arsenic (As):	1,733.110	Cobalt (C	/	220.070		Niobium (Nb):		<0.250 U	Thorium ( Tin (Sn):	Th):	10.18		
Barium (Ba):	14.580	Copper (C		10,645.00		Neodymium (N		22.730	<0.25 14.75				
Beryllium (Be): Boron (B):	1.890 80.870	Gallium ( Lanthanu		1.640 20.200		Palladium (Pd) Praseodymium		1.450 5.510	Titanium (Ti): 14. Tungsten (W): <0.				
Bromide (Br):	<10.000 U	Lead (Pb)		269.250		Rubidium (Rb)		15.450	Uranium (		197.2		
Cadmium (Cd):	273.340	Lithium (		27.060		Silver (Ag):	).	1.390	Vanadium		2.090		
Cerium (Ce):	43.850	Mercury (		NR		Selenium (Se):		1.000 J	Zinc (Zn):			5.000	
. ,									Zirconium	(Zr):	< 0.25	50 U	
				d Chemistry a		•							
**Total Dissolved S	· • • /			ardness as CaC	:03 (m	ig/L):	NR	Ammonia		<b>`</b>		NR	
**Sum of Diss. Con Field Conductivity (	( 0 )	1148.86		s as CaCO3:	~~~ (		348.05 NR	PCP (µg/L	ocarbons (µg/I	_):		NR NR	
	. ,	1519		kalinity as CaC	· ·	U /	NK 0	0.0	.): 1s, TD (mg/L):			nk 0.040 J	
Lab Conductivity (µ Field pH:	imnos):	3.34		ty as CaCO3 (1 Stability Index	- /		0 16.126		ate (mg/L):			0.040 J NR	
Lab pH:		2.86		Adsorption Ra			0.1166		olved O2 (mg/	T).		6.610	
Water Temp (°C):		17.12		Saturation Inc			-6.633		oride (mg/L):	L).		NR	
Air Temp (°C):		NR	0	mg/L as N):	JCX.			Field Red				693	
Nitrate + Nitrite (mg	v/Las N)	NR	· · · ·	de (mg/L as O	H)·		0.000		olved Organic	Carbon (m	α/I )•	NR	
Total Kjeldahl Nitro				ssolved Inorgai		rbon (mg/L):	0.000 NR	,	Organic Carb		<i>,</i>	NR	
Total Nitrogen (mg/			291.000		8.3 (mg/L Ca			516.000					
As(III) (µg/L)	L 45 11)	NR NR	As(V) (	to 4.5 (mg/L C	.ac05	,	291.000 NR		Solids (mg/L)			510.000 NR	
τs(III) (µg/L)		INIX	лэ(v) (	ug/L)	Not	tes	TAIX	i otar Susp	, sonus (mg/L	,			
Sample Condition:	CLEAR				110								
Field Remarks:		COLLECT	ED FROM	1 LOWER FLU	UME								

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

Location Information													
Sample Id/Site Id:			225094 / 28	5107		Sample Date:		8/31	/2017	1:35:00 PM	A		
Location (TRS):			07N 06W 13	DCDB		Agency/Samp	ler:	MB	MG /	ICOPINI, C	JARY		
Latitude/Longitude	:		46° 21' 26" 1	N 112° 17' 45"	W	Field Number:				BULLION		RAIN	
Datum:	-		NAD83			Lab Date:				7:19:35 A			
Altitude:			7100			Lab/Analyst:				TIMMER,		t	
County/State:			JEFFERSON	J/MT		Sample Metho	d/Hand					-	
Site Type:			MINE DRA			Sample Method/Handling: GRAB / ru:0 ra:1 fu:0 fa:0 Procedure Type: TOTAL RECOVERABLE							
••			WIINE DKA	INAGE		•1		NR	IALN	LECOVER/	ADLE		
Geology:													
USGS 7.5' Quad:						SWL-MP (ft):		NR					
PWS Id:						Depth Water I	Enters (f	t): NR					
Project:			DLFORST,	BASIN_WTRS									
					r Ion	Results						~/ <b>T</b>	
Calcium (C	<b>'</b> a)	90	<b>mg/L</b> ).950	meq/L 4.538	Bic	arbonate (HCC	13)			mg/L NR	me 0.000	q/L	
Magnesiun	/		0.690	2.443		rbonate (CO3)	(5)			NR	0.000		
Sodium (N		5.	730	0.249		loride (Cl)				NR	0.000		
Potassium	(K)		000	0.077		fate (SO4)				NR	0.000		
Iron (Fe) 102.150				3.658		rate (as N)				NR	0.000		
Manganese (Mn) 16.415 Silica (SiO2) NR				0.598		oride (F) hophosphate (a			NR NR	$0.000 \\ 0.000$			
Silica (SIO	13.996	On	nophosphate (a		d Anions		INK	0.000					
	Total Ca				ient ]	Results (µg/L)					0.000		
Aluminum (Al):	Aluminum (Al): 10,620.000 Cesium (Cs): 5.21						lo):	2.140	St	trontium (S	r):	306.13	30
Antimony (Sb):	7.590	Chromiu		2.920		ickel (Ni):		68.680		hallium (Tl	,	< 0.25	
Arsenic (As):	2,125.440	Cobalt (		225.100		iobium (Nb):	0	<0.250 U		horium (Th	):	10.920	
Barium (Ba):	14.750 1.920	Copper ( Gallium	,	10,438.330 1.820		leodymium (Nd	l):	23.750 1.440		in (Sn):	\.	<0.25	
Beryllium (Be): Boron (B):	84.530	Lanthan	< / >	21.090		alladium (Pd): raseodymium (	Dr).	5.710		itanium (Ti ungsten (W		<0.25	
Bromide (Br):	NR	Lead (Pt		282.770		ubidium (Rb):	11).	15.860		ranium (U)		209.83	
Cadmium (Cd):	277.400	Lithium	/	27.730		ilver (Ag):		NR		anadium (V		2.430	
Cerium (Ce):	44.920	Mercury	(Hg):	NR		elenium (Se):		<0.250 U	J Zi	inc (Zn):	/	29,720	0.000
				<b>a</b>	1.0		<b>D U</b>		Zi	irconium (Z	(r):	< 0.25	0 U
*******	N . 11 1. ( /T.).	ND		•		her Analytical			/ <b>т</b> .)	N.			ND
**Total Dissolved S **Sum of Diss. Cor		NR ): NR	Hardness a	ness as CaCO3	(mg	/L):	NR 240 21	Ammonia ( T.P. Hydro	· · ·				NR NR
Field Conductivity	( )			inity as CaCO3.	3 (m	g/I )•	NR	PCP (µg/L)		is (μg/L).			NR
Lab Conductivity (	. ,	NR		as CaCO3 (mg		g/L).	NR	Phosphorus		(ma/L)·			0.050 J
Field pH:	tillios).	3.34	-	bility Index:	/L).			Field Nitrat		ίų γ			NR
Lab pH:		NR	-	lsorption Ratio				Field Disso	0	. ,			6.610
Water Temp (°C):				aturation Index				Field Chlor		· • • /			NR
Air Temp (°C):		NR	Nitrite (mg		-		NR	Field Redo	· ·	U /			693
Nitrate + Nitrite (m	g/L as N)	NR		(mg/L as OH):			NR	Lab, Dissol	lved O	, Irganic Carl	oon (mg	/L):	NR
Total Kjeldahl Nitro	,	) NR		lved Inorganic		oon (mg/L):	NR	Lab, Total		e	ν U	,	NR
Total Nitrogen (mg		NR		4.5 (mg/L CaC		/	NR	Acidity to 8	0		<b>U</b> /		NR
As(III) (µg/L)		NR	As(V) (µg/	Ľ)	,		NR	Total Susp	Solids	s (mg/L)			NR
					Not	es		1					
Sample Condition:	CLEAR												
Field Remarks:	SAMPLE 0	COLLECT	ED FROM	LOWER FLUN	ИE								
Lab Remarks:													

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

Sample Ide/Site Ide/Si	
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$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	
Site Type:MINE DRAINAGEProcedure Type:DISSOLVEDGeology:Total Depth (ft):NRUSGS 7.5' Quad:SWL-MP (ft):NRPWS Id:Depth Water Enters (ft):NRProject:DLFORST, BASINProject:DLFORST, BASINCalcium (Ca)82.920Aganesium (Mg)28.400Sodium (Na)5.130O.233Carbonate (HCO3)Magenesium (Mg)28.400Sodium (Na)5.130O.233Carbonate (CO3)Outo0.000Sodium (Na)5.130O.233Chloride (CI)Potassium (K)2.750Iron (Fe)128.7004.609Nitrate (as N)Onthopsphate (as P)0.000Maganese (Mn)17.415Onthopsphate (as P)0.020 UOnthopsphate (as P)0.020 UAustinony (Sb):21.850Chromium (Cr):2.460Narsenic (As):3.0841.10Coalu (Co3):Cesium (Cs):Silte (Si):2.030Silte (Si):2.030Silte (Si):2.030Cadium (Ga):1.490Paralum (Ba):14.200Copper (Cu):10.460.000Nodell(Co):2.337Cadium (Ba):14.200Cadium (Ga):1.490Paralum (Ba):14.200Casium (Ca):2.030Silte (Si):2.030Silte (Si):2.030Calu (Ca):3.1370Reree (Ma):1.400Par	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
PWS Id:Depth Water Enters (ft):NRProject:DLFORST, BASIN_WTRSHDMajor Ion ResultsCalcium (Ca)mg/L <th c<="" td=""></th>	
$\begin{tabular}{ c c c c c } \hline Project: DLFORST, BASIN_WTRSHD & $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$	
Major Ion Results         mg/L       mg/L       mg/L       mg/L         Calcium (Ca) $82.920$ $4.138$ Bicarbonate (HCO3)       0.000       0.000         Magnersium (Mg) $28.400$ $2.337$ Carbonate (CO3)       0.000 $0.000$ Sodium (Na) $5.130$ $0.223$ Chloride (Cl) $0.820$ $0.023$ Potassium (K) $2.750$ $0.000$ $0.000$ $0.000$ Magnese (Mn) $17.415$ $0.634$ Fluoride (F) $0.020$ U $0.000$ Mainmum (Al): $11.550.000$ Centract Results ( $g/L$ Antimony (Sb): $2.3850$ Chronium (Cr): $2.460$ Nickle (Ni): $2.030$ Structure (S P)         Arract Lement Hesults ( $g/L$ Total Cation $19.278$ Matiminum (Al): $11.550.00$ Centract Results ( $g/L$ ) <th cols<="" td=""></th>	
Major Ion Results         mg/L       mg/L       mg/L       mg/L         Calcium (Ca) $82.920$ $4.138$ Bicarbonate (HCO3)       0.000       0.000         Magnersium (Mg) $28.400$ $2.337$ Carbonate (CO3)       0.000 $0.000$ Sodium (Na) $5.130$ $0.223$ Chloride (Cl) $0.820$ $0.023$ Potassium (K) $2.750$ $0.000$ $0.000$ $0.000$ Magnese (Mn) $17.415$ $0.634$ Fluoride (F) $0.020$ U $0.000$ Mainmum (Al): $11.550.000$ Centract Results ( $g/L$ Antimony (Sb): $2.3850$ Chronium (Cr): $2.460$ Nickle (Ni): $2.030$ Structure (S P)         Arract Lement Hesults ( $g/L$ Total Cation $19.278$ Matiminum (Al): $11.550.00$ Centract Results ( $g/L$ ) <th cols<="" td=""></th>	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	
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$\begin{array}{c c c c c c c c c c c c c c c c c c c $	
Total Cations14.582Total Anions19.278Trace Element Results ( $\mu g/L$ )Aluminum (Al):11,550.000Cesium (Cs):5.870Molybdenum (Mo):2.030Strontium (Sr):282.500Antimony (Sb):21.850Chromium (Cr):2.460Nickel (Ni):73.660Thallium (Tl):<0.250 U	
Trace Element Results (µg/L):Aluminum (Al):11,550.000Cesium (Cs):5.870Molybdenum (Mo):2.030Strontium (Sr):282.500Antimony (Sb):21.850Chromium (Cr):2.460Nickel (Ni):73.660Thallium (Tl):<0.250 U	
Aluminum (Al):11,550.000Cesium (Cs):5.870Molybdenum (Mo):2.030Strontium (Sr):282.500Antimony (Sb):21.850Chromium (Cr):2.460Nickel (Ni):73.660Thallium (Tl):<0.250 U	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	
Boron (B):       17.990       Lanthanum (La):       21.410       Praseodymium (Pr):       6.080       Tungsten (W):       <0.250 U	
Bromide (Br):       <10.000 U	
$ \begin{array}{c cccc} Cadmium (Cd): & 307.570 \\ Cerium (Ce): & 44.580 \\ \end{array} \begin{array}{c} Lithium (Li): & 32.920 \\ Mercury (Hg): \\ NR \\ \end{array} \begin{array}{c} Silver (Ag): \\ Selenium (Se): \\ \end{array} \begin{array}{c} < 0.250 \ U \\ < 0.250 \ U \\ Zirc (Zn): \\ Zirconium (Zr): \\ \end{array} \begin{array}{c} 7.280 \\ 31,030.000 \\ < 0.250 \ U \\ \end{array} \begin{array}{c} \\ > 0.250 \ U \\ Zirconium (Zr): \\ \end{array} \begin{array}{c} \\ > 0 \\ Zirconium (Zr): \\ \end{array} \begin{array}{c} \\ > 0 \\ Zirconium (Zr): \\ \end{array} \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	
Zirconium (Zr):        <0.250 U	
Field Chemistry and Other Analytical Results         **Total Dissolved Solids (mg/L):       1280.36       Field Hardness as CaCO3 (mg/L):       NR       Ammonia (mg/L):       NR         **Sum of Diss. Constituents (mg/L):       1280.36       Hardness as CaCO3:       323.95       T.P. Hydrocarbons (µg/L):       NR         Field Conductivity (µmhos):       1300       Field Alkalinity as CaCO3 (mg/L):       NR       PCP (µg/L):       NR         Lab Conductivity (µmhos):       1792       Alkalinity as CaCO3 (mg/L):       0       Phosphorus, TD (mg/L):       0.040 J	
**Total Dissolved Solids (mg/L):1280.36 Field Hardness as CaCO3 (mg/L):NRAmmonia (mg/L):NR**Sum of Diss. Constituents (mg/L):1280.36 Hardness as CaCO3:323.95T.P. Hydrocarbons (µg/L):NRField Conductivity (µmhos):1300Field Alkalinity as CaCO3 (mg/L):NRPCP (µg/L):NRLab Conductivity (µmhos):1792Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):0.040 J	
Field Conductivity (μmhos):1300Field Alkalinity as CaCO3 (mg/L):NRPCP (μg/L):NRLab Conductivity (μmhos):1792Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):0.040 J	
Lab Conductivity (µmhos):1792Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):0.040 J	
Field pH:2.61Ryznar Stability Index:16.193Field Nitrate (mg/L):NR	
Lab pH:2.87Sodium Adsorption Ratio:0.1209Field Dissolved O2 (mg/L):7.900	
Water Temp (°C):14.1Langlier Saturation Index:-6.661Field Chloride (mg/L):NR	
Air Temp (°C):     NR     Nitrite (mg/L as N):     <0.010 U Field Redox (mV):     700	
Nitrate + Nitrite (mg/L as N)     NR     Hydroxide (mg/L as OH):     0.000     Lab, Dissolved Organic Carbon (mg/L):     NR	
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Inorganic Carbon (mg/L): NR Lab, Total Organic Carbon (mg/L): NR $T \in INC = (1 - C - C - C)$	
Total Nitrogen (mg/L as N)     NR     Acidity to 4.5 (mg/L CaCO3)     479.000     Acidity to 8.3 (mg/L CaCO3)     809.000	
As(III) (µg/L) NR As(V) (µg/L) NR Total Susp Solids (mg/L) NR Notes	
Sample Condition: CLEAR	
Field Remarks: CLEANED OUT FLUME AFTER 11 MONTHS OF FLOW Lab Remarks:	

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

				Location	n Information						
Sample Id/Site Id:			230897 / 28	5107	Sample Date:		8/1/20	018 11:00:00 A	M		
Location (TRS):			07N 06W 13	B DCDB	Agency/Samp	oler:		G / ICOPINI, O E/DUAIME, 1		ICGRA	ATH,
Latitude/Longitude	:		46° 21' 26" 1	N 112° 17' 45" V	W Field Number	r:	LOW	ER BULLION	MINE D	RAIN	
Datum:			NAD83		Lab Date:		9/4/20	)18 10:45:05 A	М		
Altitude:			7100		Lab/Analyst:		MBM	G / TIMMER,	JACKIE		
County/State:			JEFFERSON	N/MT	Sample Meth	od/Hand		3 / ru:0 ra:1 fu:			
Site Type:			MINE DRA		Procedure Type: TOTAL RECOVERAB						
Geology:				IIIII0E	Total Depth (ft): NR						
USGS 7.5' Quad:					SWL-MP (ft): NR						
PWS Id:											
			DIFORT	DACDI WTDC	Depth Water	Enters (	II): NK				
Project:			DLFORSI,	BASIN_WTRS							
			mg/L	meg/L	· Ion Results			mg/L	mee	a/L	
Calcium (C	la)	82	2.540	4.119	Bicarbonate (HC	23)		NR	0.000	1/12	
Magnesiun	/		3.460	2.342	Carbonate (CO3)	,		NR	0.000		
Sodium (N		4.	660	0.203	Chloride (Cl)			NR	0.000		
Potassium	(K)	2.	910	0.074	Sulfate (SO4)			NR	0.000		
Iron (Fe)		12	28.675	4.608	Nitrate (as N)			NR	0.000		
Manganese			7.455	0.635 Fluoride (F)				NR	0.000		
Silica (SiO	/	R		Orthophosphate (			NR	0.000			
	Total Ca	tions		14.517			al Anions		0.000		
Aluminum (Al):	11,340.000	Cesium	$(C_{\alpha})_{\alpha}$	5.900	ent Results (µg/L Molybdenum (M		2.270	Strontium (S	·	287.69	00
Antimony (Sb):	23.420	Chromiu		3.380	Nickel (Ni):	<i>MO</i> ).	76.560	Thallium (T	,	<0.250	
Arsenic (As):	3,500.210	Cobalt (		238.970	Niobium (Nb):		<0.250 U	Thorium (Th		11.640	
Barium (Ba):	13.990	Copper (		10.312.500	Neodymium (N	24.320	Tin (Sn):	/	< 0.250		
Beryllium (Be):	2.130	Gallium	/	1.860	Palladium (Pd):		2.140	Titanium (Ti		12.000	
Boron (B):	20.350	Lanthan	< / >	21.680				Tungsten (W	/	< 0.250	
Bromide (Br):	NR	Lead (Pt	o):	· · · · · ·			18.050	Uranium (U	):	238.21	0
Cadmium (Cd):	307.080	Lithium	(Li):	35.090	Silver (Ag):		NR	Vanadium (V	V):	7.970	
Cerium (Ce):	45.150	Mercury	(Hg):	NR	Selenium (Se):		<0.250 U	Zinc (Zn):		30,785	
			Field	Chamistan and	l Other Analytica	l Docult	-	Zirconium (2	Zr):	1.100	J
**Total Dissolved S	Solids (mg/L):	NR		tess as CaCO3 (	•	NR	s Ammonia (m	g/L):			NR
**Sum of Diss. Cor			Hardness as		(ing/L).		T.P. Hydroca	e ,			NR
Field Conductivity				inity as CaCO3.	(ma/L)	525.24 NR	PCP (µg/L):	100lis (μg/L).			NR
•	. ,			•	( <b>U</b> )		(1 C )				
Lab Conductivity (µ	(mnos):	NR	•	is CaCO3 (mg/I	L):	NR	Phosphorus,	ίų,			0.040 J
Field pH:			Ryznar Sta				Field Nitrate				NR
Lab pH:				sorption Ratio:			Field Dissolv	( )			7.900
Water Temp (°C): 14.1 Langlier Saturati							Field Chlorid				NR
Air Temp (°C): NR Nitrite (mg/L as				/L as N):		NR	Field Redox (	(mV):			700
Nitrate + Nitrite (mg/L as N) NR Hydroxide (mg/L				(mg/L as OH):		NR	Lab, Dissolve	ed Organic Car	bon (mg/	L):	NR
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Ino					Carbon (mg/L):	NR	Lab, Total Or	ganic Carbon (	(mg/L):		NR
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L Ca				4.5 (mg/L CaCC	03)	NR	Acidity to 8.3	(mg/L CaCO3	3)		NR
As(III) $(\mu g/L)$ NR As(V) $(\mu g/L)$					NR	Total Susp Sc	olids (mg/L)			NR	
					Notes			,			
Sample Condition:	CLEAR										

Sample Condition: CLEAF Field Remarks: Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

				Loc	ation Iı	nformation						
Sample Id/Site Id:		Sample Dat	ie:		11/15	/2018 12:24:0	00 PM					
Location (TRS):		0′	7N 06W	13 DCDB		Agency/Sar	npler:		MBM STEV	IG / ICOPINI, 'E	, GARY/M	ICGRATH,
Latitude/Longitude:		40	5° 21' 26	" N 112° 17' 4	45" W	Field Numb	ber:		LOW	ER BULLIO	N MINE D	RAIN
Datum:		Ν	AD83			Lab Date:			12/13	/2018 7:54:02	2 AM	
Altitude:		7	100			Lab/Analys	t:		MBM	IG / TIMMEF	R, JACKIE	
County/State:		Л	EFFERS	ON / MT		Sample Me				B / ru:1 ra:0 fi		
Site Type:				AINAGE		Procedure 7		e		OLVED		
Geology:		1.		a morton		Total Depth	- 1		NR			
USGS 7.5' Quad:							SWL-MP (ft): NR					
PWS Id:						`	·		NR			
		Л	LEODE	F DACINI W	TDOLLD	Depth Wate	er Enters (1	():	INK			
Project:		D	LFURS	F, BASIN_W								
			mg/L	meg/L	ajor 10	n Results				mg/L	me	a/L
Calcium (Ca	a)	65.4		3.268	Bicart	oonate (HCO	3)			0.000	0.000	4.5
Magnesium		21.3		1.753		nate (CO3)	·			0.000	0.000	
Sodium (Na		4.08		0.177		ide (Cl)				0.650	0.018	
Potassium (I	K)	1.91		0.049 2.331		e (SO4) e (as N)				721.220 0.050 J	15.023 0.004	
Iron (Fe) Manganese	Iron (Fe)         65.105         2.331         Nitra           Manganese (Mn)         11.370         0.414         Fluor									0.030 J	0.004	
Silica (SiO2			phosphate (as	s P)			0.030 J	0.000				
	Total Cations 9.450							Anions			15.072	
	6 500 000	a ·				Results (µg/		1 0 7 0	Ŧ	a:	<i>a</i> .	
Aluminum (Al): Antimony (Sb):	6,593.000 3.440	Cesium (C Chromium		3.570 1.130 J		olybdenum ( ickel (Ni):	Mo):	1.070 51.20		Strontium (T Thallium (T		222.920 <0.250 U
Arsenic (As):	461.210	Cobalt (Co		143.740		iobium (Nb):		< 0.25		Thorium (T		4.310
Barium (Ba):	9.060	Copper (C		4,300.33		eodymium (N		15.42		Tin (Sn):	/	<0.250 U
Beryllium (Be):	1.410	Gallium (O		0.990 J		alladium (Pd)		0.890	J	Titanium (T	Ti):	8.370
Boron (B):	68.000	Lanthanur		14.480					3.880 Tungsten (W):			<0.250 U
Bromide (Br):	<10.000 U	Lead (Pb):		157.260		ubidium (Rb)	:	12.35		Uranium (U		111.090
Cadmium (Cd):	212.100	Lithium (I		23.840 J		lver (Ag):		< 0.25		Vanadium (		1.760
Cerium (Ce):	26.900	Mercury (	п <u>g</u> ):	NR	50	elenium (Se):		< 0.25	000	Zinc (Zn): Zirconium (		18,885.000 <0.250 U
			Fie	ld Chemistry	and O	ther Analyti	cal Result	<b>s</b>				
**Total Dissolved Se	olids (mg/L):	955.57 H	Field Ha	dness as CaC	O3 (mg	/L):	NR	Ammo	nia (m	ıg/L):		NR
**Sum of Diss. Cons	stituents (mg/L)	: 955.57 I	Hardness	as CaCO3:			251.2	T.P. Hy	ydroca	rbons (µg/L):		NR
Field Conductivity (	umhos):	1229 H	Field Alk	alinity as CaO	CO3 (m	g/L):	NR	PCP (µ	.g/L):			NR
Lab Conductivity (µ	mhos):			y as CaCO3 (1	0 /		0			TD (mg/L):		<0.030 U
Field pH:			•	tability Index:			16.358			(mg/L):		NR
Lab pH:	p pH: 2.91 Sodium Adsorption Ratio:						0.1098			red O2 (mg/L)	):	10.770
Water Temp (°C):-0.01Langlier Saturation Index:							-6.724			le (mg/L):		NR
Air Temp (°C):     NR     Nitrite (mg/L as N):							<0.010 U					707
Nitrate + Nitrite (mg/L as N) NR Hydroxide (mg/L as OH):							0.000			ed Organic Ca	ξ, υ	<i>,</i>
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Inorganic Carb					oon (mg/L):	NR			rganic Carbor		NR	
Total Nitrogen (mg/L as N)     NR     Acidity to 4.5 (mg/L CaCO3)       L     (III) (, III)     NR						321.000	•		3 (mg/L CaCO	))	544.000	
As(III) (µg/L) NR As(V) (µg/L) Notes						400	NR	Total S	usp S	olids (mg/L)		NR
Sample Condition:	CLEAR				NO	tes						
Field Remarks: FLUME STAGE HIEGHT 0.12												
Lab Pamarka:	I LOWE 31	MOL HIEC		-								

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L = micrograms$  per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

				Locati	ion Informatio	on						
Sample Id/Site Id:			235391 /	285107	Sample	Date:		11/15	/2018 12:24:0	00 PM		
Location (TRS):			07N 06W	13 DCDB	Agency	/Sampler:		MBM STEV	IG / ICOPINI 'E	, GARY/	MCGR	ATH,
Latitude/Longitude:	:		46° 21' 20	5" N 112° 17' 45	"W Field N	umber:		LOW	ER BULLIO	N MINE	DRAI	J
Datum:			NAD83		Lab Dat	te:		12/13	/2018 7:54:03	3 AM		
Altitude:			7100		Lab/An			MBM	G / TIMME	R. JACKI	Е	
County/State:			JEFFERS	ON / MT	Sample Method/Handling:				B / ru:0 ra:1 f		-	
Site Type:	5							0	AL RECOVE			
Geology:						ire Type: epth (ft):		NR				
USGS 7.5' Quad:					SWL-M	• • •		NR				
PWS Id:						Water Enter	s (ff)·	NR				
Project:			DI FORS	T, BASIN WTF			3 (II).	I				
Tiojeet.			DLIORS	_	or Ion Results	2						
			mg/L	meq/L	or ron results	,			mg/L	m	eq/L	
Calcium (C	a)	8	5.790	4.281	Bicarbonate (	(HCO3)			NR	0.000	T	
Magnesium			7.580	2.270	Carbonate (C				NR	0.000		
Sodium (Na			.000	0.218	Chloride (Cl)				NR	0.000		
Potassium (	(K)		.810 3.943	0.072 3.006	Sulfate (SO4 Nitrate (as N				NR NR	$0.000 \\ 0.000$		
Iron (Fe) Manganese	(Mn)		5.945 5.110	0.550	Fluoride (F)	)			NR	0.000		
Silica (SiO			J.110 JR	0.550	Orthophosph	ate (as P)			NR	0.000		
Silica (Sici	- ) Total Ca		iii iii	12.275	orthophosph		otal A	nions	TVIC	0.000		
				Trace Ele	ment Results (	(µg/L)						
Aluminum (Al):	8,389.500	Cesium (		4.260	Molybdenu			1.510	Strontium (		285.8	
Antimony (Sb):	4.040	Chromiu	· · ·	1.790	Nickel (Ni):			62.260	Thallium (T	/	< 0.25	
Arsenic (As):	764.990	Cobalt (C		180.320	Niobium (N			<0.250 U	Thorium (T	h):	4.510	
Barium (Ba): Beryllium (Be):	11.740 1.480	Copper ( Gallium (		5,561.670 1.220 J	Neodymium Palladium (1			16.900 1.120 J	Tin (Sn): Titanium (T	·i)·	<0.25 9.870	
Boron (B):	79.730	Lanthanu		15.970	Praseodymi			4.170	Tungsten (V		< 0.25	
Bromide (Br):	NR	Lead (Pb)	· · ·	153.640	Rubidium (			15.400	Uranium (U	/	108.8	
Cadmium (Cd):	228.130	Lithium (		28.680	Silver (Ag):	/		NR	Vanadium (		2.440	
Cerium (Ce):	29.520	Mercury		NR	Selenium (S			<0.250 U	Zinc (Zn):		24,75	0.000
					-				Zirconium (	(Zr):	0.830	J
				ld Chemistry a		•		. ,	( <b>F</b> )			
**Total Dissolved S	( U )			dness as CaCO3	5 (mg/L):	NR		nmonia (mg	<i>,</i>			NR
**Sum of Diss. Con	( U	/		as CaCO3:				•	oons (µg/L):			NR
Field Conductivity (	•			alinity as CaCO		NR		P (µg/L):				NR
Lab Conductivity (µ	mhos):	NR		y as CaCO3 (mg	/L):	NR		osphorus, T				<0.030 U
Field pH:		2.55	Ryznar S	tability Index:		19.03	3 Fie	ld Nitrate (1	ng/L):			NR
Lab pH:		NR	Sodium A	Adsorption Ratio	:	0.120	2 Fie	ld Dissolve	d O2 (mg/L):			10.770
Water Temp (°C):		-0.01	Langlier	Saturation Index		-9.51	7 Fie	ld Chloride	(mg/L):			NR
Air Temp (°C):		NR	Nitrite (n	ng/L as N):		NR	Fie	ld Redox (n	nV):			707
Nitrate + Nitrite (mg/L as N) NR Hydroxide (mg/L as O					:	NR	Lab	o, Dissolved	l Organic Car	bon (mg/	L):	NR
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Inorganic					Carbon (mg/L	.): NR	Lab	o, Total Org	anic Carbon	(mg/L):		NR
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L CaCO3)						NR			(mg/L CaCO)	ς υ ,		NR
As(III) ( $\mu$ g/L) NR As(V) ( $\mu$ g/L)					~	NR		al Susp Sol				NR
				- /	Notes			I.				
Sample Condition:	CLEAR											
E. 11D 1		TACTION		<b>`</b>								

Field Remarks: FLUME STAGE HIEGHT 0.12 Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

			Locat	ion Information					
Sample Id/Site Id:		246202 / 2	85107	Sample Da	te:	7/14/2	2020 11:15:00	AM	
Location (TRS):		07N 06W	13 DCDB	Agency/Sa	mpler	MBM	IG / ICOPINI,	GARY	
Latitude/Longitude			" N 112° 17' 45		•		ER BULLION		TUME
Datum:	•	NAD83	10112 17 15	Lab Date:			2020 8:27:23 A		LOWE
Altitude:		7100		Lab/Analys	-+•		1G / TIMMER,		,
									2
County/State:		JEFFERS		Sample Me		e	B / ru:1 ra:0 fu	1 fa:1	
Site Type:		MINE DR	AINAGE	Procedure	Туре:	DISS	OLVED		
Geology:				Total Dept	h (ft):	NR			
USGS 7.5' Quad:				SWL-MP (	ft):	NR			
PWS Id:				Depth Wat	er Enters (f	ft): NR			
Project:		DLFORST	, BASIN WTH	RSHD					
5			_	or Ion Results					
		mg/L	meq/L				mg/L	me	q/L
Calcium (C		73.490	3.667	Bicarbonate (HC			0.000	0.000	
Magnesiun		25.920	2.133	Carbonate (CO3)			0.000	0.000	
Sodium (N		4.900	0.213	Chloride (Cl)			0.790	0.022	
Potassium	(K)	2.460	0.063	Sulfate (SO4)			948.700	19.761	l
Iron (Fe)	$(\mathbf{M}_{\mathbf{r}})$	150.275	5.381	Nitrate (as N)			0.090	0.006	
Manganese Silica (SiO	· · ·	16.995 40.360	0.619	Fluoride (F) Orthophosphate (	(ac D)		0.600 0.060 J	0.032 0.000	
Silica (SiO	Z) Total Ca		14.447	Of thophosphate (		l Anions	0.000 J	19.822	2
			Trace Ele	ment Results (µg	/L)				
Aluminum (Al):	11,111.960	Cesium (Cs):	4.470	Molybdenum	(Mo):	2.290	Strontium (S	Sr):	226.670
Antimony (Sb):	23.350	Chromium (Cr):	2.450	Nickel (Ni):		65.010	Thallium (T		<0.250 U
Arsenic (As):	3,701.260	Cobalt (Co):	213.590	Niobium (Nb		<0.250 U	Thorium (Th	1):	6.340
Barium (Ba):	11.020	Copper (Cu):	10,178.280	2		20.420	Tin (Sn):		<0.250 U
Beryllium (Be):	1.560	Gallium (Ga):	1.470	Palladium (P		1.400	Titanium (T		18.980
Boron (B):	123.200	Lanthanum (La):	15.560	Praseodymiu		4.430	Tungsten (W		<0.250 U
Bromide (Br):	<10.000 U	Lead (Pb):	244.060	Rubidium (R	b):	14.710	Uranium (U		144.710
Cadmium (Cd): Cerium (Ce):	201.380 33.950	Lithium (Li): Mercury (Hg):	33.480 NR	Silver (Ag): Selenium (Se	·)·	<0.250 U <0.250 U	Vanadium ( Zinc (Zn):	v):	7.960 26,103.190
Ceriuni (Ce).	33.930	wereury (rig).	INK	Selellulli (Se	.).	<0.250 0	Zirconium (2	Zr):	<0.250 U
			•	nd Other Analyt	ical Result	s			
**Total Dissolved S	· · · ·	1311.8 Field Har		3 (mg/L):	NR	Ammonia (n	U /		NR
**Sum of Diss. Cor	( )				290.19	2	arbons (µg/L):		NR
Field Conductivity			alinity as CaCC	( U	NR	PCP (µg/L):			NR
Lab Conductivity (µ	umhos):		y as CaCO3 (mg	g/L):	0	Phosphorus,	ίų,		<0.030 U
Field pH:			tability Index:		16.348	Field Nitrate			NR
Lab pH:			dsorption Ratio		0.1277		ved O2 (mg/L):		8.280
Water Temp (°C):		12.1 Langlier	Saturation Index	x:	-6.764	Field Chloric	le (mg/L):		NR
Air Temp (°C):		NR Nitrite (m	ng/L as N):		<0.010 U	Field Redox	(mV):		701
Nitrate + Nitrite (m	g/L as N)	NR Hydroxid	e (mg/L as OH)	):	NR	Lab, Dissolv	ed Organic Car	bon (mg/	/L): NR
Total Kjeldahl Nitro	ogen (mg/L as N	) NR Lab, Diss	olved Inorganic	c Carbon (mg/L):	NR	Lab, Total O	rganic Carbon	(mg/L):	NR
Total Nitrogen (mg/	/L as N)	NR Acidity to	o 4.5 (mg/L Ca	CO3)	571.000	Acidity to 8.	3 (mg/L CaCO	3)	954.000
As(III) (µg/L)	,	NR As(V) (µ		,	NR	Total Susp S			NR
( ) (r.o)		(-)(P	. ,	Notes		F, D	(-8-)		-
Sample Condition:	CLEAR - S	SLIGHT RUST COL	OR						
Field Remarks:	FE(II) = 62	MG/L							
Lah Remarks									

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

			Locatio	on Information				
Sample Id/Site Id:		246205 / 28	35107	Sample Da	te:	7/14/	2020 11:15:00 Al	М
Location (TRS):		07N 06W 1	3 DCDB	Agency/Sa	mpler:	MBN	AG / ICOPINI, G	ARY
Latitude/Longitude:		46° 21' 26"	N 112° 17' 45"	W Field Numl	ber:	LOW	VER BULLION M	AINE FLUME
Datum:		NAD83		Lab Date:			2020 8:27:25 AN	
Altitude:		7100		Lab/Analys	st:	MBN	AG / TIMMER, J	ACKIE
County/State:		JEFFERSO	N / MT	Sample Me			B / ru:0 ra:1 fu:0	
Site Type:		MINE DRA		Procedure		e	AL RECOVERA	
• •		WINE DRA	INAGE		- 1	NR	AL RECOVERA	DEL
Geology:				Total Deptl				
USGS 7.5' Quad:				SWL-MP (	· /	NR		
PWS Id:				Depth Wate	er Enters	(ft): NR		
Project:		DLFORST	BASIN_WTR					
		mg/L	Majo meq/L	r Ion Results			mg/L	meq/L
Calcium (C	a)	73.870	3.686	Bicarbonate (H	(CO3)			0.000
Magnesium		25.340	2.085	Carbonate (CO				0.000
Sodium (Na	a)	4.690	0.204	Chloride (Cl)	·		NR	0.000
Potassium (	(K)	2.530	0.065	Sulfate (SO4)				0.000
Iron (Fe)		144.389	5.171	Nitrate (as N)				0.000
Manganese		16.888	0.615	Fluoride (F)	( <b>D</b> )			0.000
Silica (SiO	2) Total Ca	NR	14.168	Orthophosphate		tal Anions		0.000 0.000
	I otal Ca	luons		ient Results (µg		tai Anions		0.000
Aluminum (Al):	10,968.270	Cesium (Cs):	4.420	Molybdenum		2.790	Strontium (Sr)	: 228.490
Antimony (Sb):	25.290	Chromium (Cr):	3.230	Nickel (Ni):	()-	68.700	Thallium (TI):	
Arsenic (As):	4,363.990	Cobalt (Co):	220.340	Niobium (Nb)	:	<0.250 U	Thorium (Th):	6.270
Barium (Ba):	11.850	Copper (Cu):	9,749.570	Neodymium (	Nd):	20.590	Tin (Sn):	<0.250 U
Beryllium (Be):	1.560	Gallium (Ga):	1.670	Palladium (Pd	/	1.450	Titanium (Ti):	
Boron (B):	124.670	Lanthanum (La):	14.490	Praseodymiun		4.400	Tungsten (W):	
Bromide (Br):	NR	Lead (Pb):	244.000	Rubidium (Rb	):	15.240	Uranium (U):	141.920
Cadmium (Cd):	201.150	Lithium (Li):	35.470	Silver (Ag):		NR	Vanadium (V)	
Cerium (Ce):	33.690	Mercury (Hg):	NR	Selenium (Se)	:	<0.250 U	Zinc (Zn): Zirconium (Zr)	26,152.220 ): 0.940 J
		Field	l Chemistry an	d Other Analyti	ical Resu	lts		). 0.9403
**Total Dissolved S	olids (mg/L):		ness as CaCO3	·	NR	Ammonia (m	g/L):	NR
**Sum of Diss. Con	stituents (mg/L):	NR Hardness a	s CaCO3:		288.75	T.P. Hydrocar	bons (μg/L):	NR
Field Conductivity (	µmhos):	1582 Field Alkal	inity as CaCO3	(mg/L):	NR	PCP (µg/L):		NR
Lab Conductivity (µ	mhos):	NR Alkalinity	as CaCO3 (mg/l	L):	NR	Phosphorus, 7	D (mg/L):	<0.030 U
Field pH:		2.48 Ryznar Sta	τŪ	_)-		Field Nitrate (		NR
Lab pH:		-	sorption Ratio:		0.128	Field Dissolve	e ,	8.280
Water Temp (°C):		12.1 Langlier Sa	•			Field Chloride		NR
Air Temp (°C):		NR Nitrite (mg			NR	Field Redox (		701
Nitrate + Nitrite (mg	VI as NI)	NR Hydroxide	· · · · ·		NR	````	d Organic Carbon	
Total Kjeldahl Nitro		•	(ing/L as OH). ved Inorganic (	arbon (mg/L).	NR		ganic Carbon (mg	
5	,		e					· ·
Total Nitrogen (mg/	L dS IN j	-	4.5 (mg/L CaCO	)))	NR	-	(mg/L CaCO3)	NR
As(III) (µg/L)		NR As(V) (µg/	L)	Notes	NR	Total Susp So	nus (mg/L)	NR
Sample Condition:	CLEAR - S	LIGHT RUST COLO	)R	110105				
Field Remarks:	FE(II) = 62		/11					
TICIU ICCIIIdINS.	12(11) = 02	MO/L						

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

			Lo	cation I	nformation							
Sample Id/Site Id: 249614 / 285107 Sample Date: 9/22/2020 1:20:00 PM												
Location (TRS):		07N 06	W 13 DCDB		Agency/Sar		MBN	1G / ICOPINI, G	ARY			
Latitude/Longitude:		46° 21'	26" N 112° 17	' 45" W	Field Numb			ER BULLION		JME		
Datum:		NAD83			Lab Date:			2020 10:14:47 A				
Altitude:		7100			Lab/Analys	t•		1G / TIMMER, J				
County/State:			SON / MT		Sample Me			B / ru:1 ra:0 fu:1				
Site Type:			DRAINAGE		Procedure 7		e	OLVED	14.1			
••		IVIII VL I	KAINAOL					NR				
Geology:					Total Depth			NR				
USGS 7.5' Quad:					SWL-MP (1	/						
PWS Id:					Depth Wate	er Enters (f	t): NR					
Project:		DLFOR	ST, BASIN_V									
		mg/L		Major Io	n Results			ma/I	maal	т		
Calcium (Ca	a)	<b>mg/L</b> 77.850	meq/L 3.885	Bicarbo	onate (HCO3)	<b>`</b>	(	<b>mg/L</b> ).000	meq/ 0.000	L		
Magnesium		25.510	2.099		ate (CO3)	,		).000	0.000			
Sodium (Na		5.340	0.232	Chlorid				).770	0.022			
Potassium (	Ŕ)	2.920	0.075	Sulfate	(SO4)		8	315.800	16.993			
Iron (Fe)		90.327	3.235 0.530	Nitrate				0.060	0.004			
Manganese	· /	14.571	Fluorid				0.570	0.030				
Silica (SiO2		35.350	Orthop	hosphate (as ]			<0.020 U	0.000				
	Total Cati	ons	Flomont	Results (µg/		Anions		17.049				
Aluminum (Al):	8,723.530	Cesium (Cs):	6.160		olybdenum (		1.350	Strontium (Sr)	. 26	59.280		
Antimony (Sb):	4.390	Chromium (Cr):	1.050 J		ickel (Ni):		54.610	Thallium (TI):		0.250 U		
Arsenic (As):	419.630	Cobalt (Co):	184.63		iobium (Nb):		1.860	Thorium (Th):		420		
Barium (Ba):	13.650	Copper (Cu):	5,656.2	250 N	eodymium (N	ld):	16.980	Tin (Sn):	<	0.250 U		
Beryllium (Be):	1.160 J	Gallium (Ga):	1.500	Pa	alladium (Pd)	:	1.150 J	Titanium (Ti):	12	2.150		
Boron (B):	127.300	Lanthanum (La)			raseodymium		5.150	Tungsten (W)		510 J		
Bromide (Br):	<10.000 U	Lead (Pb):	222.38		ubidium (Rb)	:	18.230	Uranium (U):		48.870		
Cadmium (Cd):	200.290	Lithium (Li):	34.260		lver (Ag):		<0.250 U	Vanadium (V)		.070		
Cerium (Ce):	37.910	Mercury (Hg):	NR	Se	elenium (Se):		<0.250 U	Zinc (Zn): Zirconium (Zr		2,432.800 .870 J		
		F	ield Chemistı	v and O	ther Analyti	cal Result	5	Zircomuni (Zi	). 0.	870 J		
**Total Dissolved S	olids (mg/L):	1106.17 Field		•	•	NR	Ammonia (r	ng/L):		NR		
**Sum of Diss. Cons	stituents (mg/L)	: 1106.17 Hardn	ess as CaCO3	:		299.39	T.P. Hydroc	arbons (µg/L):		NR		
Field Conductivity (	umhos):	1281 Field	Alkalinity as C	CaCO3 (n	ng/L):	NR	PCP (µg/L):			NR		
Lab Conductivity (µ	mhos):	1373 Alkali	nity as CaCO3	3 (mg/L):		0	Phosphorus,	TD (mg/L):		<0.030 U		
Field pH:		2.83 Ryzna	r Stability Ind	ex:		16.177	Field Nitrate	e (mg/L):		NR		
Lab pH:		2.94 Sodiu	n Adsorption	Ratio:		0.1257	Field Dissol	ved O2 (mg/L):		8.240		
Water Temp (°C):		11.86 Langl	er Saturation	Index:		-6.619	Field Chlori	de (mg/L):		NR		
Air Temp (°C):		NR Nitrite	(mg/L as N):			<0.010 U	Field Redox	(mV):		710		
Nitrate + Nitrite (mg	/L as N)		xide (mg/L as	OH):		0.000	Lab, Dissolv	ved Organic Carl	oon (mg/L	): NR		
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Inorganic Carbon						NR		Drganic Carbon (	, U	NR		
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L CaCO3)						351.000		.3 (mg/L CaCO3	-	638.000		
As(III) ( $\mu$ g/L) NR As(V) ( $\mu$ g/L)						NR	-	Solids (mg/L)	,	NR		
·			(18 -)	No	tes		1 Sun Susp i	(ing E)		1110		
Sample Condition:	CLEAR - S	LIGHT RUST CO	DLOR									

Field Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Lab Remarks:

Site Name: BULLION MINE LOWER AT JACK CRK CONFLUENCE Compare to Water Quality Standards

				Locat	ion Ir	nformation						
Sample Id/Site Id:         249617 / 285107         Sample Date:         9/22/2020 1:20:00 PM												
Location (TRS):		(	07N 06W	13 DCDB		Agency/Samp	ler:	MBN	AG / ICOPINI	, GARY		
Latitude/Longitude:		4	46° 21' 26'	' N 112° 17' 45	" W	Field Number:		LOW	ER BULLIO	N MINE	FLUME	3
Datum:		]	NAD83			Lab Date:		11/9/	2020 10:14:48	3 AM		
Altitude:		,	7100			Lab/Analyst:		MBN	AG / TIMME	R. JACKI	Е	
County/State:			JEFFERSO	ON / MT		Sample Metho	d/Handl		B / ru:1 ra:0 f	,		
Site Type:			MINE DR			Procedure Typ		C				
21		1	WIINE DK	AINAGE		Procedure Type: TOTAL RECOVERABLE Total Depth (ft): NR						
Geology:				* · · /								
USGS 7.5' Quad:						SWL-MP (ft):		NR				
PWS Id:						Depth Water I	Enters (f	t): NR				
Project:		]	DLFORST	, BASIN_WTF	RSHD	)						
			a.		or Io	n Results			a		π	
Calcium (C	a)	7	<b>mg/L</b> 8.370	meq/L 3.911	Dia	arbonate (HCO3	3		mg/L NR	, <b>m</b> 0.000	eq/L	
Magnesium	/		6.580	2.187		bonate (CO3)	9		NR	0.000		
Sodium (Na			.930	0.214		oride (Cl)			NR	0.000		
Potassium (			.700	0.069		fate (SO4)			NR	0.000		
Iron (Fe)		94	4.524	3.385	Nitr	rate (as N)			NR	0.000		
Manganese		14		oride (F)			NR	0.000				
Silica (SiO2			R	Orth	hophosphate (as			NR	0.000			
Total Cations12.149Total Anions0.000Trace Element Results (µg/L)												
Aluminum (Al):	8,673.380	Cesium (O	<sup>г</sup> е)•	5.180		olybdenum (Mo	) <b>.</b>	1.100 J	Strontium (	<b>Sr)</b> .	290.33	20
Antimony (Sb):	5.250	Chromiun	/	2.030		ckel (Ni):	).	57.960	Thallium (1	/	< 0.25	
Arsenic (As):	889.150	Cobalt (C		195.770		obium (Nb):		1.500	Thorium (T		3.380	,0
Barium (Ba):	14.520	Copper (C		5,774.950		odymium (Nd):		18.630	Tin (Sn):		< 0.25	) U
Beryllium (Be):	1.330	Gallium (	Ga):	1.390	Pa	lladium (Pd):		1.210 J	Titanium (T	i):	13.710	)
Boron (B):	122.120	Lanthanu	m (La):	15.450	Pra	aseodymium (Pi	·):	4.480	Tungsten (V	N):	< 0.25	) U
Bromide (Br):	NR	Lead (Pb)	:	238.950	Ru	ıbidium (Rb):		14.640	Uranium (U	Л:	162.76	50
Cadmium (Cd):	222.770	Lithium (		31.570		ver (Ag):		NR	Vanadium (	(V):	2.150	
Cerium (Ce):	33.530	Mercury (	Hg):	NR	Se	lenium (Se):		<0.250 U	Zinc (Zn):		22,504	
			Fiel	d Chemistry a	nd O	ther Analytical	Results		Zirconium (	(Zr):	0.780	J
**Total Dissolved S	olids (mg/L):	NR		dness as CaCO		•	NR	, Ammonia (1	mg/L):			NR
**Sum of Diss. Con	ίų,			as CaCO3:	- (2	8-).			arbons (µg/L)	:		NR
Field Conductivity (		/		alinity as CaCO	O3 (m	ng/L):	NR	PCP (µg/L):		•		NR
Lab Conductivity (µ	• •	NR		y as CaCO3 (m		e ,	NR	<i></i>	TD (mg/L):			0.030 J
Field pH:	iiiios).	2.83		tability Index:	<i>g L</i> ).			Field Nitrate	· · · ·			NR
Lab pH:		NR	2	Adsorption Rati	0.				ved O2 (mg/L	).		8.240
Water Temp (°C):				Saturation Inde				Field Chlori	, U	<i>.</i>		NR
Air Temp (°C):		NR	0	ng/L as N):	л.		-9.550 NR	Field Redox				710
Nitrate + Nitrite (mg	/L as ND	NR		le (mg/L as N).	n.		NR		ved Organic C	arhan (m	α/I ).	NR
			2	ί	·	L ( /Т.).			e	· ·	<i>°</i>	
Total Kjeldahl Nitro		·		solved Inorgani		,	NR		Drganic Carboi			NR
Total Nitrogen (mg/	Las N)	NR	-	o 4.5 (mg/L Ca	CO3)		NR		.3 (mg/L CaCo	03)		NR
As(III) (µg/L)		NR	As(V) (µ	g/L)	ът	4	NR	Total Susp S	Solids (mg/L)			NR
Sample Condition	CLEAR - S	SI IGUT DI		OP	No	tes						
Sample Condition:	ULEAK - S	SLIGHT K	USI COD	UK								

Sample Condition: Field Remarks:

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

# Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

			L	ocation I	nformation						
Sample Id/Site Id:		230896	/ 257068		Sample Da	te:	8/1	/2018	12:53:00 PM	1	
Location (TRS):		07N 05	W 20 B		Agency/Sa	mpler:			/ ICOPINI, G DUAIME, TH		CGRATH,
Latitude/Longitude:		46° 20'	53" N 112° 1	5' 41" W	Field Numl	ber:			AL MINE DR		
Datum:		WGS84			Lab Date:		9/4	/2018	10:45:04 AN	Л	
Altitude:					Lab/Analys	st:			TIMMER, J		
County/State:		JEFFER	SON / MT		Sample Method/Handling: GRAB / ru:1				ru:1 ra:0 fu:1	fa:1	
Site Type:			RAINAGE		•	Procedure Type: DISSOLVED					
Geology:					Total Deptl	• 1	NR				
USGS 7.5' Quad:					SWL-MP (		NR				
PWS Id:					Depth Wat	· ·					
Project:		DLFOR	ST, BASIN	WTRSHI							
110,000.		DEFOR	_		on Results						
		mg/L	meq/L	inajor re	in results				mg/L	mee	ı∕L
Calcium (C		57.910	2.890		onate (HCO3	)		0.00	0	0.000	•
Magnesium		15.580	1.282		nate (CO3)			0.00		0.000	
Sodium (Na Potassium (		3.200 1.330	0.139 0.034	Chlorie	de (CI) (SO4)			0.68 623.		0.019 12.979	
Iron (Fe)	K)	62.505	2.238		(304) (as N)			0.09		0.006	
Manganese	(Mn)	11.078	0.403	Fluoric				0.16		0.008	
Silica (SiO2		24.070			hosphate (as	P)		< 0.0	20 U	0.000	
	Total Cati	ons	10.423		. D. 1. (		Anions			13.013	
Aluminum (Al):	13,387,500	Cesium (Cs):	3.540		t <b>Results (μg</b> Molybdenum		<0.100 1	IT G	Strontium (Sr		227.880
Antimony (Sb):	6.630	Chromium (Cr):	< 0.100		Nickel (Ni):	(100).	36.090		Fhallium (TI)		<0.100 U
Arsenic (As):	394.560	Cobalt (Co):	232.43		Niobium (Nb	):	<0.100 1		Thorium (Th)		0.540
Barium (Ba):	27.160	Copper (Cu):	13,425		Neodymium		9.000		Γin (Sn):		<0.100 U
Beryllium (Be):	1.610	Gallium (Ga):	1.160		Palladium (Po	,	1.160		Fitanium (Ti)		11.370
Boron (B):	3.390 <10.000 U	Lanthanum (La)			Praseodymiu Rubidium (Rl		2.440		Fungsten (W)		<0.100 U
Bromide (Br): Cadmium (Cd):	<10.000 U 645.530	Lead (Pb): Lithium (Li):	157.15 20.110		Silver (Ag):	5):	9.140 <0.100 V		Jranium (U): Vanadium (V		49.730 0.340 J
Cerium (Ce):	20.180	Mercury (Hg):	NR		Selenium (Se	):	0.640		Zinc (Zn):		49,675.000
		-			Ì.	, 		2	Zirconium (Z	r):	<0.100 U
**Tatal Dissalarad C	alida (as a/L).			•	ther Analyti			(	<b>)</b> .		ND
**Total Dissolved S	( U )	875.98 Field E : 875.98 Hardne			g/L):	NR 208.73	Ammonia		<i>,</i>		NR NR
**Sum of Diss. Con Field Conductivity (	(°C)	895.8 Field A			a/L).	208.75 NR	T.P. Hydro PCP (µg/L		ons (μg/L):		NR
Lab Conductivity (µ	• •		ity as CaCO?	-	ig/L).	0	Phosphoru	·	(mg/L):		<0.030 U
Field pH:			Stability Ind			15.404	Field Nitra		ίς σ		<0.050 C NR
Lab pH:		2	Adsorption			0.0904			O2 (mg/L):		7.280
Water Temp (°C):			r Saturation			-5.717	Field Chlor		ίų,		NR
Air Temp (°C):		8	(mg/L as N):				Field Redo				510
Nitrate + Nitrite (mg	z/L as N)		ide (mg/L as			0.000			Organic Carb	on (mg/]	
Total Kjeldahl Nitro		2	issolved Inor	,	bon (mg/L):	NR			nic Carbon (r		NR
Total Nitrogen (mg/			to 4.5 (mg/L	e	ίų,	218.000		0	ng/L CaCO3)	<b>U</b> /	563.000
As(III) (µg/L)	ŕ	NR As(V)	(µg/L)	,		NR	Total Susp	Solid	ls (mg/L)		NR
				No	otes						
Sample Condition: Field Remarks: Lab Remarks:		'ELLOWISH CO GS IN FRONT OF		AOVED F	LUME DOW	/NSTREA	MABOUT	20 FE	ET		
Explanation: mg/L	= milligrams per	Liter; $\mu g/L = mi$	crograms per	Liter; ft =	= feet; <b>NR</b> = 1	No Reading	g in GWIC				
					иг			- ··			

<u>Qualifiers</u>: A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limitbut below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standardadditions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sumof major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalentweight of evaporation residue.

# Disclaimer

# Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

				Locati	on Information						
Sample Id/Site Id:			230899 / 2	57068	Sample Date	e:	8/1/20	018 12:53:00 Pl	М		
Location (TRS):			07N 05W	20 B	Agency/San	npler:		G / ICOPINI, ( E/DUAIME, T		MCGRATH,	
Latitude/Longitude:			46° 20' 53'	" N 112° 15' 41"	W Field Numb	er:	CRYS	STAL MINE D	RAIN		
Datum:			WGS84		Lab Date:		9/4/20	018 10:45:05 A	М		
Altitude:					Lab/Analys	ŀ	MBM	G / TIMMER,	JACKI	र.	
County/State:			JEFFERSO	N / MT	Sample Met			3 / ru:0 ra:1 fu:		-	
•			MINE DR		Procedure T		0	L RECOVER			
Site Type:			MINE DR	AINAGE		• 1		IL RECOVER	ADLL		
Geology:					Total Depth		NR				
USGS 7.5' Quad:					`	SWL-MP (ft): NR					
PWS Id:					Depth Wate	r Enters	(ft): NR				
Project:			DLFORST	, BASIN_WTR							
			_		or Ion Results			_		_	
Calaina (C	-)	C	mg/L	meq/L 3.084	Disarkarata (IIC	$(\mathbf{n})$		mg/L	me 0.000	eq/L	
Calcium (C Magnesium	/		1.800 6.530	3.084 1.360	Bicarbonate (HC) Carbonate (CO3)	· ·		NR NR	0.000		
Sodium (Na			.540	0.154	Chloride (Cl)			NR	0.000		
	Potassium (K) 1.540 0.039							NR	0.000		
Iron (Fe)	Nitrate (as N)			NR	0.000						
Manganese			1.598 IR	0.422	Fluoride (F)	(a.a. D)		NR NR	0.000		
Silica (SiO	2) Total Cat		ĸ	10.990	Orthophosphate (		al Anions	INK	$0.000 \\ 0.000$		
	i otai Ca	lions			nent Results (µg/				0.000		
Aluminum (Al):	13,813.750	Cesium	(Cs):	3.890	Molybdenum		0.570 J	Strontium (S	r):	244.020	
Antimony (Sb):	11.370	Chromiu		0.940 J	Nickel (Ni):		38.260	Thallium (Tl	/	<0.250 U	
Arsenic (As):	807.030 29.050	Cobalt (		249.520 13,816.670	Niobium (Nb) Neodymium (		<0.250 U 9.900	Thorium (Th Tin (Sn):	ı):	1.070 J <0.250 U	
Barium (Ba): Beryllium (Be):	1.800	Copper ( Gallium		15,810.070	Palladium (Pd			1.280 Titanium (Ti):			
Boron (B):	8.560	Lanthan	· /	12.080	Praseodymiun		2.620	Tungsten (W	/	10.590 <0.250 U	
Bromide (Br):	NR	Lead (Ph		184.030	Rubidium (Rb		10.110	Uranium (U)		53.590	
Cadmium (Cd):	683.890	Lithium	· /	27.170	Silver (Ag):		NR	Vanadium (V	V):	0.740 J	
Cerium (Ce):	21.740	Mercury	(Hg):	NR	Selenium (Se)	:	<0.250 U	Zinc (Zn):	7	51,420.000	
			Fiel	d Chemistry ar	nd Other Analytic	al Resul	Its	Zirconium (2	2r):	<0.250 U	
**Total Dissolved S	olids (mg/L):	NR		dness as CaCO3	•	NR	Ammonia (mg	/L):		NR	
**Sum of Diss. Con	( U )	: NR		as CaCO3:		222.35	T.P. Hydrocart	/		NR	
Field Conductivity (	, υ, γ			alinity as CaCO	3 (mg/L):	NR	PCP ( $\mu$ g/L):	(18-)		NR	
Lab Conductivity (µ	• /	NR		as CaCO3 (mg	( U	NR	Phosphorus, T	D (mg/L):		<0.030 U	
Field pH:	,	3.97		ability Index:	,	19.318	Field Nitrate (r			NR	
Lab pH:		NR	Sodium A	dsorption Ratio	:	0.1167	Field Dissolve	d O2 (mg/L):		7.280	
Water Temp (°C):		5.79	Langlier S	Saturation Index	:	-9.659	Field Chloride	(mg/L):		NR	
Air Temp (°C):		NR	Nitrite (m	g/L as N):		NR	Field Redox (n	nV):		510	
Nitrate + Nitrite (mg	:	NR	Lab, Dissolved	Organic Carbo	on (mg/l	L): NR					
Total Kjeldahl Nitro	Carbon (mg/L):	NR	Lab, Total Org	anic Carbon (n	ng/L):	NR					
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L CaCO3)						NR	Acidity to 8.3	(mg/L CaCO3)		NR	
$As(III) (\mu g/L) NR As(V) (\mu g/L)$						NR	Total Susp Sol	ids (mg/L)		NR	
					Notes						
Sample Condition:	CLEAR - Y	TELLOW	SH COLO	R							

Field Remarks:

Lab Remarks:

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers</u>:  $\mathbf{A}$  = Hydride atomic absorption;  $\mathbf{E}$  = Estimated due to interference;  $\mathbf{H}$  = Exceeded holding time;  $\mathbf{J}$  = Estimated quantity above detection limit but below reporting limit;  $\mathbf{K}$  = Na+K combined;  $\mathbf{N}$  = Spiked sample recovery not within control limits;  $\mathbf{P}$  = Preserved sample;  $\mathbf{S}$  = Method of standard additions;  $\mathbf{U}$  = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

#### Disclaimer

Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

			Locatio	n Information							
Sample Id/Site Id:		246204	/ 257068	Sample Da	te:	7/14	/2020 2:35:00 PM	M			
Location (TRS):		07N 05	W 20 B	Agency/Sa	mpler:	MBI	MG / ICOPINI, O	GARY			
Latitude/Longitude:		46° 20' :	53" N 112° 15' 41" '	W Field Num	ber:	CRY	STAL MINE FI	LUME			
Datum:		WGS84		Lab Date:		8/12	/2020 8:27:23 A	М			
Altitude:				Lab/Analys	st:	MBI	MG / TIMMER,	JACKIE			
County/State:		JEFFER	SON / MT	Sample Me	thod/Hand	lling: GRA	GRAB / ru:1 ra:0 fu:1 fa:1				
Site Type:		MINE I	DRAINAGE	Procedure	Гуре:	DIS	DISSOLVED				
Geology:				Total Dept	h (ft):	NR	NR				
USGS 7.5' Quad:				SWL-MP (	ft):	NR					
PWS Id:				Depth Wat	er Enters (f	ft): NR					
Project:		DLFOR	ST, BASIN_WTRS	SHD							
			Majo	r Ion Results							
		mg/L	meq/L				mg/L	meq	/L		
Calcium (Ca	,	55.900		arbonate (HCO3	)		0.000	0.000			
Magnesium Sodium (Na		15.280 3.340		bonate (CO3) oride (Cl)			0.000 0.610	$0.000 \\ 0.017$			
Potassium (1		1.320		fate (SO4)			517.300	10.775			
Iron (Fe)	( <b>i</b> )	42.056		rate (as N)			0.100	0.007			
Manganese	(Mn)	10.018		oride (F)			0.180	0.009			
Silica (SiO2	/	24.490		hophosphate (as			<0.020 U	0.000			
	Total Cati	ons	8.653			Anions		10.809			
A1 · (A1)	0.021.020	a · (a)		ent Results (µg		-0 100 II	G: .(G		00.220		
Aluminum (Al): Antimony (Sb):	9,921.030 2.230	Cesium (Cs): Chromium (Cr):	3.100 0.280 J	Molybdenum ( Nickel (Ni):	Mo):	<0.100 U 32.100	Strontium (Sr Thallium (Tl)	/	200.220 <0.100 U		
Arsenic (As):	132.360	Cobalt (Co):	174.630	Niobium (Nb):		<0.100 U	Thorium (Th)	,	0.100 U 0.240 J		
Barium (Ba):	24.080	Copper (Cu):	9,931.480	Neodymium (1		8.180	Tin (Sn):	,	<0.100 U		
Beryllium (Be):	1.360	Gallium (Ga):	1.250	Palladium (Pd	/	1.050	Titanium (Ti)		0.160		
Boron (B):	37.450	Lanthanum (La):		Praseodymium		1.940	Tungsten (W		<0.100 U		
Bromide (Br):	<10.000 U	Lead (Pb):	106.210	Rubidium (Rb	):	7.870	Uranium (U):	: 3	7.270		
Cadmium (Cd):	479.770	Lithium (Li):	23.350	Silver (Ag):		<0.100 U	Vanadium (V	): <	<0.100 U		
Cerium (Ce):	16.920	Mercury (Hg):	NR	Selenium (Se)	:	0.850	Zinc (Zn):		7,042.480		
		F	ield Chemistry and	d Other Analyti	ical Result	s	Zirconium (Z	r): <	<0.100 U		
**Total Dissolved So	olids (mg/L):		ardness as CaCO3	•	NR	Ammonia (1	mg/L):		NR		
**Sum of Diss. Cons	stituents (mg/L)	: 726.07 Hardne	ss as CaCO3:		202.47	T.P. Hydroc	arbons (μg/L):		NR		
Field Conductivity (	umhos):	745.4 Field A	lkalinity as CaCO3	(mg/L):	NR	PCP (µg/L)	:		NR		
Lab Conductivity (µ	mhos):		ity as CaCO3 (mg/l	L):	0	1	, TD (mg/L):		<0.030 U		
Field pH:		2	Stability Index:		15.395	Field Nitrat	( U		NR		
Lab pH:			Adsorption Ratio:		0.0917		ved O2 (mg/L):		7.480		
Water Temp (°C):		U	er Saturation Index:		-5.693	Field Chlori			NR		
Air Temp (°C):		NR Nitrite	(mg/L as N):		<0.010 U	Field Redox	x (mV):		522		
Nitrate + Nitrite (mg	/L as N)	NR Hydrox	tide (mg/L as OH):		NR	Lab, Dissol	ved Organic Carl	bon (mg/L	.): NR		
Total Kjeldahl Nitrog	gen (mg/L as N	) NR Lab, D	issolved Inorganic (	Carbon (mg/L):	NR	Lab, Total (	Organic Carbon (	mg/L):	NR		
Total Nitrogen (mg/I	L as N)	NR Acidity	to 4.5 (mg/L CaCO	03)	189.000	Acidity to 8	.3 (mg/L CaCO3	6)	596.000		
As(III) (µg/L)		NR As(V)	(µg/L)		NR	Total Susp S	Solids (mg/L)		NR		
				Notes							
Sample Condition:	CLEAR										
Field Remarks:	FE(II) = 44	.7 MG/L									
Lab Remarks:											

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

## Disclaimer

Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

Location Information													
Sample Id/Site Id:		S	ample Date	:		7/14/2	2020 2:35:00	PM					
Location (TRS):			07N 05W 2	20 B	А	Agency/Sam	pler:		MBM	G / ICOPIN	I, GARY		
Latitude/Longitude:			46° 20' 53'	' N 112° 15' 41'	"W F	ield Numbe	er:		CRYS	STAL MINE	FLUME		
Datum:			WGS84			ab Date:				2020 8:27:25			
Altitude:						.ab/Analyst:				G / TIMME		Е	
County/State:			JEFFERSO	DN/MT		ample Metl				3 / ru:0 ra:1 f			
Site Type:			MINE DR.			Procedure Ty		U		L RECOVE			
Geology:			otal Depth			NR							
USGS 7.5' Quad:						WL-MP (ft			NR				
PWS Id:						Depth Water	/		NR				
Project:			DLEORST	, BASIN WTR		opin mater	2110010	(11).					
110jeet.			DEFOR		or Ion F	Results							
			mg/L	meq/L	01 101 1	ites unes				mg/I	m	eq/L	
Calcium (Ca	/		4.060	2.698		onate (HCC	03)			NR	0.000	-	
Magnesium			4.570	1.199		nate (CO3)				NR	0.000		
Sodium (Na			.160	0.137		de (Cl)				NR	0.000		
Potassium (I Iron (Fe)	K)		.340 2.120	0.034 1.508		e (SO4) e (as N)				NR NR	0.000 0.000		
Manganese	(Mn)		0.032	0.365	Fluoric	· · ·				NR	0.000		
Silica (SiO2	< / /		NR	0.303		ohosphate (a	as P)			NR	0.000		
511164 (5102	Total Ca	-		8.500	ormop	, and the second s		al Anions	5	1.11	0.000		
				Trace Ele	ment Re	esults (µg/I	.)						
Aluminum (Al):	9,954.680	Cesium (		3.190		bdenum (M	lo):	0.560		Strontium (		208.	
Antimony (Sb):	6.370	Chromiu		0.930		el (Ni):		34.89		Thallium (			80 U
Arsenic (As):	477.180	Cobalt (C	/	181.390		ium (Nb):		< 0.18		Thorium (7	(h):	0.72	
Barium (Ba):	25.490	Copper (		9,732.940		lymium (Nd	):	8.570		Tin (Sn):	<b>P</b> ')		80 U
Beryllium (Be): Boron (B):	1.460 49.210	Gallium ( Lanthanu	· /	1.460 9.820		dium (Pd): odymium (1	<b>D</b> ).	1.340 2.040		Titanium (T Tungsten (	,	13.5	40 80 U
Bromide (Br):	49.210 NR	Lead (Pb		112.020		dium (Rb):		8.570		Uranium (U		35.1	
Cadmium (Cd):	518.260	Lithium (		27.520		r (Ag):		NR		Vanadium			80 U
Cerium (Ce):	17.510	Mercury		NR		nium (Se):		1.130		Zinc (Zn):	(•).		44.100
()			(8)-							Zirconium	(Zr):		80 U
				d Chemistry a		·							
**Total Dissolved So		NR		dness as CaCO3	3 (mg/L)	):	NR	Ammon	0	,			NR
**Sum of Diss. Cons Field Conductivity ()		·		as CaCO3: alinity as CaCO	2 (ma/I	<b>`</b> .	194.96 NR	ο Τ.Ρ. Ηγα PCP (μg		oons (µg/L):			NR NR
Lab Conductivity (µ	/	743.4 NR		annity as CaCO as CaCO3 (mg		_):	NR		· · ·	D (mg/L):			NK <0.030 U
Field pH:	iiiios).	3.87	5	ability Index:	5/L).			Field Ni					<0.050 U NR
Lab pH:		NR	•	dsorption Ratio	):					d O2 (mg/L)	:		7.480
Water Temp (°C):		5.88		Saturation Index				Field Ch		ίų,			NR
Air Temp (°C):		NR	Nitrite (m	g/L as N):			NR	Field Re	dox (n	nV):			522
Nitrate + Nitrite (mg	/L as N)	NR	Hydroxide	e (mg/L as OH)	):		NR	Lab, Dis	solved	l Organic Ca	rbon (mg/	'L):	NR
Total Kjeldahl Nitrog	gen (mg/L as N	) NR	Lab, Disso	olved Inorganic	c Carbon	n (mg/L):	NR	Lab, Tot	al Org	anic Carbon	(mg/L):		NR
Total Nitrogen (mg/I	L as N)	NR	Acidity to	4.5 (mg/L CaC	CO3)		NR	Acidity 1	to 8.3 (	(mg/L CaCO	3)		NR
As(III) ( $\mu$ g/L)		NR	As(V) (µg	g/L)			NR	Total Su	sp Sol	ids (mg/L)			NR
Samula Constitution	CLEAD				Notes	i							
Sample Condition:	CLEAR	171/07											
Field Remarks:	FE(II) = 44	+./ MG/L											
Lab Remarks:													

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

## Disclaimer

Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

Sample ld Site ld249612 / 25 °M3 cample Date:922 20 MBG / 1004800 AULocation (TRS):670 05 °F 20 MField Number:MBG / 1004800 AULatitude/Longinude:670 05 °F 20 MI / 21 °S × 112 ° 15 °V 10Field Number:CRS TAL AININE FLUME. LUMEDatum:10 20 05 °F 20 MI / 20	Location Information											
Laitude/Longinule:Heig 20 53" N 112" 15 41" WField Number:C RYSTAL MINE FLUMEDatun:WG84Lab Date:11047 AMAhitude:JEFFERSON / MTSample Method Hamlin:GR AB / n:1 no. 0 1:: 1.6.1County/State:JEFFERSON / MTSample Method Hamlin:GR AB / n:1 no. 0 1:: 1.6.1Site Type:MINE DR AIN AGEProcedure Type:DS UNEDGoology:MINE DR AIN AGESWLAMP (fi)NRUSGS 7.5 Quad:State Type:SULAPDR (fi)NRUSGS 7.5 Quad:EDEFORST SUTTENTNRProcedure:DEFORST SUTTENTNRNRProcedure:NRNRNRMingonium (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.114Celemante (HCO)NRMangacesum (Mg)13.5001.150Nimet (LEN)NRMangacesum (Mg)13.5001.150Nimet (LEN)NRMangacesum (Mg)13.400Celemante (LEN)NRNRMangacesum (Mg)13.400Celemante (LEN)NRNRMangacesum (Mg)13.400Celemante (LEN)NRNRMangacesum (Mg)13.400Celemante (LEN)NRNR	Sample Id/Site Id:		249612 / 2	Sample D	Sample Date: 9/22/			/2020 10:48:00 AM				
name Commy/State:WG84Lab Jant:I1/9/202 010:14:47 AUAltitute:Lab/Analyst:Cab/Analyst:MCATTAMER, JACKECommy/State:JEFFERSON / MTSample Method Handling:GRAB / ncl : no: 1: for: 1: for	•		07N 05W 20 B		Agency/S	ampler:	MBMG / ICOPINI, GARY					
name Commy/State:WG84Lab Jant:I1/9/202 010:14:47 AUAltitute:Lab/Analyst:Cab/Analyst:MCATTAMER, JACKECommy/State:JEFFERSON / MTSample Method Handling:GRAB / ncl : no: 1: for: 1: for	Latitude/Longitude:		46° 20' 53	41" W Field Nun	nber:	CRY						
Altinde:JEFFER SON / MTSample M=lowel/1=wileMBM O/ TIMME, J-CKIEConclyState:JEFFER SON / MTSample M=lowel/1=wileGRAJ m: 1 m: 0 fit: 0 fit: 1 m:	e											
County/State:JEFFERSON / MTSample Method/Harding:GRAB / ric1 ra/0.rl ra/0.					ret.							
Sine Type:MINE DRAINAGEProcedure Type:DISSULVEDGeolog:Total Depth (ft):NRUSGS 7.5 'Quad:SW1-WP (ft):NRWS la:Depth Vater Enters (ft):NRProject:DLFORS'T JASUNATION (ft):NRProject:DLFORS'T JASUNATION (ft):NRMagnesium (Mg)13.5001.11Carbonate (CO3)0.000Sodium (NA)13.5001.11Carbonate (CO3)0.000Sodium (NA)13.200.144Carbonate (CO3)0.000Poinssium (K)13.200.144Sulface (SO4)464.000Magnesium (Mg)13.200.144Sulface (SO4)0.0200.000Magnesium (K)13.200.144Sulface (SO4)0.0200.000Magnesium (K)1.3200.144Sulface (SO4)0.0200.000Magnese (Mn)3.3100.144Sulface (SO4)0.0200.000Magnese (Mn)2.140Cobalt (CO):1.550Strontium (ST):1.83.600Antimory (Sb):3.240Copper (Cu):6.007.410Nodybdenum (Ne):0.550Strontium (ST):0.100Barylinu (Ba):2.340Copper (Cu):6.007.410Nodybdenum (Ne):0.510Thalium (T1):0.100Barylinu (Ba):2.340Copper (Cu):6.007.410Nodybdenum (Ne):0.510Thalium (T1):0.100Barylinu (Ba):2.340Copper (Cu):6.007.410Nodybdenum (Ne):0.510Thalium (T1):0.100Baryl			IEEEEDC	-								
Total Depth (f):NR VUSGS 7.5 'Quad:SWL-MP (f):NR PWS ld:PWS ld:Depth Water Enters (f):NRProject:DLFORST, BASIN_WTRSHDProject:DLFORST, BASIN_WTRSHDMagnesim (Mg)13.5001.111Calcium (Ca) $47.190$ 2.355Bicarbonate (HCO3)0.000Sodium (Na)33.100.144Sodium (Na)13.200.034Sodium (Na)13.200.034Sodium (Na)13.200.034Sugarsen (Ng)10.8870.396Pitassium (K)13.29Othopophate (as P)Outor (Fe)40.7431.459Nitrate (as N)0.0700.000Stica (SO2)2.100Othopophate (as P)Othopophate (As P)0.2000.001Stica (SO2)0.010Nitrate (as N)Antimony (Sb)3.240Chorroin (Cr):3.640Manganese (An)1.03870.396Partinus (A):2.910Thanium (Ch):0.2101Antimony (Sb)3.240Chorroin (Cr):3.010Natinum (A):4.139.800Cesium (Cs):3.010Partinus (As):107.040Cobalt (Co):10.000Nobium (Nb):0.530Trontium (Sr):18.3600Antimony (Sb)3.240Chorroin (Ch):2.9106Thatimum (A):1.197Chorroin (Ch):2.9106Antimony (Sb):3.910Pranting (B):0.2101Antimony (Sb):3.910Pranting (B):	2			1		e						
SWL-M (N):       NUC         SWL-M (N):       NUC         Personal Sector (N):       NUC         Personal Sector (N):       NUC         Tail Colspan="2">SWL-MP (R):       NUC         Major DR Secus:         Major DR Secus:         One (N):       Notice (P):       Notice (P):       Notice (P):         Major DR Secus:       One (N):       Notice (P):       One (N):       Notice (P):         Calcium (Ca)       Major DR Secus:       Notice (P):       One (N):       One (N): <th codd="" n<="" td=""><td><b>2</b> I</td><td></td><td colspan="2">MINE DRAINAGE</td><td></td><td>•1</td><td></td><td colspan="4"></td></th>	<td><b>2</b> I</td> <td></td> <td colspan="2">MINE DRAINAGE</td> <td></td> <td>•1</td> <td></td> <td colspan="4"></td>	<b>2</b> I		MINE DRAINAGE			•1					
Project:DEFORE TABLEDEFORE TABLETABLE TABLETABLE TABLETABLE TABLETABLE TABLE TABLETABLE TABLE TAB								NR				
DLFORST, BASIN_WTRSHD         Major Lon Results         mg/L       mg/L <th cols<="" td=""><td>USGS 7.5' Quad:</td><td></td><td></td><td></td><td>SWL-MP</td><td>(ft):</td><td>NR</td><td></td><td></td><td></td></th>	<td>USGS 7.5' Quad:</td> <td></td> <td></td> <td></td> <td>SWL-MP</td> <td>(ft):</td> <td>NR</td> <td></td> <td></td> <td></td>	USGS 7.5' Quad:				SWL-MP	(ft):	NR				
$\begin{tabular}{ c c c c c c } \hline Partial constraint of the term of term $	PWS Id:				Depth Wa	ter Enters (	ft): NR					
	Project:		DLFORS	T, BASIN_W	TRSHD							
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Major Ion Results											
Magnesium (Mg)       13.500       1.111       Carbonate (CO3)       0.000       0.000         Sodium (Na)       3.310       0.144       Choride (CI)       0.660       0.019       484.000       10.082         Potassium (K)       1.320       0.034       Sulfate (SO4)       484.000       10.082       10.082         Iron (Fe)       40.743       1.459       Nitrate (as N)       0.202       0.001       0.000         Silica (SiO2)       21.160       Orthophosphate (as P)       0.020 J       0.000       1.011         Silica (SiO2)       21.160       Orthophosphate (as V)       0.550       Strontium (Sr):       183.600         Animony (Sb):       3.240       Chornium (Cr):       <0.0740		`				22)						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $						53)						
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$												
$\begin{split} \begin{array}{c c c c c c } & 10.887 \\ Silica (SiO2 \\ & 21.160 \\ & 21.80 \\ \hline \\ &$												
Silica (SiO2)21.10Orthophosphate (as P)0.020 J0.000 $IOIII > IOIII > IOIIII > IOIII > IOI$												
Total Cations1.299Total Anions10.117Trace Element Results ( $\mu$ ):Total Anions10.117Trace Element Results ( $\mu$ ):Inter Celement Results ( $\mu$ ):Inter Celement Results ( $\mu$ ):Inter Celement Results ( $\mu$ ):10.117Aluminum (Al):4,139,800Cesum (Cs):3.640Molybdenum (Mo):0.550Strontium (Sr):183,600Antimony (Sb):3.240Colper (Cu):6,0100 UNickel (Ni):0.510Therium (Th):<0.100 UBarium (Ba):0.3440Colper (Cu):6,07,410Neadymium (Pd):1.010Titanium (Ti):7.650Boron (B):0.940Galium (Ga):1.630Palladium (Pd):9.310Pracedymium (Pd):1.010Titanium (Ti):2.950Cadmium (Cd):368.170Lithium (Li):2.0640Silver (Ag):0.250 JVanadium (Y):<0.100 UStront Insisolved Solids (mg/L):NT at Solids (mg/L):NTNTNTNTNTNT <th cols<="" td=""><td>ç</td><td>· /</td><td></td><td>0.396</td><td></td><td>ng D)</td><td></td><td></td><td></td><td></td></th>	<td>ç</td> <td>· /</td> <td></td> <td>0.396</td> <td></td> <td>ng D)</td> <td></td> <td></td> <td></td> <td></td>	ç	· /		0.396		ng D)					
Hare Elementer under the function of the function	Silica (5102			1			Anions	0.020 J				
Antimony (Sb):3.240Chromium (Cr):<0.100 UNickel (Ni):29.060Thallium (TI):0.210 JArsenic (As):107.040Cobalt (Co):175.950Niobium (Nb):0.510Thorium (Th):<0.100 U					lement Results (µ							
Arsenic (As):107.040Cobalt (Co):175.950Niobium (Nb):0.510Thorium (Th):<0.100 UBarium (Ba):23.440Copper (Cu):6,007.410Noodymium (Nd):6.140Tin (Sn):<0.100 U		· ·						( )				
Barium (Ba):23.440Copper (Cu):6,007.410Neodymium (Nd):6.140Tin (Sn):<0.100UBeryllium (Be):0.940Gallium (Ga):1.630Palladium (Pd):1.010Titanium (Ti):7.650Boron (B):61.100Lanthanuum (La):9.310Praseodymium (Pt):1.990Tungsten (W):<0.100												
Beryllium (Be):0.940Gallium (Ga):1.630Palladium (Pd):1.010Titanium (Ti):7.650Boron (B):61.100Lanthanum (La):9.310Praseodymium (Pt):1.990Tungsten (W):<0.100 U												
Bromide (Br):<10.000 ULead (Pb):69.960Rubidium (Rb):9.530Uranium (U):25.950Cadmium (Cd):368.170Lithium (Li):20.640Silver (Ag):0.250 JVanadium (V):<0.100 U								· · ·				
Cadmium (Cd):368.170 (Cerium (Ce):Lithium (Li):20.640 (Mercury (Hg):Silver (Ag):0.250 J (Mercury (Hg):Vanadium (V):<0.100 U (Jice (Zn): $37,300.150$ (Jice (Zn: $37,300.150$				m (La): 9.310 Pr								
Cerium (Ce):17.000Mercury (Hg):NRSelenium (Se):0.660Zinc (Zn):37,300.150Field Chemistry and Other Analytical ResultsField Chemistry and Other Analytical Results**Total Dissolved Solids (mg/L):670.14Field Hardness as CaCO3 (mg/L):NRAmmonia (mg/L):NR**Total Dissolved Solids (mg/L):670.14Field Alkalinity as CaCO3 (mg/L):NRPCP (ug/L):NRField Conductivity (µmhos):691.4Field Alkalinity as CaCO3 (mg/L):NRPCP (ug/L):NRLab Conductivity (µmhos):729.9Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):<0.030 U			· /		· · · · · · · · · · · · · · · · · · ·	/						
Zirconium (Zr): 0.280 JField Chemistry and Other Analytical Results**Total Dissolved Solids (mg/L):670.14 Field Hardness as CaCO3 (mg/L):NRAmmonia (mg/L):NR**Sum of Diss. Constituents (mg/L):670.14 Hardness as CaCO3:173.4T.P. Hydrocarbons (µg/L):NRField Conductivity (µmhos):691.4Field Alkalinity as CaCO3 (mg/L):NRPCP (µg/L):NRLab Conductivity (µmhos):729.9Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):<0.030 U			· · ·									
Field Chemistry and Other Analytize Results         **Total Dissolved Solids (mg/L):       670.14 Field Hardness as CaCO3 (mg/L):       NR       Ammonia (mg/L):       NR         **Sum of Diss. Constituents (mg/L):       670.14 Hardness as CaCO3:       173.4       T.P. Hydrocarbons (µg/L):       NR         Field Conductivity (µmhos):       691.4       Field Alkalinity as CaCO3 (mg/L):       NR       PCP (µg/L):       NR         Lab Conductivity (µmhos):       729.9       Alkalinity as CaCO3 (mg/L):       0       Phosphorus, TD (mg/L):       <0.030 U	Certain (CC).	17.000	wereary (rig).	INIX	Scientum (S	c).	0.000	( )				
**Sum of Diss. Constituents (mg/L):       670.14 Hardness as CaCO3:       173.4       T.P. Hydrocarbons (µg/L):       NR         Field Conductivity (µmhos):       691.4       Field Alkalinity as CaCO3 (mg/L):       NR       PCP (µg/L):       NR         Lab Conductivity (µmhos):       729.9       Alkalinity as CaCO3 (mg/L):       0       Phosphorus, TD (mg/L):       <0.030 U			Fie	d Chemistry	and Other Analy	tical Result	ts	( )				
Field Conductivity (µmhos):601.4Field Alkalinity as CaCO3 (mg/L):NRPCP (µg/L):NRLab Conductivity (µmhos):729.9Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):<0.030 U		ίų,		O3 (mg/L):		· ·	0 /					
Lab Conductivity (µmhos):729.9Alkalinity as CaCO3 (mg/L):0Phosphorus, TD (mg/L):<0.030 UField pH:4.35Ryznar Stability Index:15.102Field Nitrate (mg/L):NRLab pH:4.45Sodium Adsorption Ratio:0.0991Field Dissolved O2 (mg/L):7.840Water Temp (°C):5.8Langlier Saturation Index:-5.326Field Chloride (mg/L):NRAir Temp (°C):NRNitrite (mg/L as N):<0.010 U Field Redox (mV):						-						
Field pH:4.35Ryznar Stability Index:15.102Field Nitrate (mg/L):NRLab pH:4.45Sodium Adsorption Ratio:0.0991Field Dissolved O2 (mg/L):7.840Water Temp (°C):5.8Langlier Saturation Index:-5.326Field Chloride (mg/L):NRAir Temp (°C):NRNitrite (mg/L as N):<0.010 U Field Redox (mV):	• (1 )			• • •								
Lab pH:4.45Sodium Adsorption Ratio: $0.0991$ Field Dissolved O2 (mg/L):7.840Water Temp (°C):5.8Langlier Saturation Index: $-5.326$ Field Chloride (mg/L):NRAir Temp (°C):NRNitrite (mg/L as N): $<0.010$ U Field Redox (mV):461Nitrate + Nitrite (mg/L as N)NRHydroxide (mg/L as OH): $0.000$ Lab, Dissolved Organic Carbon (mg/L):NRTotal Kjeldahl Nitrogen (mg/L as N)NRLab, Dissolved Inorganic Carbon (mg/L):NRLab, Total Organic Carbon (mg/L):NRTotal Nitrogen (mg/L as N)NRAcidity to $4.5$ (mg/L CaCO3) $235.000$ Acidity to $8.3$ (mg/L CaCO3) $603.000$ As(III) (µg/L)NRAs(V) (µg/L)NRTotal Susp Solids (mg/L)NRNotesSample Condition:CLEARField Remarks:							· ·					
Water Temp (°C):5.8Langlier Saturation Index:-5.326Field Chloride (mg/L):NRAir Temp (°C):NRNitrite (mg/L as N):<0.010 U Field Redox (mV):	*		5 5									
Air Temp (°C):       NR       Nitrite (mg/L as N):       <0.010 U Field Redox (mV):	*		1									
Nitrate + Nitrite (mg/L as N)       NR       Hydroxide (mg/L as OH):       0.000       Lab, Dissolved Organic Carbon (mg/L):       NR         Total Kjeldahl Nitrogen (mg/L as N)       NR       Lab, Dissolved Inorganic Carbon (mg/L):       NR       Lab, Total Organic Carbon (mg/L):       NR         Total Nitrogen (mg/L as N)       NR       Acidity to 4.5 (mg/L CaCO3)       235.000       Acidity to 8.3 (mg/L CaCO3)       603.000         As(III) (µg/L)       NR       As(V) (µg/L)       NR       Total Susp Solids (mg/L)       NR         Sample Condition:       CLEAR       Field Remarks:       Field Remarks:       Image: Clear Alpha Alp			8									
Total Kjeldahl Nitrogen (mg/L as N)       NR       Lab, Dissolved Inorganic Carbon (mg/L):       NR       Lab, Total Organic Carbon (mg/L):       NR         Total Nitrogen (mg/L as N)       NR       Acidity to 4.5 (mg/L CaCO3)       235.000       Acidity to 8.3 (mg/L CaCO3)       603.000         As(III) (µg/L)       NR       As(V) (µg/L)       NR       Total Susp Solids (mg/L)       NR         Sample Condition:       CLEAR       CLEAR       Field Remarks:       Image: Clear Color Clear Cle	A 1 7											
Total Nitrogen (mg/L as N)       NR       Acidity to 4.5 (mg/L CaCO3)       235.000       Acidity to 8.3 (mg/L CaCO3)       603.000         As(III) (µg/L)       NR       As(V) (µg/L)       NR       Total Susp Solids (mg/L)       NR         Sample Condition:       CLEAR       CLEAR       Field Remarks:       Image: Clear Color Clear Cle								e				
As(III) (µg/L) NR As(V) (µg/L) NR Total Susp Solids (mg/L) NR Notes Sample Condition: CLEAR Field Remarks:	, e ( e )			, , , , , , , , , , , , , , , , , , , ,				-	-			
Notes       Sample Condition:     CLEAR       Field Remarks:     CLEAR	6 ( 6 )		, , , , , , , , , , , , , , , , , , , ,				5					
Field Remarks:	·			······································	Notes		1 Sun Subp c	(ing L)				
	*	CLEAR										
Lab Kemarks:												
Performant l'incorrent l'encorrent												

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

# Disclaimer

Site Name: CRYSTAL MINE ADIT

Compare to Water Quality Standards

Location Information										
Sample Id/Site Id:		249615 / 2	257068 Sample Date		e:	9/22/2020 10:48:00 AM				
Location (TRS): 07N 05W			20 B Agency/Sat		npler:	MBM	AG / ICOPINI, O			
Latitude/Longitude:		46° 20' 53"	' N 112° 15' 41'	"W Field Numb	er:	CRY	CRYSTAL MINE FLUME			
Datum:		WGS84				11/9/	11/9/2020 10:14:48 AM			
Altitude:			Lab/Analys		ŀ	MBM	MBMG / TIMMER, JACKIE			
County/State:		JEFFERSC								
Site Type:			1			C	TOTAL RECOVERABLE			
Geology:						NR		IDEL		
27				Total Depth						
USGS 7.5' Quad:				SWL-MP (f	/	NR				
PWS Id:				Depth Wate	r Enters	(ft): NR				
Project:		DLFORST	, BASIN_WTR							
		/T	3	or Ion Results					а/ <b>Т</b>	
Calcium (Ca	u)	<b>mg/L</b> 50.150	meq/L 2.502	Bicarbonate (HC	03)		mg/L NR	<b>me</b> 0.000	q/L	
Magnesium		14.760	1.215	Carbonate (CO3)			NR	0.000		
Sodium (Na		3.410	0.148	Chloride (Cl)			NR	0.000		
Potassium (I	Ŕ)	1.320	0.034	Sulfate (SO4)			NR	0.000		
Iron (Fe)		45.019	1.612	Nitrate (as N)			NR	0.000		
Manganese	(Mn)	11.422	0.416	Fluoride (F)			NR	0.000		
Silica (SiO2		NR		Orthophosphate (			NR	0.000		
	Total Ca	itions	7.928			al Anions		0.000		
	5 10 6 500	a · (a)		ment Results (µg/		0.500.1	a: .a	、 、	216.650	
Aluminum (Al):	5,196.790	Cesium (Cs):	3.470	Molybdenum (N	/10):	0.560 J	Strontium (Sr		216.650	
Antimony (Sb):	4.460	Chromium (Cr):	0.940 J	Nickel (Ni):		31.720 1.000 J			<0.250 U	
Arsenic (As): Barium (Ba):	268.720 27.120			Niobium (Nb): Neodymium (No	d).	7.440			0.530 J <0.250 U	
Beryllium (Be):	1.110 J	Copper (Cu): Gallium (Ga):	6,508.290 1.610	Palladium (Pd):	u).	1.090 J	Titanium (Ti)		13.460	
Boron (B):	58.300			Praseodymium (Pd).					<0.250 U	
Bromide (Br):	NR			Rubidium (Rb):					25.390	
Cadmium (Cd):	557.350	Lithium (Li):				NR	Vanadium (V		<0.250 U	
Cerium (Ce):	16.560	Mercury (Hg):	NR	Selenium (Se):			Zinc (Zn):	).	39,498.270	
		5 ( 6)		( )		<0.250 U	Zirconium (Z	r):	<0.250 U	
		Field	d Chemistry a	nd Other Analytic	al Resu	lts				
**Total Dissolved Solids (mg/L): NR Field Hardness as CaCO3 (n				3 (mg/L):	NR	Ammonia (mg	,		NR	
			as CaCO3:			-	.P. Hydrocarbons (μg/L):		NR	
			alinity as CaCO3 (mg/L):		NR	PCP (µg/L):			NR	
5 (1 )			as CaCO3 (mg/L):		NR	Phosphorus, T		<0.030 U NR		
Field pH:4.35Ryznar Stability Index:						Tield Nitrate (mg/L):				
Lab pH:NRSodium Adsorption Ratio:					Field Dissolve			7.840		
Water Temp (°C):5.8Langlier Saturation Index:Lin Temp (°C):D					Field Chloride		NR			
Air Temp (°C):     NR     Nitrite (mg/L as N):				NR	Field Redox (1	,		461		
Nitrate + Nitrite (mg/L as N) NR Hydroxide (mg/L as OH):				NR	,	d Organic Carbo		/		
Total Kjeldahl Nitrogen (mg/L as N) NR Lab, Dissolved Inorgan			e	( U )	NR		ganic Carbon (n	<b>U</b> /	NR	
Total Nitrogen (mg/L as N) NR Acidity to 4.5 (mg/L Cat			203)	NR	•	(mg/L CaCO3)		NR		
As(III) $(\mu g/L)$ NR As(V) $(\mu g/L)$			/L)		NR	Total Susp So	lids (mg/L)		NR	
Comple Condition	CLEAD			Notes						
Sample Condition:	CLEAR									
Field Remarks:										
Lab Remarks:										

Explanation: mg/L = milligrams per Liter;  $\mu g/L$  = micrograms per Liter; ft = feet; NR = No Reading in GWIC

<u>Qualifiers:</u> A = Hydride atomic absorption; E = Estimated due to interference; H = Exceeded holding time; J = Estimated quantity above detection limit but below reporting limit; K = Na+K combined; N = Spiked sample recovery not within control limits; P = Preserved sample; S = Method of standard additions; U = Undetected quantity below detection limit; \* = Duplicate analysis not within control limits; \*\* = Sum of Dissolved Constituents is the sum of major cations (Na, Ca, K, Mg, Mn, Fe) and anions (HCO3, CO3, SO4, Cl, SiO2, NO3, F) in mg/L. Total Dissolved Solids is reported as equivalent weight of evaporation residue.

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