March 20, 2019

Daryl Reed, Hydrogeologist
Montana Department of Environmental Quality
1225 Cedar St
P.O. Box 200901
Helena, MT 59620-0901

RE: CONTRACT NO. 415008-TO-2, BUTTE MINE FLOODING–FEBRUARY 2019 MONTHLY REPORT, BMFOU CONSENT DECREE 02-35-BU-SEH

Dear Daryl:

Enclosed is the February 2019 monthly report for Contract No. 415008-TO-2, Butte Mine Flooding CD Monitoring. This report is in partial fulfillment of the terms contained in the Butte Mine Flooding Operable Unit Consent Decree-02-35-BU-SEH. The enclosed report briefly discusses the major activities undertaken during the month and presents data from monitoring activities.

Water level monitoring of the Granite Mountain Mine continues to be suspended due to an obstruction in the shaft and safety concerns around the mine headframe and shaft.

Water level monitoring of GS-41S and GS-41-D remains suspended until Phase I removal activities at the Parrot Tailings site are complete and new/replacement wells are installed.

The Pilot Butte, Lexington, Steward, and Marget Ann mines, were not accessible due to drifting snow, as were a number of monitoring wells. Montana Resources and Butte-Silver Bow helped with access where possible but many sites were still inaccessible.

The Berkeley Pit water level was surveyed by Common Sense Engineering and Surveying on March 4, 2019 and was at an elevation of 5,352.14 feet.

Figures referenced in the report are contained on the enclosed compact disc in a PDF file format. If you have questions about the project, or the enclosed report, do not hesitate to contact me. Electronic copies of the report (text only) and water-level data have been sent to the required parties, per Appendix C of the Consent Decree.

Sincerely,

Ted Duaime
Hydrogeologist

TD: cm
Enclosures

xc: Nikia Greene, EPA
Mark Thompson, MR
Steve Walsh, MR
Loren Burmeister, AR (elec. only)
Tim Hilmo, AR (all report - elec. only)
Irene Montero, AR (elec. only)
Rich Keeland, PTS (elec. only)
Julia Crain, BSB (elec. only)
Fritz Daily (elec. only)
Eric Hassler, BSB (elec. only)
Garrett Smith, DEQ-HRB (elec. only)
CTEC
File
Chapin Storrar, CDM (elec. only)
Karen Sullivan, BSB (elec. only)
Jon Sesso, BSB Courthouse
Tom Malloy, BSB Courthouse (elec. only)
Mark Neary, BSB Courthouse
Brandon Warner, BSB (elec. only)
Mark Schaffer, PTS (elec. only)
Rayelynn Brandl, CFWEP (elec. only)
Jeremy Fleege, MR (elec. only)
Mike Harvie, MR (elec. only)

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MBMG Butte Mine Flooding Monthly Report
BMFOU Consent Decree 02-35-BU-SEH
Remedial Action–Monitoring Program
Contract No. 415008-TO-2
February 2019

The Montana Bureau of Mines and Geology (MBMG) continued to perform monitoring and sampling activities for the Butte Mine Flooding Operable Unit (BMFOU), per the conditions of the 2002 Consent Decree as outlined in the Remedial Action Monitoring Program. Normal monthly activities include the monitoring of surface-water flows in the Horseshoe Bend (HSB) drainage, water-quality sampling of HSB, water-level monitoring, and report preparation. Due to site access issues (snow drifts), no water levels were obtained from the Marget Ann Mine, well S-4, and Pilot Butte, Emma, Ophir and Steward mines, along with several alluvial wells around town that were covered with snow piles. Montana Resources and Butte Silver Bow helped with access where possible.

Water-level monitoring at the Granite Mountain Mine continues to be suspended due to safety concerns around the mine headframe; an evaluation is underway looking at the feasibility of installing a monitoring well into the Granite Mountain workings for monitoring purposes.

Horseshoe Bend Monitoring

The average flow rate for the month at HSB weir and the change from the previous month is shown in Table 1, while a summary of average, maximum, minimum, and total flow at the HSB weir is attached at the end of the report (attachment 1). Graphs showing the daily average flow rates and cumulative flow rates are also attached (attachment 2).

Monitoring Site	Monthly Avg. Flow (gpm)	Change from Previous Month (gpm)
HSB Drainage	2,738	-207

Table 1. Monthly Average Flow Rate and Change from Previous Month for the Horseshoe Bend Site.

MR continues to use a portion of the HSB water for the leach pads, which periodically change flows in this system. The first major use of HSB water occurred on September 20, 2012.

The HSB weir was replaced with a larger rectangular weir during December 2015; as part of this upgrade the non-contact radar sensor and staff gauge were relocated. Quality assurance testing of the radar sensor was conducted during May 2016; the signal-to-noise (SNR) ratio was 47. A SNR value of 15 or above represents high quality data collection. The average SNR during February was 40.8. Based on test results and monthly readings, high quality data continues to be collected at this site.

East Camp Alluvial System Monitoring

The East Camp alluvial groundwater monitoring system consists of the LP- and MR97-series wells located within the active mine area, and selected AMC, GS, AMW, and BMF05-series wells. All of the wells associated with the four latter groups are located outside and to the south of the active mine area, with the exception of wells AMC-5 and AMC-15, which are within the active mine area. Table 2 summarizes the water-level changes for the alluvial wells and presents the maximum water-level increase and decrease within each group. Well AMC-10 has been dry since its installation. The water-level variations seen in well LP-15 are the result of continued dewatering

activities undertaken by MR to lower alluvial water levels. Graphs showing responses to pumping in well LP-15, and water levels for wells LP-15 and LP-16 are included on the accompanying compact disk; current and previous pumping influences are shown. Pressure transducers have been installed in wells LP-12, LP-13, and LP-16 to better monitor water-level fluctuations related to dewatering activities; hydrographs for these wells are included on the compact disk.

Well Series (No. Wells)	No. Wells Water Level Increased	No. Wells Water Level Decreased	Max. Water-Level Increase	Max. Water-Level Decrease
LP (14)	7	7	3.33	-0.75
MR97 (4)	2	2	0.05	-0.31
AMC (7)	0	5	—	-0.43
GS (4)	0	4	—	-0.31
AMW (3)	0	2	—	-0.31
BMF05 (4)	0	2	—	-0.28

Table 2. East Camp Alluvial Well Water-Level Changes.

Hydrographs for wells LP-1-LP-2-LP-4, LP-9-LP-10, and LP-14-LP-15-LP-16, showing the long-term trends are included on the accompanying compact disk. These wells are reflective of the general alluvial system within the active mine area and show greater variability, the result of historic and current mine operations and seasonal trends. Water levels in basin alluvial wells (wells outside the active mine area) decreased at a majority of sites this month in response to seasonal climatic conditions.

Twenty-four alluvial wells within the East Camp system are equipped with pressure transducers to record water-level changes every hour. These detailed records provide information on the daily and seasonal changes that occur within the regional groundwater system. Copies of the monthly and long-term hydrographs for each of these sites are included on the accompanying compact disk. Influences from on-going dewatering activities are noticeable on these graphs.

Figure 1 shows daily average water levels for wells LP-14, AMC-8, and BMF05-3. Well LP-14 is located on the southern edge of the mine property, well AMC-8 is just south of LP-14 outside the mine area, and well BMF05-3 is farther south in the basin. Wells LP-14 and AMC-8 have shown periodic influences from mining activities while well BMF05-3 is outside the area of influence of current or historic mining activity. An increasing water-level trend (long-term) was noticeable in wells LP-14 and AMC-8 from 2003-2011 followed by a decline from 2012-2015; water levels rose during much of 2016 into early 2017. Water levels steadily declined through much of 2017-2018 and into 2019; water-level responses in both wells are similar. Water levels in well BMF05-3 depict a more seasonal trend, with little overall net water-level change. The influence of irrigation wells near sites BMF05-3 and BMF05-4 during the summer and fall months is apparent on the monthly well hydrographs.

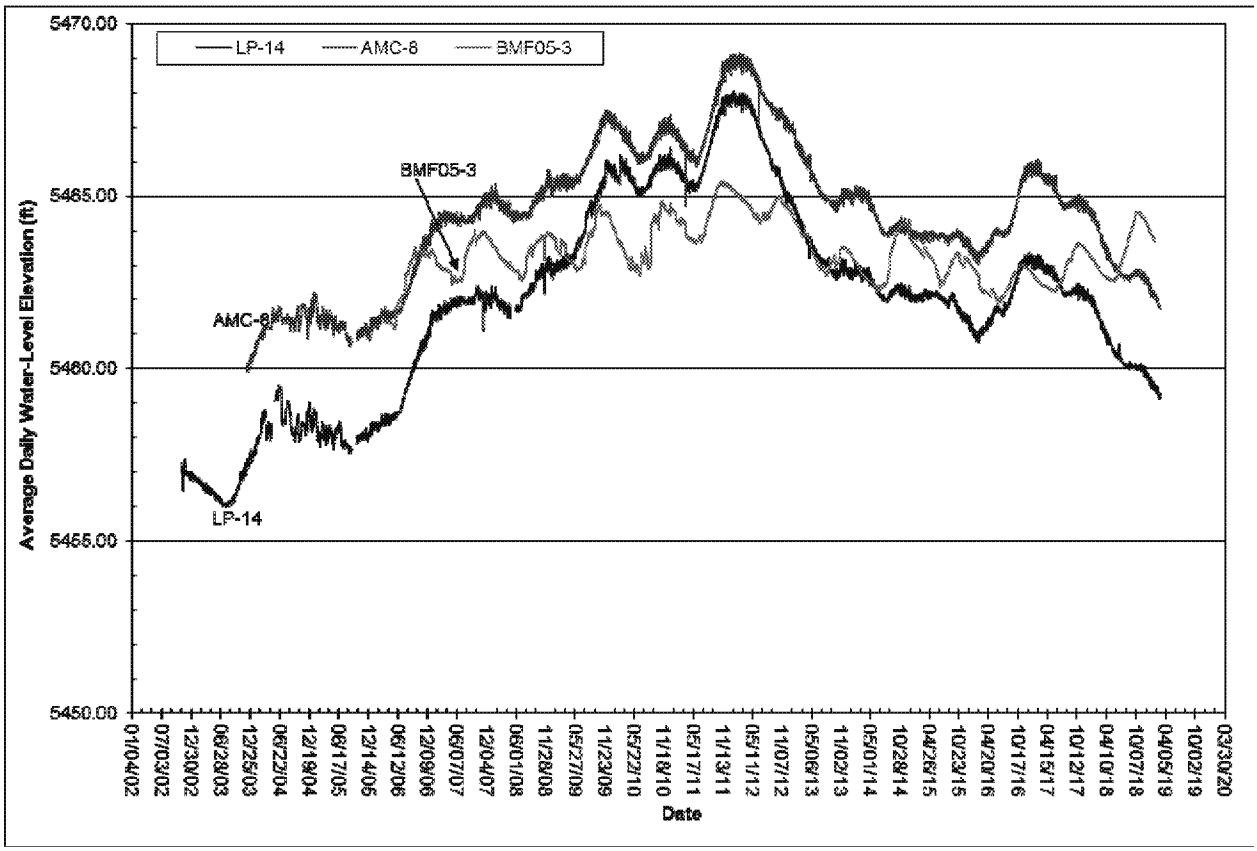


Figure 1. Hydrograph showing water-level elevations for alluvial wells LP-14, AMC-8, and BMF05-3.

The GS-series wells are two pairs of nested wells, a shallow and a deep well, within the alluvial aquifer. Figure 2 is a hydrograph showing the water levels for wells GS-44S and GS-44D. The water-level changes shown on this graph are similar to those for the GS-46S and GS-46D nested wells; water levels increase from snowmelt in late spring and precipitation during the summer followed by water-level declines in the fall and winter.

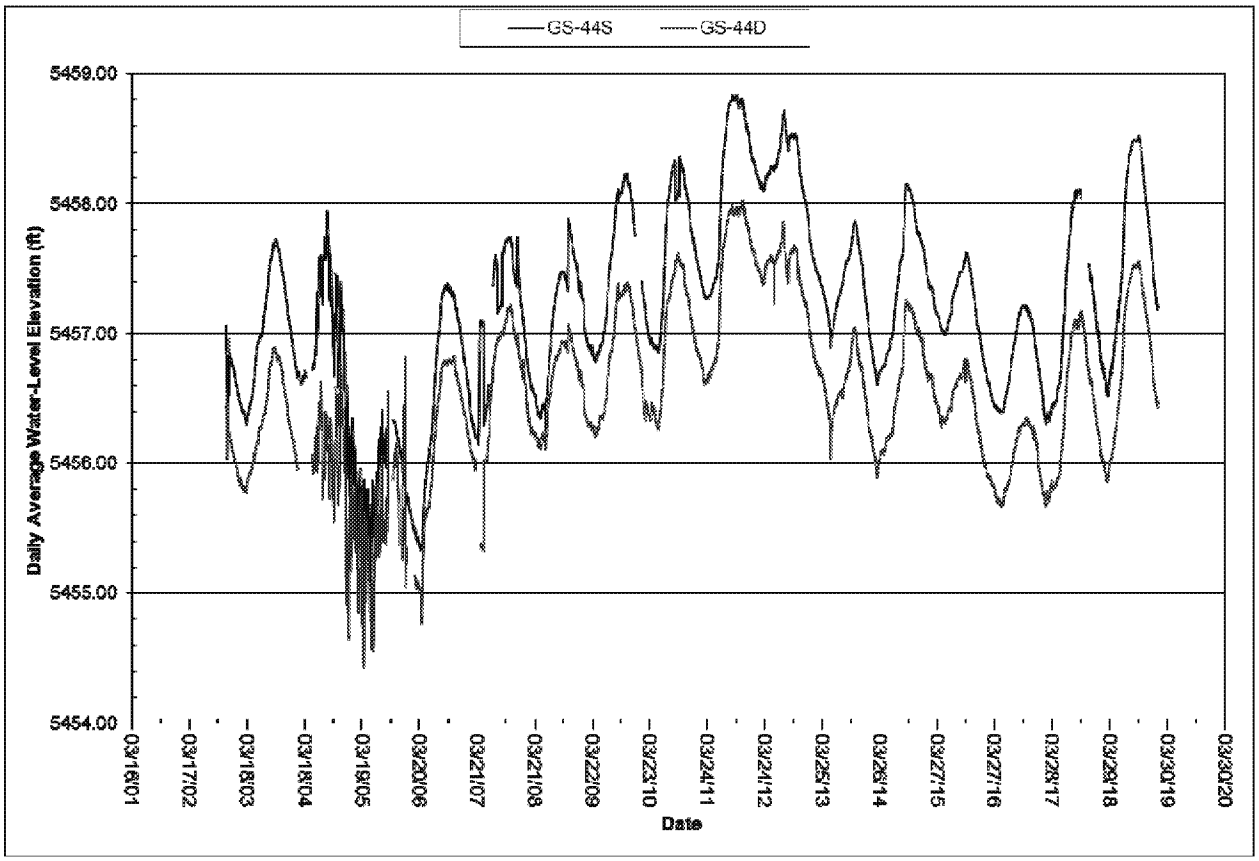


Figure 2. Hydrograph showing water-level elevations for alluvial wells GS-44S and GS-44D.

East Camp Mine and Bedrock System

The East Camp bedrock system consists of six underground mines, 10 bedrock wells within the active mine area, and three bedrock wells outside the active mine area. The latter wells are located at Hebgen, Parrot, and Belmont parks. The Berkeley Pit is part of the East Camp bedrock monitoring system. Due to an obstruction in the Granite Mountain - mine shaft, no water level was obtained this month.

The 1994 Record of Decision (ROD) and 2002 Consent Decree (CD) established the maximum level that water in the East Camp bedrock system will be allowed to rise to, and is based upon fourteen compliance points within that system. The compliance points are bedrock wells A, C, D-1, D-2, G, J, and Belmont well #2, plus the following mine shafts: Anselmo, Steward, Pilot Butte, Granite Mountain, Lexington, Kelley, and Continental Pit, or its monitoring well located at the Sarsfield Shaft. Under the conditions contained in the CD, the water level in the bedrock system cannot exceed the Critical Water Level (CWL) of 5,410 ft elevation at any of the compliance points, ensuring that the water level in the Berkeley Pit remains the lowest point within the East Camp bedrock system. (Effective February 2019 the term Critical Water Level is being replaced by Protective Water Level (PWL), to more accurately reflect the relationship of the 5410 bedrock water level elevation to adjacent alluvial water levels.) Table 3 contains the most recent monthly water levels for selected compliance points and the Berkeley Pit, and the depth below the PWL. Currently, the water level is highest in the Pilot Butte Mine, with the water

level 32.65 ft (January 2019 level) below the PWL.

Compliance Point	Monthly Water Level (ft)	Depth Below PWL (ft)
Anselmo Mine	5,373.44	36.56
Granite Mountain Mine	NR	—
Pilot Butte Mine	5,377.35 (Jan. 2019 reading)	32.65
Kelley Mine	5365.09	44.91
Belmont Well #2	5,363.40 (Jan. 2019 reading)	46.60
Well A	5,364.75	45.25
Well C	5,357.10	52.90
Well G	5,367.57	42.43
Berkeley Pit	5,352.14	57.86

Table 3. Selected Compliance Points Monthly Water-Level Elevation and Depth below Protective Water Level (PWL).

Copies of water-level data are attached and graphs from selected sites are included on the accompanying compact disk. Table 4 summarizes the water-level changes for the past month within the East Camp bedrock system, along with the maximum changes within each group of monitoring sites. Within the East Camp bedrock system, 11 wells and 5 mine shafts are equipped with pressure transducers that record hourly water-level changes.

The transducer was replaced in the Kelley shaft the end of December and no issues were observed with the February data.

Monitoring Sites (No. Mines/Wells)	No. Sites Water Level Increased	No. Sites Water Level Decreased	Max. Water-Level Increase	Max. Water-Level Decrease
Mine Shafts (6)	3	0	1.47	—
Bedrock Wells within Active Mine Area (10)**	8	0	0.89	—
Bedrock Wells outside Active Mine Area (3)	0	1	—	-0.92

**Includes Belmont Well #2.
Table 4. East Camp Bedrock Water-Level Changes.

Copies of the monthly and long-term hydrographs for each site are included with the accompanying compact disk. Figure 3 is a hydrograph showing a comparison of daily average water-level elevations for wells A, C, and G. Water levels continue an upward trend, reflecting groundwater recovery from historic mine-dewatering practices.

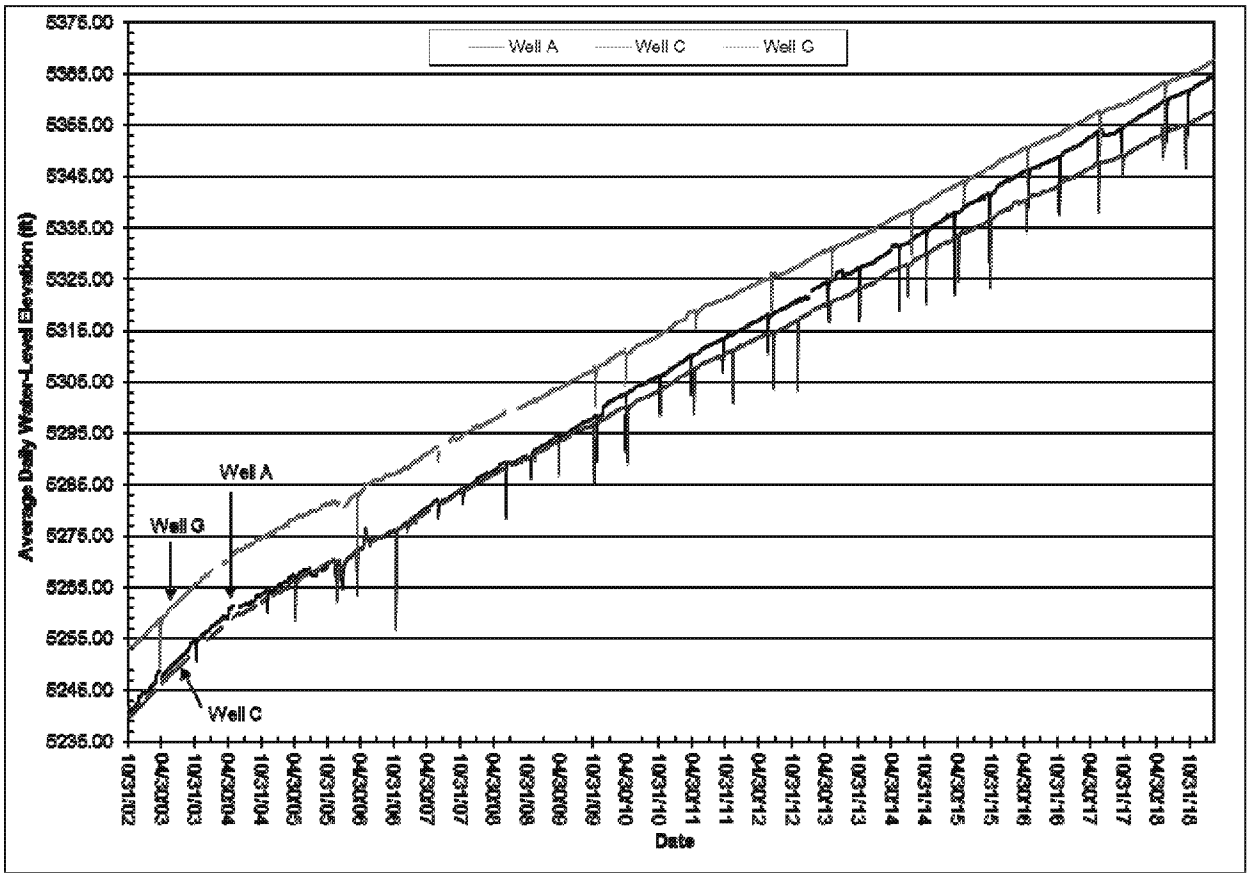


Figure 3. Hydrograph showing water-level elevations for bedrock wells A, C, and G.

West Camp System

The West Camp monitoring system consists of three underground mines: Emma, Ophir, Travona, and six monitoring wells. Table 5 summarizes the water-level changes for the past month within the West Camp bedrock system, along with the maximum changes within each group of monitoring sites.

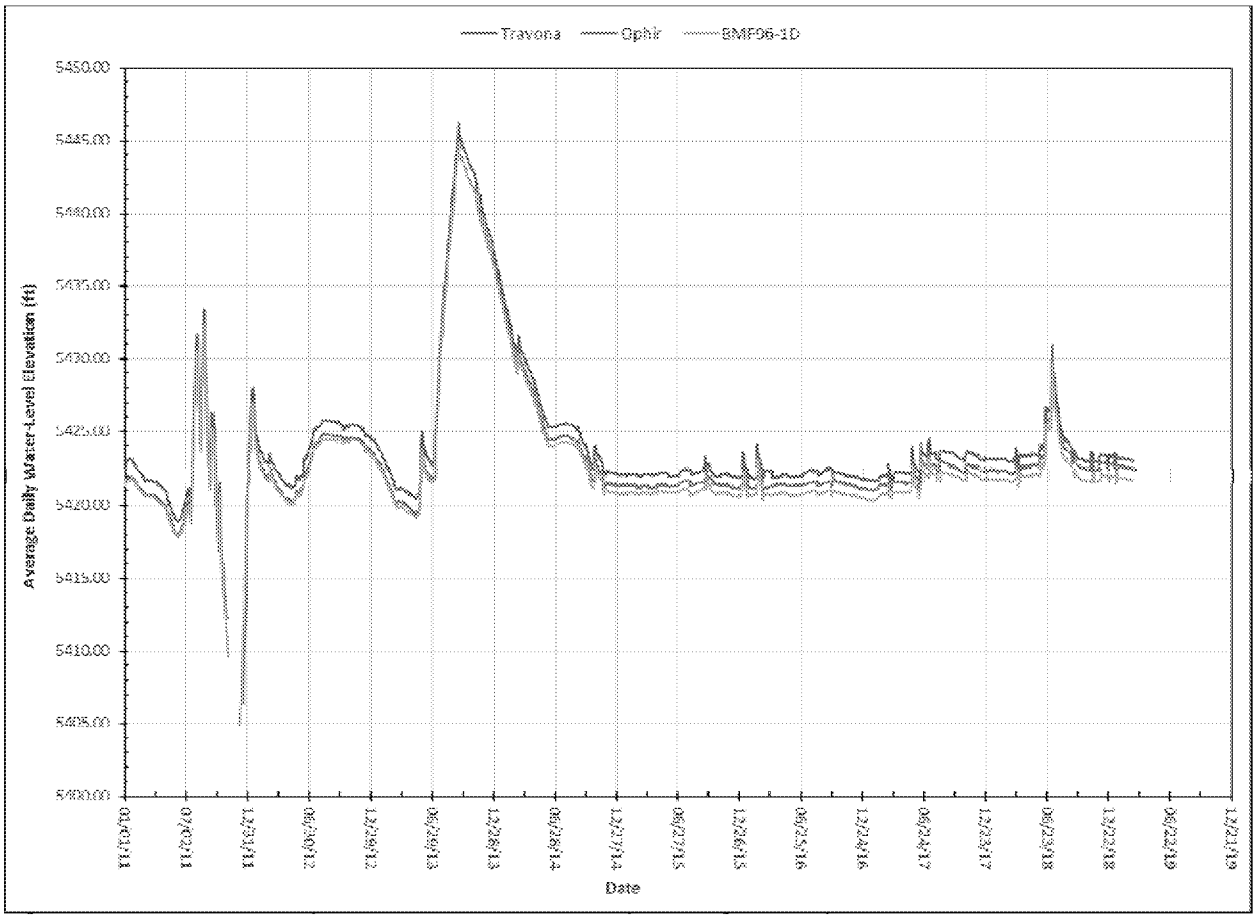
Monitoring Sites (No. Mines/Wells)	No. Sites Water Level Increased	No. Sites Water Level Decreased	Max. Water-Level Increase	Max. Water-Level Decrease
Mine Shafts (3)	0	3	—	-0.20
Bedrock Wells (6)	0	5	—	-3.20

Table 5. West Camp Bedrock Water-Level Changes.

The ROD and CD established a CWL for the West Camp bedrock system of 5,435 ft, as measured at well BMF96-1D; the current water level is over 14 ft. below the West Camp's compliance point. (Effective February 2019 the term Critical Water Level (CWL) is being replaced by Protective Water Level (PWL), to more accurately reflect the relationship of the 5,435 bedrock water level elevation to adjacent alluvial water levels.) Water levels in the West Camp underground mine system are controlled by pumping groundwater from well WCP-1, which is completed in the Travona Mine 800-level workings (approx. 500 ft below ground surface). More than 31.1 acre-ft of water was pumped this past month, with pumping rates varying between 190 and 220 gpm. Monthly transducer hydrographs show water-level variations due to changes in pumping rates.

Six monitoring wells and two mines in the West Camp are equipped with pressure transducers that record water-level changes every hour. Two of the wells (BMF96-1D and BMF96-1S) are located adjacent to the WCP-1, with well BMF96-1D completed in the same mine workings as WCP-1; well BMF96-1S is completed in the shallow, weathered bedrock. Figure 4 is a hydrograph showing average daily water levels for the two mines and well BMF96-1D through February 2019. The water-level variations seen in these sites are the direct result of pumping changes relating to Butte Priority Soils (BPS) activities.

March 20, 2019



Outer Camp Systems

The Outer Camp monitoring system consists of two underground mines and bedrock well near each mine. Water levels increased at two sites and were not measured at two sites during February. The Outer Camp has no PWL or compliance monitoring points. Water levels in this area were assumed to be at or near pre-mining levels. Continuous water levels were monitored in the Orphan Boy and Marget Ann mines and Tech well by pressure transducers.

In addition to the four groundwater-monitoring sites, a seep (spring), referred to as the Green Seep, is monitored for the quantity of water flowing from it. Vegetative growth has completely obscured this monitoring site. Plans are being developed for site modifications that will allow reestablishment of the monitoring station.

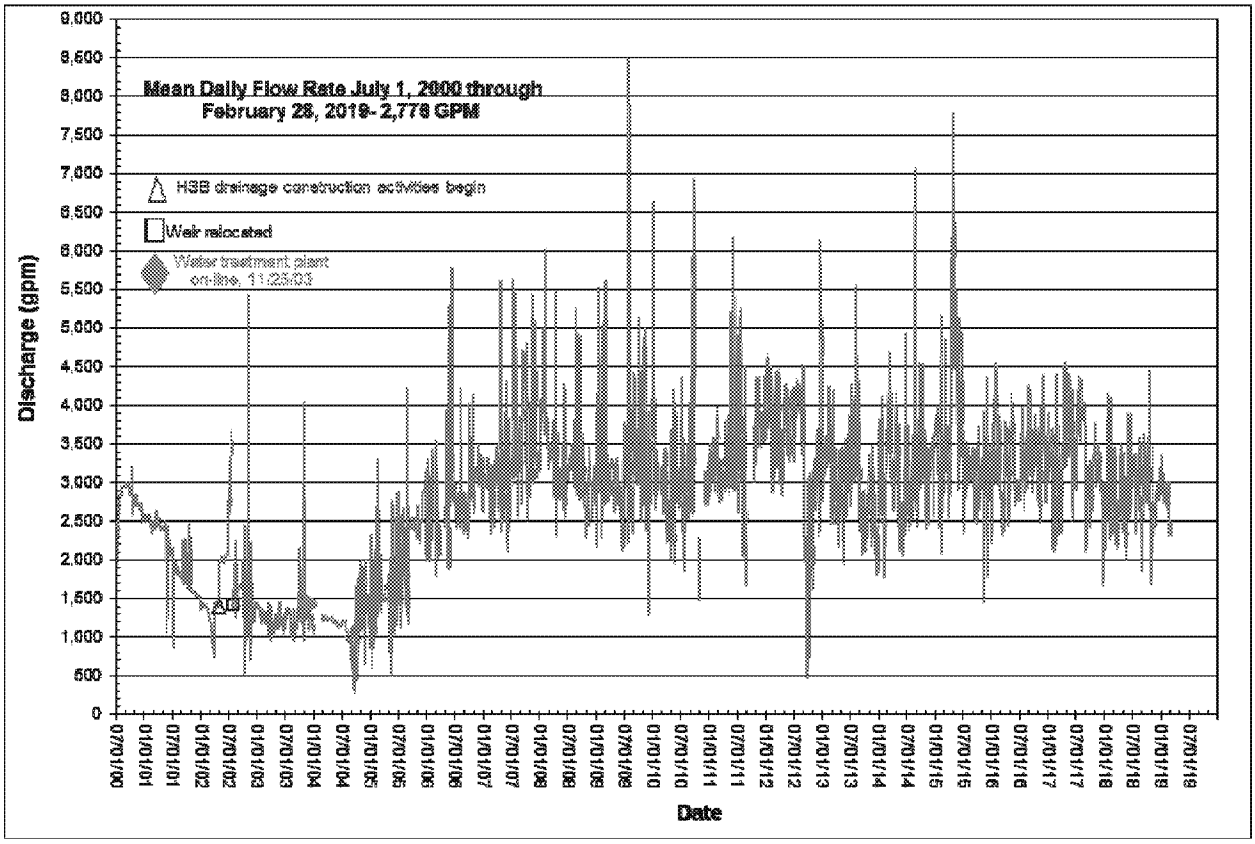
Water-Quality Sampling

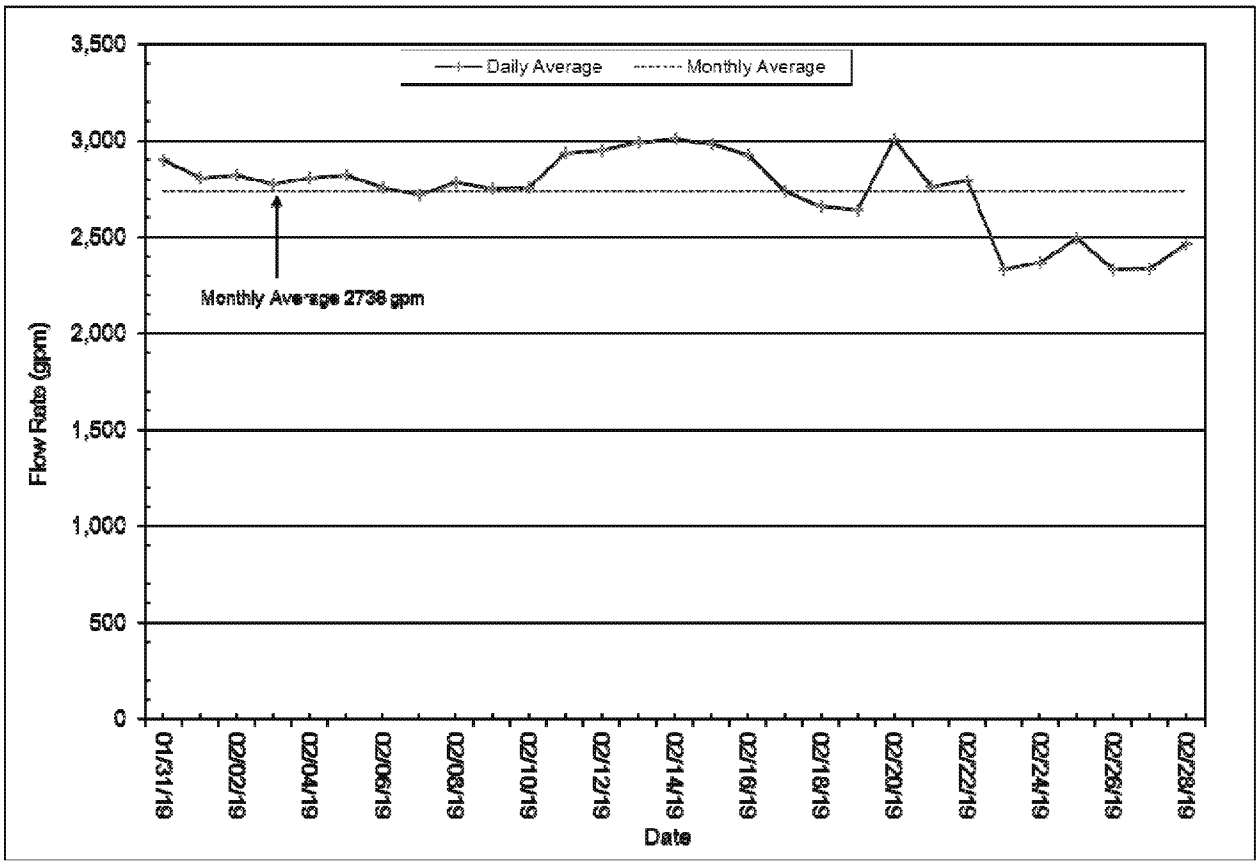
The monthly water sample was collected from the HSB drainage. Copies of results through January 2019 (sample collected 1/30/19) are attached.

Attachment 1. Horseshoe Bend Drainage Monthly Flow Statistics

Monthly Statistics	Jan-18	Feb-18	Mar-18	Apr-18	May-18	Jun-18	July-18	Aug-18	Sept-18	Oct-18	Nov-18	Dec-18
Mean Flow (gpm)	2888	2706	2646	2890	2578	3052	3061	2877	2933	2814	2616	2908
Min Flow (gpm)	2141	2278	2166	2391	2008	2530	2351	2427	1864	1697	2100	2779
Max Flow (gpm)	4164	4093	3458	3502	3378	3903	3374	3585	3631	4466	3460	3240
Total Flow (MG)	120.6	128.6	102.9	120.7	129.9	123.0	149.9	120.1	118.3	141.8	105.5	125.6
Monthly Statistics	Jan-19	Feb-19	Mar-19	Apr-19	May-19	Jun-19	July-19	Aug-19	Sept-19	Oct-19	Nov-19	Dec-19
Mean Flow (gpm)	2945	2738										
Min Flow (gpm)	2756	2330										
Max Flow (gpm)	3358	3008										
Total Flow (MG)	139.9	114.4										

Attachment 2. Horseshoe Bend Drainage Flow Graphs





February 2019 Horseshoe Bend Flow Rate.

Montana Bureau of Mines and Geology
Horseshoe Bend Drainage
Water Quality Data

03/19/19
Horseshoe Bend Drainage
M#:125744

				PHYSICAL PARAMETERS								DISSOLVED CONCENTRATION										DISSOLVED CONCENTRATION		
				FIELD				LAB																
Collector/	Date	Time	Discharge	pH	SC	Temp	Eh	pH	SC	Hardness	Alkalinity	Ca	Mg	Na	K	Fe	Mn	SiO_2	HCO_3	CO_3	Cl	SO_4	NO_2-N	NO_3-N	F
Lab Analysis	(mm/dd/yy)	(HRS)	(gpm)		(uMHOS)	(C)	(MV)		(uMHOS)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
MBMG	07/14/16	14:55	3,130	3.23	5,290	21.4	612	3.22	5,680	2,344	0.0	454	294	77	10.2	211	106	71.6	0.0	0.0	14.3	4,624	<0.05	<0.05	19.51
MBMG	08/03/16	10:15	2,883	3.10	5,600	14.7	619	3.22	5,960	2,471	0.0	450	327	81	9.8	266	117	77.4	0.0	0.0	14.6	5,035	<0.05	0.33	21.86
MBMG	09/16/16	14:45	3,826	3.22	6,690	14.2	606	3.13	7,160	2,838	0.0	425	431	75	6.7	383	130	90.3	0.0	0.0	14.8	6,437	<0.05	<0.05	25.82
MBMG	10/10/16	14:35	3,737	3.28	5,905	12.1	604	3.12	6,450	2,566	0.0	435	360	74	8.4	276	114	81.5	0.0	0.0	14.3	5,352	<0.05	<0.05	22.67
MBMG	11/04/16	15:00	3,215	3.10	4,990	13.8	575	3.28	5,340	2,429	0.0	463	309	80	11.1	194	104	79.9	0.0	0.0	15.0	4,578	<0.05	0.31	17.96
MBMG	12/02/16	11:13	4,190	3.31	6,715	6.7	583	3.19	7,040	2,866	0.0	425	438	67	6.2	520	151	92.8	0.0	0.0	14.0	6,163	<0.05	<0.05	28.30
MBMG	01/11/17	10:58	3,475	3.55	5,950	3.2	551	3.66	6,270	2,702	0.0	432	394	78	6.5	385	121	84.1	0.0	0.0	13.8	5,565	<0.05	<0.05	27.73
MBMG	01/30/17	12:25	3,826	3.34	5,970	7.2	577	3.23	6,580	2,720	0.0	420	406	70	5.9	448	126	94.5	0.0	0.0	13.9	5,888	<0.05	<0.05	30.05
MBMG	02/28/17	15:11	5,148	3.15	6,570	6.7	605	3.26	7,300	2,986	0.0	436	461	70	5.9	402	133	90.3	0.0	0.0	16.5	6,339	<0.05	0.30	26.50
MBMG	03/30/17	11:57	3,216	2.94	6,020	11.6	625	3.14	7,230	2,857	0.0	432	423	72	6.3	384	144	89.5	0.0	0.0	14.1	5,961	<0.05	<0.05	29.60
MBMG	04/27/17	13:02	3,826	3.18	6,410	10.4	616	3.17	6,940	2,838	0.0	426	431	70	5.2	365	133	101.6	0.0	0.0	14.0	6,059	<0.05	<0.05	29.54
MBMG	06/02/17	10:27	3,915	2.43	6,090	15.4	604	3.10	5,990	2,610	0.0	425	376	68	6.2	339	121	94.6	0.0	0.0	12.2	5,290	<0.05	0.26	10.35
MBMG	06/29/17	10:04	3,300	3.06	5,715	14.6	591	3.06	5,790	2,519	0.0	445	342	76	8.1	299	115	77.6	0.0	0.0	12.2	4,848	<0.05	0.28	10.04
MBMG	07/27/17	13:31	3,740	3.23	6,185	17.6	588	3.03	6,000	2,765	0.0	458	394	76	6.2	333	120	94.5	0.0	0.0	13.6	5,598	<0.05	<0.05	23.75
MBMG	08/30/17	14:23	3,740	3.39	6,070	17.7	562	3.20	6,105	2,609	0.0	433	371	72	6.8	340	120	89.2	0.0	0.0	13.7	5,369	<0.05	<0.05	23.41
MBMG	09/28/17	10:14	3,720	3.67	6,255	9.9	577	3.05	6,240	2,554	0.0	408	376	73	5.4	349	118	88.9	0.0	0.0	16.0	5,831	<0.05	<0.05	21.71
MBMG	10/31/17	13:46	4,007	4.07	6,445	6.9	550	3.14	6,425	2,742	0.0	432	404	73	5.7	371	122	91.7	0.0	0.0	12.9	5,900	<0.05	<0.05	13.47
MBMG	11/28/17	10:58	3,387	4.34	6,450	3.1	531	3.11	6,430	2,734	0.0	440	397	74	5.7	354	117	87.4	0.0	0.0	13.5	5,836	<0.05	<0.05	21.52
MBMG	12/28/17	14:50	2,256	2.88	6,380	3.1	600	3.08	6,380	2,679	0.0	433	388	74	6.0	340	116	85.8	0.0	0.0	13.6	5,913	<0.05	<0.05	21.11
MBMG	01/26/18	14:50	3,215	3.04	4,220	6.2	586	3.30	5,675	2,381	0.0	439	312	75	9.1	268	111	82.0	0.0	0.0	13.5	5,053	<0.05	<0.05	16.47
MBMG	02/28/18	11:37	2,965	3.30	5,700	5.1	553	3.45	5,820	2,506	0.0	446	338	79	8.3	291	106	79.1	0.0	0.0	16.6	4,923	<0.05	<0.05	23.07
MBMG	03/27/18	10:54	2,885	2.89	5,300	7.8	608	3.10	5,620	2,306	0.0	434	297	76	9.4	250	104	78.3	0.0	0.0	13.5	4,906	<0.05	0.25	15.54
MBMG	04/25/18	14:54	2,500	2.96	5,525	15.1	609	3.12	5,620	2,350	0.0	447	600	77	10.4	264	105	76.1	0.0	0.0	13.3	4,621	<0.05	<0.05	18.90
MBMG	05/30/18	12:43	2,965	2.17	6,015	15.0	664	3.13	6,160	2,411	0.0	415	334	69	7.1	286	110	83.9	0.0	0.0	13.7	5,402	<0.05	<0.05	24.73
MBMG	06/27/18	15:21	3,040	3.16	5,225	19.9	608	3.05	6,190	2,507	0.0	444	340	80	8.4	304	113	80.7	0.0	0.0	15.6	5,315	<0.05	0.25	17.10
MBMG	07/31/18	15:22	3,125	3.62	4,960	17.9	562	3.16	5,970	2,429	0.0	443	321	78	9.3	292	109	80.6	0.0	0.0	13.5	4,771	<0.05	<0.05	20.32
MBMG	08/29/18	13:40	2,350	3.61	5,450	14.7	558	3.21	5,810	2,202	0.0	415	283	72	8.4	263	97	76.5	0.0	0.0	14.7	5,004	<0.05	0.27	16.59
MBMG	09/26/18	15:53	3,044	2.80	5,335	14.8	585	3.13	6,280	2,327	0.0	414	314	72	7.8	279	108	85.0	0.0	0.0	14.9	5,343	<0.05	0.12	19.47
MBMG	10/31/18	11:17	2,205	3.36	2,865	7.3	590	3.21	5,430	2,332	0.0	427	307	73	8.8	259	105	78.3	0.0	0.0	15.8	5,011	<0.05	<0.05	17.55
MBMG	11/28/18	14:15	2,805	3.49	3,690	8.1	571	3.07	5,670	2,553	0.0	445	351	70	5.1	291	112	80.2	0.0	0.0	13.8	5,125	<0.05	<0.05	21.43
MBMG	12/28/18	10:45	3,045	3.31	6,000	2.5	587	3.06	5,890	2,530	0.0	426	356	74	7.2	328	115	88.0	0.0	0.0	14.5	5,655	<0.05	<0.05	18.05
MBMG	01/30/19	13:30	2,885	2.98	5,595	5.1	603	3.16	5,670	2,405	0.0	416	322	73	6.9	289	110	84.7	0.0	0.0	15.8	5,270	<0.05	<0.05	15.91
	Mean Value		2,835	3.27	5,321	11.6	550	3.02	5,838	2,502	0	444	339	77	9.1	311	123	78	0.0	0.0	15.50	5,494	1.6	0.3	17.04
	Maximum Value		6,350	5.65	9,010	22.9	821	3.96	11,540	3,763	15	555	655	100	13.0	937	361	102	0.0	0.0	33.60	13,453	9.8	0.5	48.61
	Minimum Value		820	1.52	1,523	2.2	286	2.14	3,920	1,882	0	395	106	61	1.5	97	77	56	0.0	0.0	8.69	3,010	0.2	0.1	1.24
	Number Readings		234	231	235	234	228	233	232	238	236	239	239	239	238	239	239	231	231	231	167	231	19	45	224

nd/na - not measured or analyzed

ED_014362_00000831-00014

Montana Bureau of Mines and Geology
Horseshoe Bend Drainage
Water Quality Data

03/19/19
Horseshoe Bend Drainage
M#:125744

DISSOLVED CONCENTRATION

Collector/ Lab Analysis	Date (mm/dd/yy)	Al (ug/l)	Ag (ug/l)	As (ug/l)	B (ug/l)	Be (ug/l)	Cd (ug/l)	Cr (ug/l)	Co (ug/l)	Cu (ug/l)	Hg (ug/L)	Li (ug/l)	Mo (ug/l)	Ni (ug/l)	Pb (ug/l)	Se (ug/l)	Sr (ug/l)	Ti (ug/l)	Tl (ug/l)	U (ug/l)	V (ug/l)	Zn (ug/l)	Zr (ug/l)
MBMG	07/14/16	186,248	<1.0	3.3	6.4	21.5	958	15.4	746	54,518		91.3	3.75	494	2.2	7.74	926	52.1	<1.0	248	3.56	222,039	<1.0
MBMG	08/03/16	214,081	<1.0	3.3	210.4	24.3	900	18.8	812	40,139		105.1	8.00	568	3.8	7.63	849	67.8	<1.0	270	2.26	243,701	<1.0
MBMG	09/16/16	313,281	<1.0	7.5	249.7	28.6	809	34.0	1,004	40,872		113.5	<1.0	687	<0.6	11.57	631	96.9	<1.0	341	11.30	290,837	<1.0
MBMG	10/10/16	251,774	<1.0	5.2	173.2	25.4	812	24.5	830	48,409		98.7	<1.0	579	<0.6	7.68	737	96.9	<1.0	275	9.44	238,568	<1.0
MBMG	11/04/16	179,503	<1.0	5.8	151.1	15.7	808	14.3	699	55,258		74.6	2.19	484	<0.6	7.08	870	76.8	<1.0	211	8.82	220,503	<1.0
MBMG	12/02/16	377,879	<1.0	5.8	227.3	40.5	1,073	43.9	1,186	33,010		186.5	2.25	842	<0.6	14.45	708	72.8	<1.0	480	12.83	332,642	<1.0
MBMG	01/11/17	278,084	2.01	2.7	18.4	28.4	754	30.8	930	14,661		141.1	15.9	698	<0.6	12.35	688	111.8	3.86	320	<1.0	265,585	<1.0
MBMG	01/30/17	306,250	<1.0	<1.0	13.9	29.3	758	27.3	962	17,234		140.5	<1.0	687	<0.6	<1.0	629	93.9	<1.0	315	2.95	276,550	<1.0
MBMG	02/28/17	336,655	2.48	8.1	199.5	36.3	975	43.9	1,061	39,569		144.5	2.49	759	<0.6	10.51	625	81.7	<1.0	403	25.83	288,727	<1.0
MBMG	03/30/17	343,268	<1.0	10.6	146.6	29.9	1,086	43.3	1,072	46,396		129.4	2.94	780	2.1	14.68	696	72.4	<1.0	402	28.30	305,803	<1.0
MBMG	04/27/17	319,160	26.98	8.7	197.2	37.1	1,060	44.4	1,045	44,099		158.4	18.58	761	2.3	12.58	642	68.3	9.37	404	27.73	286,735	<1.0
MBMG	06/02/17	271,375	<1.0	2.8	351.5	23.4	844	25.3	912	23,161		107.9	<1.0	661	<0.6	8.55	656	82.6	<1.0	330	<1.0	257,400	<1.0
MBMG	06/29/17	239,575	<1.0	2.1	27.7	24.6	811	22.9	826	20,599		51.9	<1.0	580	<0.6	7.84	821	98.6	<1.0	277	<1.0	235,300	<1.0
MBMG	07/27/17	281,550	12.04	4.1	18.8	33.1	866	30.6	891	21,640		134.1	2.02	647	<0.6	9.68	681	99.6	<1.0	323	<1.0	254,000	<1.0
MBMG	08/30/17	264,000	19.48	3.1	16.6	29.7	799	30.4	865	15,704		100.0	3.23	631	0.7	10.61	732	107.9	<1.0	285	<1.0	251,350	2.3
MBMG	09/28/17	287,700	2.98	3.3	263.7	36.6	897	40.3	958	21,986		144.0	3.00	674	<0.6	10.58	657	126.7	<1.0	437	2.95	250,400	<1.0
MBMG	10/31/17	299,400	2.57	5.3	355.7	33.0	868	39.7	926	24,576		142.3	4.37	666	4.1	12.02	624	101.0	<1.0	392	11.84	258,300	22.17
MBMG	11/28/17	290,250	2.37	5.2	319.0	35.8	972	46.2	960	26,925		143.9	9.88	688	2.3	13.45	681	121.4	<1.0	376	7.75	249,150	5.12
MBMG	12/28/17	283,850	<1.0	8.1	314.2	35.6	973	56.1	972	22,608		155.5	4.51	656	<0.6	13.67	676	117.7	<1.0	409	16.78	242,150	<1.0
MBMG	01/26/18	225,000	<1.0	3.1	208.9	23.8	788	22.8	732	29,729		116.3	11.72	537	2.7	8.68	806	81.4	<1.0	249	5.98	218,300	3.02
MBMG	02/28/18	225,250	<1.0	<1.0	254.0	24.5	724	24.4	728	17,047		102.7	4.99	534	<0.6	8.41	731	72.5	<1.0	259	<1.0	215,800	1.34
MBMG	03/27/18	187,039	<1.0	1.4	230.4	21.1	759	23.2	724	20,589		100.7	6.48	511	2.4	7.83	836	62.0	<1.0	237	<1.0	206,400	2.53
MBMG	04/25/18	202,150	<1.0	3.3	24.9	23.1	819	20.4	737	20,954		101.0	3.49	529	3.9	10.28	912	61.8	<1.0	261	<1.0	209,800	<1.0
MBMG	05/30/18	245,350	<1.0	3.3	10.1	24.9	738	29.4	792	20,405		127.8	2.59	602	<0.6	8.67	718	60.3	<1.0	299	<1.0	226,600	<1.0
MBMG	06/27/18	251,100	2.75	4.1	38.0	26.5	787	38.4	830	23,875		<100	8.12	612	2.6	10.07	770	48.1	<1.0	259	<1.0	231,850	3.78
MBMG	07/31/18	226,850	<1.0	2.0	20.1	23.4	812	32.1	775	17,444		104.0	<1.0	557	1.4	6.37	881	121.7	<1.0	266	<1.0	219,150	<1.0
MBMG	08/29/18	194,050	<1.0	<1.0	280.6	23.4	811	24.6	699	12,606		107.5	2.37	525	<0.6	9.14	824	68.5	<1.0	251	<1.0	192,550	<1.0
MBMG	09/26/18	231,200	<1.0	<1.0	254.7	25.5	787	32.4	730	17,916		110.8	2.31	557	<0.6	9.24	732	63.8	<1.0	272	<1.0	213,900	<1.0
MBMG	10/31/18	218,850	<1.0	<1.0	295.8	28.8	855	35.3	763	22,376		137.7	2.96	589	3.3	8.94	776	59.3	<1.0	241	<1.0	211,800	<1.0
MBMG	11/28/18	236,050	<1.0	2.6	56.3	33.2	931	46.2	765	22,222	<0.005	146.2	13.34	595	2.5	12.18	777	65.9	<1.0	274	<1.0	225,650	3.86
MBMG	12/28/18	270,350	<1.0	3.0	335.6	33.4	895	66.5	873	17,815	<0.01	172.1	4.8	684	3.8	11.47	741	80.5	<1.0	321	6.65	233,350	3.25
MBMG	01/30/19	237,000	<1.0	2.3	167.0	28.3	757	49.3	787	20,758	<0.01	177.0	10.14	569	3.2	10.89	756	72.2	2.32	313	5.48	218,850	3.57
	Mean Value	227,073	7	12.5	108	27.0	1,202	37.0	838	39,871		132	6	592	4.8	16	1,003	56.2	3.15	329	11.5	260,252	8
	Maximum Valu	657,448	27	66.5	513	52.9	2,151	153.5	1,429	101,000		703	23	1,165	59.1	148	1,327	157	13.20	664	70.1	434,103	23
	Minimum Valu	92,344	1	0.9	1	11.7	595	10.6	340	10,485		7	1	148	0.6	2	587	1.3	0.23	105	0.8	148,000	1.0
	Number Readir	235	23	160	135	211	241	181	241	241		235	47	239	87	165	236	125	10	221	92	241	21

nd/na - not measured or analyze

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Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	4597			4604			4611		
DATE	AMC-5			AMC-6			AMC-8		
	SWL	Elevation	Mo Change	SWL	Elevation	Mo Change*	SWL	Elevation	Mo Change
		5509.21			5492.48	5489.62		5524.03	
01/26/16	72.41	5436.80	-0.44	31.95	5457.67	-0.24	60.07	5463.96	-0.23
02/22/16	72.74	5436.47	-0.33	32.17	5457.45	-0.22	60.06	5463.97	0.01
03/29/16	73.04	5436.17	-0.30	32.34	5457.28	-0.17	59.85	5464.18	0.21
04/26/16	73.22	5435.99	-0.18	32.50	5457.12	-0.16	59.66	5464.37	0.19
05/25/16	73.32	5435.89	-0.10	32.60	5457.02	-0.10	59.36	5464.67	0.30
06/30/16	73.38	5435.83	-0.06	32.49	5457.13	0.11	59.31	5464.72	0.05
07/26/16	73.18	5436.03	0.20	32.27	5457.35	0.22	59.37	5464.66	-0.06
08/31/16	72.92	5436.29	0.26	32.01	5457.61	0.26	59.12	5464.91	0.25
09/30/16	72.74	5436.47	0.18	31.90	5457.72	0.11	58.72	5465.31	0.40
10/28/16	72.76	5436.45	-0.02	31.84	5457.78	0.06	57.89	5466.14	0.83
11/25/16	72.80	5436.41	-0.04	31.88	5457.74	-0.04	57.67	5466.36	0.22
12/27/16	72.81	5436.40	-0.01	31.98	5457.64	-0.10	57.38	5466.65	0.29
Annual WL Change			**-0.84**			**-0.27**			**2.46**
01/26/17	72.85	5436.36	-0.04	32.12	5457.50	-0.14	57.68	5466.35	-0.30
02/27/17	72.94	5436.27	-0.09	32.21	5457.41	-0.09	57.54	5466.49	0.14
03/28/17	73.03	5436.18	-0.09	32.22	5457.40	-0.01	57.75	5466.28	-0.21
04/25/17	73.04	5436.17	-0.01	32.26	5457.36	-0.04	57.85	5466.18	-0.10
05/31/17	73.13	5436.08	-0.09	32.16	5457.46	0.10	58.02	5466.01	-0.17
06/26/17	73.11	5436.10	0.02	32.01	5457.61	0.15	58.20	5465.83	-0.18
07/26/17	73.05	5436.16	0.06	31.70	5457.92	0.31	58.62	5465.41	-0.42
08/30/17	72.91	5436.30	0.14	31.39	5458.23	0.31	58.47	5465.56	0.15
09/27/17	72.87	5436.34	0.04	31.23	5458.39	0.16	58.55	5465.48	-0.08
10/30/17	72.72	5436.49	0.15	31.24	5458.38	-0.01	58.41	5465.62	0.14
11/27/17	72.80	5436.41	-0.08	31.40	5458.22	-0.16	58.52	5465.51	-0.11
12/27/17	72.81	5436.40	-0.01	31.56	5458.06	-0.16	58.69	5465.34	-0.17
Annual WL Change			**0.00**			**0.42**			**-1.31**
01/25/18	72.87	5436.34	-0.06	31.83	5457.79	-0.27	59.06	5464.97	-0.37
02/26/18	72.99	5436.22	-0.12	32.07	5457.55	-0.24	59.32	5464.71	-0.26
03/26/18	73.02	5436.19	-0.03	32.09	5457.53	-0.02	59.77	5464.26	-0.45
04/24/18	73.03	5436.18	-0.01	32.19	5457.43	-0.10	60.08	5463.95	-0.31
05/29/18	72.89	5436.32	0.14	32.12	5457.50	0.07	60.28	5463.75	-0.20
06/26/18	72.73	5436.48	0.16	31.81	5457.81	0.31	60.47	5463.56	-0.19
07/30/18	72.44	5436.77	0.29	31.42	5458.20	0.39	60.61	5463.42	-0.14
08/28/18	72.20	5437.01	0.24	31.11	5458.51	0.31	60.72	5463.31	-0.11
09/25/18	72.04	5437.17	0.16	30.95	5458.67	0.16	60.62	5463.41	0.10
10/30/18	71.97	5437.24	0.07	30.95	5458.67	0.00	60.62	5463.41	0.00
11/27/18	72.06	5437.15	-0.09	31.01	5458.61	-0.06	60.57	5463.46	0.05
12/27/18	72.18	5437.03	-0.12	31.34	5458.28	-0.33	60.88	5463.15	-0.31
Annual WL Change			**0.63**			**0.22**			**-2.19**
01/28/19	72.22	5436.99	-0.04	31.39	5458.23	-0.05	61.12	5462.91	-0.24
03/05/19	72.31	5436.90	-0.09	NR			61.55	5462.48	-0.43
03/28/19									
04/28/19									
05/28/19									
06/28/19									
07/28/19									
08/28/19									
09/28/19									
10/28/19									
11/28/19									
12/28/19									
Annual WL Change			**-0.13**			**-0.05**			**-0.67**

* Well AMC-06 measuring point elevation changed Oct 04, re-surveyed Jan-10

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	155569			4656			4673		
DATE	AMC-10			AMC-12			AMC-13		
	SWL	Elevation	Mo Change	SWL	Elevation	Mo Change	SWL	Elevation	Mo Change
		5511.26			5479.58			5475.34	
01/26/16	DRY			22.36	5457.22	-0.19	20.58	5454.76	-0.14
02/22/16	DRY			22.48	5457.10	-0.12	20.66	5454.68	-0.08
03/29/16	DRY			22.63	5456.95	-0.15	20.75	5454.59	-0.09
04/26/16	DRY			22.72	5456.86	-0.09	20.80	5454.54	-0.05
05/25/16	DRY			22.77	5456.81	-0.05	20.79	5454.55	0.01
06/30/16	DRY			22.61	5456.97	0.16	20.62	5454.72	0.17
07/26/16	DRY			22.43	5457.15	0.18	20.45	5454.89	0.17
08/31/16	DRY			22.19	5457.39	0.24	20.26	5455.08	0.19
09/30/16	DRY			22.14	5457.44	0.05	20.27	5455.07	-0.01
10/28/16	DRY			22.13	5457.45	0.01	20.23	5455.11	0.04
11/25/16	DRY			22.28	5457.30	-0.15	20.37	5454.97	-0.14
12/27/16	DRY			22.44	5457.14	-0.16	20.53	5454.81	-0.16
Annual WL Change			**0.00**			**-0.27**			**-0.09**
01/26/17	DRY			22.68	5456.90	-0.24	20.77	5454.57	-0.24
02/27/17	DRY			22.78	5456.80	-0.10	20.80	5454.54	-0.03
03/28/17	DRY			22.75	5456.83	0.03	20.66	5454.68	0.14
04/25/17	DRY			22.69	5456.89	0.06	20.60	5454.74	0.06
05/31/17	DRY			22.41	5457.17	0.28	20.27	5455.07	0.33
06/26/17	DRY			21.96	5457.62	0.45	19.81	5455.53	0.46
07/26/17	DRY			21.62	5457.96	0.34	19.59	5455.75	0.22
08/30/17	DRY			21.44	5458.14	0.18	19.52	5455.82	0.07
09/27/17	DRY			21.38	5458.20	0.06	19.48	5455.86	0.04
10/30/17	DRY			21.55	5458.03	-0.17	19.74	5455.60	-0.26
11/27/17	DRY			21.75	5457.83	-0.20	19.90	5455.44	-0.16
12/27/17	DRY			21.99	5457.59	-0.24	20.12	5455.22	-0.22
Annual WL Change			**0.00**			**0.45**			**0.41**
01/25/18	DRY			22.21	5457.37	-0.22	20.33	5455.01	-0.21
02/26/18	DRY			22.46	5457.12	-0.25	20.54	5454.80	-0.21
03/26/18	DRY			22.46	5457.12	0.00	20.48	5454.86	0.06
04/24/18	DRY			22.29	5457.29	0.17	20.28	5455.06	0.20
05/29/18	DRY			21.99	5457.59	0.30	19.96	5455.38	0.32
06/26/18	DRY			21.44	5458.14	0.55	19.39	5455.95	0.57
07/30/18	DRY			20.97	5458.61	0.47	19.20	5456.14	0.19
08/28/18	DRY			20.76	5458.82	0.21	19.11	5456.23	0.09
09/25/18	DRY			20.66	5458.92	0.10	19.11	5456.23	0.00
10/30/18	DRY			20.91	5458.67	-0.25	19.33	5456.01	-0.22
11/27/18	DRY			21.19	5458.39	-0.28	19.58	5455.76	-0.25
12/27/18	DRY			21.47	5458.11	-0.28	19.86	5455.48	-0.28
Annual WL Change			**0.00**			**0.52**			**0.26**
01/28/19	DRY			21.75	5457.83	-0.28	20.09	5455.25	-0.23
03/05/19	DRY			22.03	5457.55	-0.28	20.28	5455.06	-0.19
03/28/19									
04/28/19									
05/28/19									
06/28/19									
07/28/19									
08/28/19									
09/28/19									
10/28/19									
11/28/19									
12/28/19									
Annual WL Change			**0.00**			**-0.56**			**-0.42**

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	4702		
DATE	AMC-15		
	SWL	Elevation	Mo Change
		5559.00	
01/26/16	92.64	5466.36	-0.06
02/22/16	92.95	5466.05	-0.31
03/29/16	93.16	5465.84	-0.21
04/26/16	93.21	5465.79	-0.05
05/25/16	93.23	5465.77	-0.02
06/30/16	93.56	5465.44	-0.33
07/26/16	93.56	5465.44	0.00
08/31/16	93.69	5465.31	-0.13
09/30/16	93.71	5465.29	-0.02
10/28/16	93.49	5465.51	0.22
11/25/16	93.41	5465.59	0.08
12/27/16	93.04	5465.96	0.37
Annual WL Change			**-0.46**
01/26/17	93.23	5465.77	-0.19
02/27/17	93.16	5465.84	0.07
03/28/17	93.16	5465.84	0.00
04/25/17	93.29	5465.71	-0.13
05/31/17	93.32	5465.68	-0.03
06/26/17	93.34	5465.66	-0.02
07/26/17	93.61	5465.39	-0.27
08/30/17	93.48	5465.52	0.13
09/27/17	93.31	5465.69	0.17
10/30/17	92.88	5466.12	0.43
11/27/17	92.84	5466.16	0.04
12/27/17	92.62	5466.38	0.22
Annual WL Change			**0.42**
01/25/18	92.70	5466.30	-0.08
02/26/18	92.77	5466.23	-0.07
03/26/18	92.88	5466.12	-0.11
04/24/18	92.99	5466.01	-0.11
05/29/18	93.09	5465.91	-0.10
06/26/18	93.22	5465.78	-0.13
07/30/18	93.31	5465.69	-0.09
08/28/18	93.10	5465.90	0.21
09/25/18	92.56	5466.44	0.54
10/30/18	92.30	5466.70	0.26
11/27/18	92.02	5466.98	0.28
12/27/18	92.10	5466.90	-0.08
Annual WL Change			**0.52**
01/28/19	92.20	5466.80	-0.10
03/05/19	92.28	5466.72	-0.08
03/28/19			
04/28/19			
05/28/19			
06/28/19			
07/28/19			
08/28/19			
09/28/19			
10/28/19			
11/28/19			
12/28/19			
Annual WL Change			**-0.18**

Montana Bureau of Mines and Geology
1997 Alluvial Wells - Periodic Water-Level Measurements
Montana Resources, Butte, MT

GWIC ID	166372			166373			166374			166375		
	97-1			97-2			97-3			97-4		
Date	SWL	Elevation*	Change	SWL	Elevation*	Change	SWL	Elevation*	Change	SWL	Elevation*	Change
	MP-ToS(ft)	5561.35	(ft)	MP-CT(ft)	5577.42	(ft)	MP-CT(ft)	5591.18	(ft)	MP-CT(ft)	5576.80	(ft)
01/27/17	43.79	5517.56	-0.09	22.41	5555.01	0.06	7.21	5583.97	-0.10	24.91	5551.89	0.63
02/28/17	43.35	5518.00	0.44	21.64	5555.78	0.77	6.36	5584.82	0.85	25.19	5551.61	-0.28
03/28/17	43.61	5517.74	-0.26	21.99	5555.43	-0.35	5.89	5585.29	0.47	25.51	5551.29	-0.32
04/26/17	42.88	5518.47	0.73	21.07	5556.35	0.92	5.44	5585.74	0.45	25.25	5551.55	0.26
06/02/17	42.94	5518.41	-0.06	21.68	5555.74	-0.61	5.75	5585.43	-0.31	25.02	5551.78	0.23
06/29/17	43.02	5518.33	-0.08	21.91	5555.51	-0.23	5.87	5585.31	-0.12	24.80	5552.00	0.22
07/27/17	42.99	5518.36	0.03	21.91	5555.51	0.00	5.83	5585.35	0.04	24.90	5551.90	-0.10
08/30/17	43.19	5518.16	-0.20	22.14	5555.28	-0.23	5.98	5585.20	-0.15	25.27	5551.53	-0.37
09/27/17	43.60	5517.75	-0.41	22.32	5555.10	-0.18	6.24	5584.94	-0.26	25.78	5551.02	-0.51
10/31/17	43.76	5517.59	-0.16	22.07	5555.35	0.25	6.24	5584.94	0.00	25.63	5551.17	0.15
11/28/17	43.84	5517.51	-0.08	22.04	5555.38	0.03	6.12	5585.06	0.12	25.51	5551.29	0.12
12/27/17	44.23	5517.12	-0.39	22.46	5554.96	-0.42	6.11	5585.07	0.01	24.86	5551.94	0.65
01/26/18	43.87	5517.48	0.36	21.96	5555.46	0.50	6.09	5585.09	0.02	23.71	5553.09	1.15
02/28/18	44.12	5517.23	-0.25	22.23	5555.19	-0.27	6.20	5584.98	-0.11	24.86	5551.94	-1.15
03/27/18	44.08	5517.27	0.04	22.31	5555.11	-0.08	5.76	5585.42	0.44	24.64	5552.16	0.22
04/25/18	43.76	5517.59	0.32	21.84	5555.58	0.47	5.31	5585.87	0.45	24.39	5552.41	0.25
05/30/18	43.97	5517.38	-0.21	22.10	5555.32	-0.26	5.44	5585.74	-0.13	23.71	5553.09	0.68
06/27/18	43.31	5518.04	0.66	21.76	5555.66	0.34	5.22	5585.96	0.22	24.64	5552.16	-0.93
07/31/18	43.56	5517.79	-0.25	22.32	5555.10	-0.56	5.80	5585.38	-0.58	25.44	5551.36	-0.80
08/29/18	43.96	5517.39	-0.40	22.63	5554.79	-0.31	5.92	5585.26	-0.12	25.83	5550.97	-0.39
09/26/18	44.15	5517.20	-0.19	22.79	5554.63	-0.16	6.20	5584.98	-0.28	27.61	5549.19	-1.78
10/31/18	44.52	5516.83	-0.37	22.99	5554.43	-0.20	6.31	5584.87	-0.11	28.27	5548.53	-0.66
11/28/18	44.80	5516.55	-0.28	23.01	5554.41	-0.02	5.93	5585.25	0.38	28.09	5548.71	0.18
12/28/18	44.92	5516.43	-0.12	22.83	5554.59	0.18	6.47	5584.71	-0.54	28.41	5548.39	-0.32
01/30/19	44.90	5516.45	0.02	23.00	5554.42	-0.17	6.40	5584.78	0.07	28.39	5548.41	0.02
03/05/19	45.21	5516.14	-0.31	23.09	5554.33	-0.09	6.35	5584.83	0.05	28.38	5548.42	0.01
Total Change			**2.22**			**3.47**			**-0.09**			**0.53**

* Elevations are based on MR survey data using AMC datum, corrected to USGS.

Montana Bureau of Mines and Geology
East Camp Alluvial Water-Level Elevations
Site Name/Monthly Elevations

DATE MO/YR	LP-01 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-02 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-03 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-04 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-05 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-06 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)
	TD-200'	SI-177-197'		TD-162'	SI-129.5-159.5'		TD-55.20'	SI-32-52'		TD-150'	SI-128-148'		TD-231'	SI-189-229'		TD-115'	SI-92.2-112.2'	
(MP Elev.)		5619.70			5624.70			5566.00			5585.50			5583.90			5713.18	
Jan-17	146.93	5472.77	-0.20	148.44	5476.26	-0.37	P&A			111.27	5474.23	-0.27	133.86	5450.04	-0.24	P&A		
Feb-17	145.88	5473.82	1.05	147.27	5477.43	1.17	P&A			110.58	5474.92	0.69	132.31	5451.59	1.55	P&A		
Mar-17	146.23	5473.47	-0.35	147.74	5476.96	-0.47	P&A			110.99	5474.51	-0.41	132.75	5451.15	-0.44	P&A		
Apr-17	145.70	5474.00	0.53	147.17	5477.53	0.57	P&A			110.68	5474.82	0.31	132.41	5451.49	0.34	P&A		
May-17	145.79	5473.91	-0.09	147.37	5477.33	-0.20	P&A			110.96	5474.54	-0.28	132.63	5451.27	-0.22	P&A		
Jun-17	145.46	5474.24	0.33	147.03	5477.67	0.34	P&A			110.99	5474.51	-0.03	132.55	5451.35	0.08	P&A		
Jul-17	145.37	5474.33	0.09	147.28	5477.42	-0.25	P&A			110.97	5474.53	0.02	132.61	5451.29	-0.06	P&A		
Aug-17	145.11	5474.59	0.26	147.04	5477.66	0.24	P&A			110.82	5474.68	0.15	132.63	5451.27	-0.02	P&A		
Sep-17	145.21	5474.49	-0.10	147.23	5477.47	-0.19	P&A			110.92	5474.58	-0.10	132.85	5451.05	-0.22	P&A		
Oct-17	144.62	5475.08	0.59	146.57	5478.13	0.66	P&A			110.40	5475.10	0.52	132.43	5451.47	0.42	P&A		
Nov-17	144.83	5474.87	-0.21	146.88	5477.82	-0.31	P&A			110.59	5474.91	-0.19	132.64	5451.26	-0.21	P&A		
Dec-17	144.53	5475.17	0.30	146.51	5478.19	0.37	P&A			110.32	5475.18	0.27	132.54	5451.36	0.10	P&A		
Yearly Change			**2.20**			**1.56**						**0.68**			**1.08**			
Jan-18	144.39	5475.31	0.14	146.41	5478.29	0.10	P&A			110.37	5475.13	-0.05	132.74	5451.16	-0.20	P&A		
Feb-18	144.31	5475.39	0.08	146.34	5478.36	0.07	P&A			110.08	5475.42	0.29	132.38	5451.52	0.36	P&A		
Mar-18	144.43	5475.27	-0.12	146.50	5478.20	-0.16	P&A			110.14	5475.36	-0.06	132.56	5451.34	-0.18	P&A		
Apr-18	144.37	5475.33	0.06	146.35	5478.35	0.15	P&A			110.05	5475.45	0.09	132.06	5451.84	0.50	P&A		
May-18	144.02	5475.68	0.35	145.99	5478.71	0.36	P&A			109.91	5475.59	0.14	132.27	5451.63	-0.21	P&A		
Jun-18	144.06	5475.64	-0.04	146.09	5478.61	-0.10	P&A			110.03	5475.47	-0.12	132.37	5451.53	-0.10	P&A		
Jul-18	144.15	5475.55	-0.09	146.15	5478.55	-0.06	P&A			109.87	5475.63	0.16	132.37	5451.53	0.00	P&A		
Aug-18	144.02	5475.68	0.13	146.04	5478.66	0.11	P&A			109.68	5475.82	0.19	132.20	5451.70	0.17	P&A		
Sep-18	144.11	5475.59	-0.09	146.11	5478.59	-0.07	P&A			109.66	5475.84	0.02	132.37	5451.53	-0.17	P&A		
Oct-18	144.04	5475.66	0.07	146.01	5478.69	0.10	P&A			109.53	5475.97	0.13	132.36	5451.54	0.01	P&A		
Nov-18	143.74	5475.96	0.30	145.65	5479.05	0.36	P&A			109.28	5476.22	0.25	132.04	5451.86	0.32	P&A		
Dec-18	144.17	5475.53	-0.43	146.11	5478.59	-0.46	P&A			109.54	5475.96	-0.26	132.41	5451.49	-0.37	P&A		
Yearly Change			**0.36**			**0.40**						**0.78**			**0.13**			
Jan-19	144.01	5475.69	0.16	145.86	5478.84	0.25	P&A			109.26	5476.24	0.28	132.30	5451.60	0.11	P&A		
Feb-19	143.92	5475.78	0.09	145.75	5478.95	0.11	P&A			109.16	5476.34	0.10	132.18	5451.72	0.12	P&A		
Mar-19																		
Apr-19																		
May-19																		
Jun-19																		
Jul-19																		
Aug-19																		
Sep-19																		
Oct-19																		
Nov-19																		
Dec-19																		
Yearly Change			**0.25**			**0.36**						**0.38**			**0.23**			

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Montana Bureau of Mines and Geology
East Camp Alluvial Water-Level Elevations
Site Name/Monthly Elevations

DATE MO/YR	LP-07 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-08 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-09 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-10 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-11 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-12 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)
	TD-101.50'	SI-93-98'		TD-100'	SI-81-96'		TD-107'	SI-82-102'		TD-169'	SI-132-162'		TD-284'	SI-247-277'		TD-133'	SI-110-130'	
(MP Elev.)		5617.00			5577.29			5561.52			5609.12			5609.61			5543.82	
Jan-17	98.23	5518.77	-0.24	94.21	5483.08	-0.37	86.82	5474.70	0.36	132.37	5476.75	-0.20	Plugged and abandoned			80.50	5463.32	0.04
Feb-17	98.23	5518.77	1.55	93.99	5483.30	0.22	86.68	5474.84	0.14	132.14	5476.98	0.23	Plugged and abandoned			80.51	5463.31	-0.01
Mar-17	98.22	5518.78	-0.44	94.41	5482.88	-0.42	87.26	5474.26	-0.58	132.47	5476.65	-0.33	Plugged and abandoned			80.90	5462.92	-0.39
Apr-17	98.25	5518.75	0.34	94.28	5483.01	0.13	86.83	5474.69	0.43	132.39	5476.73	0.08	Plugged and abandoned			80.81	5463.01	0.09
May-17	98.24	5518.76	-0.22	94.76	5482.53	-0.48	86.99	5474.53	-0.16	132.61	5476.51	-0.22	Plugged and abandoned			81.11	5462.71	-0.30
Jun-17	98.25	5518.75	0.08	94.82	5482.47	-0.06	86.95	5474.57	0.04	132.72	5476.40	-0.11	Plugged and abandoned			81.36	5462.46	-0.25
Jul-17	98.25	5518.75	-0.06	94.81	5482.48	0.01	86.65	5474.87	0.30	132.68	5476.44	0.04	Plugged and abandoned			81.58	5462.24	-0.22
Aug-17	98.29	5518.71	-0.02	94.83	5482.46	-0.02	86.23	5475.29	0.42	132.84	5476.28	-0.16	Plugged and abandoned			81.62	5462.20	-0.04
Sep-17	98.27	5518.73	-0.22	94.75	5482.54	0.08	86.48	5475.04	-0.25	132.74	5476.38	0.10	Plugged and abandoned			81.69	5462.13	-0.07
Oct-17	98.31	5518.69	0.42	94.26	5483.03	0.49	85.95	5475.57	0.53	132.94	5476.18	-0.20	Plugged and abandoned			81.45	5462.37	0.24
Nov-17	98.29	5518.71	-0.21	94.37	5482.92	-0.11	86.64	5474.88	-0.69	132.88	5476.24	0.06	Plugged and abandoned			81.80	5462.02	-0.35
Dec-17	98.29	5518.71	0.10	94.09	5483.20	0.28	86.53	5474.99	0.11	132.83	5476.29	0.05	Plugged and abandoned			81.79	5462.03	0.01
Yearly Change			**1.08**			**-0.25**			**0.65**			**-0.66**						**-1.25**
Jan-18	98.21	5518.79	-0.20	93.86	5483.43	0.23	86.75	5474.77	-0.22	132.99	5476.13	-0.16	P&A			81.98	5461.84	-0.19
Feb-18	98.22	5518.78	0.36	93.67	5483.62	0.19	86.78	5474.74	-0.03	132.90	5476.22	0.09	P&A			82.32	5461.50	-0.34
Mar-18	98.21	5518.79	-0.18	93.59	5483.70	0.08	86.97	5474.55	-0.19	132.99	5476.13	-0.09	P&A			82.53	5461.29	-0.21
Apr-18	98.21	5518.79	0.50	93.44	5483.85	0.15	86.77	5474.75	0.20	133.30	5475.82	-0.31	P&A			82.87	5460.95	-0.34
May-18	98.21	5518.79	-0.21	93.58	5483.71	-0.14	86.55	5474.97	0.22	133.14	5475.98	0.16	P&A			83.06	5460.76	-0.19
Jun-18	98.22	5518.78	-0.10	93.76	5483.53	-0.18	86.58	5474.94	-0.03	133.09	5476.03	0.05	P&A			83.29	5460.53	-0.23
Jul-18	98.21	5518.79	0.00	93.43	5483.86	0.33	86.57	5474.95	0.01	133.20	5475.92	-0.11	P&A			83.56	5460.26	-0.27
Aug-18	98.22	5518.78	0.17	93.19	5484.10	0.24	86.39	5475.13	0.18	133.10	5476.02	0.10	P&A			83.73	5460.09	-0.17
Sep-18	98.25	5518.75	-0.17	93.09	5484.20	0.10	86.49	5475.03	-0.10	133.02	5476.10	0.08	P&A			83.73	5460.09	0.00
Oct-18	98.27	5518.73	0.01	92.96	5484.33	0.13	86.74	5474.78	-0.25	133.11	5476.01	-0.09	P&A			83.82	5460.00	-0.09
Nov-18	98.22	5518.78	0.32	92.85	5484.44	0.11	86.74	5474.78	0.00	132.95	5476.17	0.16	P&A			83.92	5459.90	-0.10
Dec-18	98.23	5518.77	-0.37	92.95	5484.34	-0.10	87.32	5474.20	-0.58	133.21	5475.91	-0.26	P&A			84.16	5459.66	-0.24
Yearly Change			**0.13**			**1.14**			**-0.79**			**-0.38**						**-2.37**
Jan-19	98.22	5518.78	0.11	92.63	5484.66	0.32	87.03	5474.49	0.29	132.31	5476.81	0.90	P&A			84.21	5459.61	-0.05
Feb-19	98.21	5518.79	0.12	92.58	5484.71	0.05	87.15	5474.37	-0.12	133.06	5476.06	-0.75	P&A			84.46	5459.36	-0.25
Mar-19																		
Apr-19																		
May-19																		
Jun-19																		
Jul-19																		
Aug-19																		
Sep-19																		
Oct-19																		
Nov-19																		
Dec-19																		
Yearly Change			**0.23**			**0.37**			**0.17**			**0.15**						**-0.30**

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Montana Bureau of Mines and Geology
East Camp Alluvial Water-Level Elevations
Site Name/Monthly Elevations

DATE MO/YR	LP-13 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-14 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-15 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-16 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	*LP-17 SWL (FT)	ELEV. (FT)	MO. DIFF (FT)	LP-17R SWL (FT)	ELEV. (FT)	MO. DIFF (FT)
	TD-242'	SI-219-239'		TD-108.5'	SI-85-105'		TD-242.5'	SI-218.3-238.3'		TD-126'	SI-103.4-123.4'		TD-222'	SI-201-226'		TD-222'	SI-17-221'	
(MP Elev.)		5543.05			5525.68	5526.36		5520.23			5519.88			5623.34	5621.54		5619.09	
Jan-17	88.86	5454.19	-0.03	63.48	5462.88	-0.29	NR			96.53	5423.35	0.05	P&A			176.65	5442.44	0.09
Feb-17	88.84	5454.21	0.02	63.14	5463.22	0.34	NR			96.28	5423.60	0.25	P&A			176.68	5442.41	-0.03
Mar-17	88.93	5454.12	-0.09	63.59	5462.77	-0.45	NR			96.12	5423.76	0.16	P&A			176.67	5442.42	0.01
Apr-17	88.99	5454.06	-0.06	63.46	5462.90	0.13	NR			96.17	5423.71	-0.05	P&A			176.64	5442.45	0.03
May-17	89.07	5453.98	-0.08	63.62	5462.74	-0.16	211.95	5308.28	-6.08	96.07	5423.81	0.10	P&A			176.85	5442.24	-0.21
Jun-17	89.03	5454.02	0.04	63.85	5462.51	-0.23	NR			96.09	5423.79	-0.02	P&A			176.93	5442.16	-0.08
Jul-17	89.07	5453.98	-0.04	64.20	5462.16	-0.35	NR			95.97	5423.91	0.12	P&A			176.81	5442.28	0.12
Aug-17	88.98	5454.07	0.09	64.11	5462.25	0.09	NR			95.87	5424.01	0.10	P&A			176.76	5442.33	0.05
Sep-17	88.97	5454.08	0.01	64.09	5462.27	0.02	NR			95.81	5424.07	0.06	P&A			176.76	5442.33	0.00
Oct-17	88.69	5454.36	0.28	63.94	5462.42	0.15	NR			95.51	5424.37	0.30	P&A			176.43	5442.66	0.33
Nov-17	88.78	5454.27	-0.09	64.34	5462.02	-0.40	NR			95.62	5424.26	-0.11	P&A			176.73	5442.36	-0.30
Dec-17	88.56	5454.49	0.22	64.25	5462.11	0.09	176.60	5343.63	35.35	95.22	5424.66	0.40	P&A			176.50	5442.59	0.23
Yearly Change			**0.27**			**-1.06**			**29.27**			**1.36**			**0.00**			**0.24**
Jan-18	88.84	5454.21	-0.28	64.64	5461.72	-0.39	177.93	5342.30	-1.33	95.35	5424.53	-0.13	P&A			176.55	5442.54	-0.05
Feb-18	89.01	5454.04	-0.17	64.98	5461.38	-0.34	178.19	5342.04	-0.26	95.46	5424.42	-0.11	P&A			176.76	5442.33	-0.21
Mar-18	89.05	5454.00	-0.04	65.29	5461.07	-0.31	177.53	5342.70	0.66	95.11	5424.77	0.35	P&A			176.73	5442.36	0.03
Apr-18	89.31	5453.74	-0.26	65.47	5460.89	-0.18	178.04	5342.19	-0.51	95.33	5424.55	-0.22	P&A			176.97	5442.12	-0.24
May-18	89.39	5453.66	-0.08	65.82	5460.54	-0.35	179.18	5341.05	-1.14	95.07	5424.81	0.26	P&A			176.93	5442.16	0.04
Jun-18	89.20	5453.85	0.19	65.81	5460.55	0.01	173.58	5346.65	5.60	94.11	5425.77	0.96	P&A			176.83	5442.26	0.10
Jul-18	89.67	5453.38	-0.47	66.20	5460.16	-0.39	177.35	5342.88	-3.77	94.97	5424.91	-0.86	P&A			177.07	5442.02	-0.24
Aug-18	89.59	5453.46	0.08	66.32	5460.04	-0.12	177.49	5342.74	-0.14	94.96	5424.92	0.01	P&A			177.02	5442.07	0.05
Sep-18	89.40	5453.65	0.19	66.32	5460.04	0.00	177.60	5342.63	-0.11	94.84	5425.04	0.12	P&A			177.05	5442.04	-0.03
Oct-18	89.33	5453.72	0.07	66.28	5460.08	0.04	178.35	5341.88	-0.75	94.58	5425.30	0.26	P&A			177.00	5442.09	0.05
Nov-18	89.35	5453.70	-0.02	66.43	5459.93	-0.15	178.21	5342.02	0.14	94.65	5425.23	-0.07	P&A			177.10	5441.99	-0.10
Dec-18	89.59	5453.46	-0.24	66.71	5459.65	-0.28	178.09	5342.14	0.12	94.79	5425.09	-0.14	P&A			177.23	5441.86	-0.13
Yearly Change			**-1.03**			**-2.46**			**-1.49**			**0.43**			**0.00**			**-0.73**
Jan-19	89.61	5453.44	-0.02	66.83	5459.53	-0.12	177.23	5343.00	0.86	94.62	5425.26	0.17	P&A			177.10	5441.99	0.13
Feb-19	89.73	5453.32	-0.12	67.18	5459.18	-0.35	173.90	5346.33	3.33	94.68	5425.20	-0.06	P&A			177.29	5441.80	-0.19
Mar-19																		
Apr-19																		
May-19																		
Jun-19																		
Jul-19																		
Aug-19																		
Sep-19																		
Oct-19																		
Nov-19																		
Dec-19																		
Yearly Change			**-0.14**			**-0.47**			**4.19**			**0.11**			**0.00**			**-0.06**

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Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	150401 GS-41S			150402 GS-41D			150409 GS-44S		
	SWL	ELEV.	Mo. Diff	SWL	ELEV.	Mo. Diff	SWL	ELEV.	Mo. Diff
		5491.90	(ft)		5491.30	5491.39		5476.20	**5478.45**
01/26/17	34.89	5457.01	-0.28	34.91	5456.48	-0.25	21.97	5456.48	-0.29
02/24/17	34.99	5456.91	-0.10	34.98	5456.41	-0.07	22.07	5456.38	-0.10
03/27/17	34.93	5456.97	0.06	34.87	5456.52	0.11	21.98	5456.47	0.09
04/25/17	34.80	5457.10	0.13	34.77	5456.62	0.10	21.90	5456.55	0.08
05/31/17	34.57	5457.33	0.23	34.52	5456.87	0.25	21.56	5456.89	0.34
06/26/17	34.15	5457.75	0.42	34.10	5457.29	0.42	20.98	5457.47	0.58
07/26/17	33.77	5458.13	0.38	33.76	5457.63	0.34	20.60	5457.85	0.38
08/30/17	33.61	5458.29	0.16	33.63	5457.76	0.13	20.39	5458.06	0.21
09/27/17	33.51	5458.39	0.10	33.53	5457.86	0.10	20.41	5458.04	-0.02
10/30/17	33.62	5458.28	-0.11	33.72	5457.67	-0.19	20.73	5457.72	-0.32
11/27/17	33.86	5458.04	-0.24	33.88	5457.51	-0.16	21.01	5457.44	-0.28
12/28/17	34.04	5457.86	-0.18	34.13	5457.26	-0.25	21.26	5457.19	-0.25
Yearly Change			**0.57**			**0.53**			**0.42**
01/25/18	34.26	5457.64	-0.22	34.32	5457.07	-0.19	21.54	5456.91	-0.28
02/26/18	34.54	5457.36	-0.28	34.60	5456.79	-0.28	21.79	5456.66	-0.25
03/26/18	34.60	5457.30	-0.06	34.52	5456.87	0.08	21.82	5456.63	-0.03
04/24/18	34.33	5457.57	0.27	34.33	5457.06	0.19	21.59	5456.86	0.23
05/29/18	34.04	5457.86	0.29	34.02	5457.37	0.31	21.22	5457.23	0.37
06/26/18	33.58	5458.32	0.46	33.51	5457.88	0.51	20.42	5458.03	0.80
07/30/18	P&A			P&A			20.10	5458.35	0.32
08/28/18	P&A			P&A			19.97	5458.48	0.13
09/30/18	P&A			P&A			19.91	5458.54	0.06
10/30/18	P&A			P&A			20.24	5458.21	-0.33
11/30/18	P&A			P&A			20.59	5457.86	-0.35
12/27/18	P&A			P&A			20.93	5457.52	-0.34
Yearly Change			**0.46**			**0.62**			**0.33**
01/28/19	P&A			P&A			21.24	5457.21	-0.31
03/05/19	P&A			P&A			21.49	5456.96	-0.25
03/28/19	P&A			P&A					
04/28/19	P&A			P&A					
05/28/19	P&A			P&A					
06/28/19	P&A			P&A					
07/28/19	P&A			P&A					
08/28/19	P&A			P&A					
09/28/19	P&A			P&A					
10/28/19	P&A			P&A					
11/28/19	P&A			P&A					
12/28/19	P&A			P&A					
Yearly Change			**0.00**			**0.00**			**-0.56**

Measuring point elevations changed October 2008 for wells GS-44S, GS-44D, GS-46S, and GS-46D

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	150411 GS-44D			150412 GS-46S			150413 GS-46D		
	SWL	ELEV.	Mo. Diff	SWL	ELEV.	Mo. Diff	SWL	ELEV.	Mo. Diff
		5476.20	**5478.48**		5483.80	**5486.18**		5484.00	**5486.32**
01/26/17	22.73	5455.75	-0.24	27.53	5458.65	-0.22	27.42	5458.90	-0.20
02/24/17	22.79	5455.69	-0.06	27.71	5458.47	-0.18	27.57	5458.75	-0.15
03/27/17	22.68	5455.80	0.11	27.79	5458.39	-0.08	27.63	5458.69	-0.06
04/25/17	22.62	5455.86	0.06	27.78	5458.40	0.01	27.64	5458.68	-0.01
05/31/17	22.40	5456.08	0.22	27.64	5458.54	0.14	27.50	5458.82	0.14
06/26/17	21.82	5456.66	0.58	27.26	5458.92	0.38	27.17	5459.15	0.33
07/26/17	21.54	5456.94	0.28	26.66	5459.52	0.60	26.69	5459.63	0.48
08/30/17	21.43	5457.05	0.11	26.28	5459.90	0.38	26.37	5459.95	0.32
09/27/17	21.38	5457.10	0.05	26.16	5460.02	0.12	26.22	5460.10	0.15
10/30/17	21.64	5456.84	-0.26	26.31	5459.87	-0.15	26.31	5460.01	-0.09
11/27/17	21.83	5456.65	-0.19	26.57	5459.61	-0.26	26.53	5459.79	-0.22
12/28/17	22.08	5456.40	-0.25	26.82	5459.36	-0.25	26.75	5459.57	-0.22
Yearly Change			**0.41**			**0.49**			**0.47**
01/25/18	22.31	5456.17	-0.23	27.07	5459.11	-0.25	26.97	5459.35	-0.22
02/26/18	22.53	5455.95	-0.22	27.34	5458.84	-0.27	27.22	5459.10	-0.25
03/26/18	22.51	5455.97	0.02	27.53	5458.65	-0.19	27.39	5458.93	-0.17
04/24/18	22.31	5456.17	0.20	27.50	5458.68	0.03	27.38	5458.94	0.01
05/29/18	22.00	5456.48	0.31	27.29	5458.89	0.21	27.18	5459.14	0.20
06/26/18	21.42	5457.06	0.58	26.89	5459.29	0.40	26.75	5459.57	0.43
07/30/18	21.11	5457.37	0.31	26.05	5460.13	0.84	26.13	5460.19	0.62
08/28/18	20.98	5457.50	0.13	25.71	5460.47	0.34	25.80	5460.52	0.33
09/30/18	20.91	5457.57	0.07	25.61	5460.57	0.10	25.63	5460.69	0.17
10/30/18	21.16	5457.32	-0.25	25.79	5460.39	-0.18	25.77	5460.55	-0.14
11/30/18	21.43	5457.05	-0.27	26.08	5460.10	-0.29	26.02	5460.30	-0.25
12/27/18	21.76	5456.72	-0.33	26.41	5459.77	-0.33	26.32	5460.00	-0.30
Yearly Change			**0.32**			**0.41**			**0.43**
01/28/19	22.02	5456.46	-0.26	26.73	5459.45	-0.32	26.62	5459.70	-0.30
03/05/19	22.24	5456.24	-0.22	27.04	5459.14	-0.31	26.91	5459.41	-0.29
03/28/19									
04/28/19									
05/28/19									
06/28/19									
07/28/19									
08/28/19									
09/28/19									
10/28/19									
11/28/19									
12/28/19									
Yearly Change			**-0.48**			**-0.63**			**-0.59**

Measuring point elevations changed October 2008 for wells GS-44S, GS-44D, GS-46S, and GS-46D

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	137598			247722			166182		
	AMW-8			AMW-20			AMW-22		
	SWL	ELEV.	Mo. Diff	SWL	Elev	Mo. Diff	SWL	ELEV.	Mo. Diff
		5496.34	**5496.05**	5486.78	5487.27	(ft)		5497.42	(ft)
01/26/17	38.37	5457.68	-0.20	28.69	5458.58	-0.37	39.17	5458.25	-0.06
02/24/17	38.55	5457.50	-0.18	28.95	5458.32	-0.26	39.26	5458.16	-0.09
03/27/17	38.51	5457.54	0.04	28.89	5458.38	0.06	39.34	5458.08	-0.08
04/25/17	38.46	5457.59	0.05	28.81	5458.46	0.08	39.37	5458.05	-0.03
05/31/17	38.32	5457.73	0.14	28.71	5458.56	0.10	39.35	5458.07	0.02
06/26/17	38.02	5458.03	0.30	28.33	5458.94	0.38	39.24	5458.18	0.11
07/26/17	37.63	5458.42	0.39	28.10	5459.17	0.23	38.97	5458.45	0.27
08/30/17	37.38	5458.67	0.25	28.08	5459.19	0.02	38.60	5458.82	0.37
09/27/17	37.31	5458.74	0.07	28.07	5459.20	0.01	38.37	5459.05	0.23
10/30/17	37.32	5458.73	-0.01	28.12	5459.15	-0.05	38.33	5459.09	0.04
11/27/17	37.51	5458.54	-0.19	28.44	5458.83	-0.32	38.45	5458.97	-0.12
12/28/17	37.68	5458.37	-0.17	28.56	5458.71	-0.12	38.64	5458.78	-0.19
Yearly Change			**0.49**			**-0.24**			**0.47**
01/25/18	37.89	5458.16	-0.21	28.77	5458.50	-0.21	38.83	5458.59	-0.19
02/26/18	38.08	5457.97	-0.19	28.96	5458.31	-0.19	39.07	5458.35	-0.24
03/26/18	38.22	5457.83	-0.14	28.29	5458.98	0.67	39.13	5458.29	-0.06
04/24/18	37.88	5458.17	0.34	28.50	5458.77	-0.21	39.34	5458.08	-0.21
05/29/18	37.70	5458.35	0.18	28.51	5458.76	-0.01	39.37	5458.05	-0.03
06/26/18	37.40	5458.65	0.30	28.09	5459.18	0.42	39.16	5458.26	0.21
07/30/18	36.79	5459.26	0.61	27.85	5459.42	0.24	38.78	5458.64	0.38
08/28/18	36.61	5459.44	0.18	27.64	5459.63	0.21	38.42	5459.00	0.36
09/30/18	36.51	5459.54	0.10	27.62	5459.65	0.02	38.19	5459.23	0.23
10/30/18	36.62	5459.43	-0.11	28.68	5458.59	-1.06	38.15	5459.27	0.04
11/30/18	36.77	5459.28	-0.15	27.97	5459.30	0.71	38.25	5459.17	-0.10
12/27/18	37.04	5459.01	-0.27	28.16	5459.11	-0.19	38.44	5458.98	-0.19
Yearly Change			**0.64**			**0.40**			**0.20**
01/28/19	37.31	5458.74	-0.27	28.33	5458.94	-0.17	38.63	5458.79	-0.19
03/05/19	37.56	5458.49	-0.25	NR			38.94	5458.48	-0.31
03/28/19									
04/28/19									
05/28/19									
06/28/19									
07/28/19									
08/28/19									
09/28/19									
10/28/19									
11/28/19									
12/28/19									
Yearly Change			**-0.52**			**-0.17**			**-0.50**

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	222920			222921			224152		
	BMF05-1			BMF05-2			BMF05-3		
	SWL	ELEV.	Mo. Diff	SWL	ELEV.	Mo. Diff	SWL	ELEV.[1)]	Mo. Diff
		5481.95	(ft)		5504.96	(ft)	5501.29	5500.17	(ft)
01/26/17	24.29	5457.66	-0.18	43.22	5461.74	-0.10	37.53	5462.64	-0.21
02/24/17	24.41	5457.54	-0.12	43.24	5461.72	-0.02	37.66	5462.51	-0.13
03/27/17	24.41	5457.54	0.00	43.28	5461.68	-0.04	37.76	5462.41	-0.10
04/25/17	24.43	5457.52	-0.02	43.36	5461.60	-0.08	37.84	5462.33	-0.08
05/31/17	24.21	5457.74	0.22	43.38	5461.58	-0.02	37.88	5462.29	-0.04
06/26/17	23.87	5458.08	0.34	43.32	5461.64	0.06	37.69	5462.48	0.19
07/26/17	23.56	5458.39	0.31	43.21	5461.75	0.11	37.59	5462.58	0.10
08/30/17	23.34	5458.61	0.22	42.90	5462.06	0.31	37.06	5463.11	0.53
09/27/17	23.24	5458.71	0.10	42.68	5462.28	0.22	36.69	5463.48	0.37
10/30/17	23.31	5458.64	-0.07	42.52	5462.44	0.16	36.54	5463.63	0.15
11/27/17	23.51	5458.44	-0.20	42.64	5462.32	-0.12	36.68	5463.49	-0.14
12/28/17	23.68	5458.27	-0.17	42.82	5462.14	-0.18	36.85	5463.32	-0.17
Yearly Change			**0.43**			**0.30**			**0.47**
01/25/18	23.93	5458.02	-0.25	42.99	5461.97	-0.17	37.02	5463.15	-0.17
02/26/18	24.15	5457.80	-0.22	43.32	5461.64	-0.33	37.31	5462.86	-0.29
03/26/18	24.12	5457.83	0.03	43.47	5461.49	-0.15	37.48	5462.69	-0.17
04/24/18	24.11	5457.84	0.01	43.55	5461.41	-0.08	37.58	5462.59	-0.10
05/29/18	23.93	5458.02	0.18	43.61	5461.35	-0.06	37.54	5462.63	0.04
06/26/18	23.50	5458.45	0.43	43.39	5461.57	0.22	37.18	5462.99	0.36
07/30/18	23.04	5458.91	0.46	43.10	5461.86	0.29	36.70	5463.47	0.48
08/28/18	22.80	5459.15	0.24	42.74	5462.22	0.36	36.26	5463.91	0.44
09/30/18	22.71	5459.24	0.09	42.41	5462.55	0.33	35.77	5464.40	0.49
10/30/18	22.79	5459.16	-0.08	42.34	5462.62	0.07	35.69	5464.48	0.08
11/30/18	22.99	5458.96	-0.20	42.43	5462.53	-0.09	35.84	5464.33	-0.15
12/27/18	23.24	5458.71	-0.25	42.75	5462.21	-0.32	36.15	5464.02	-0.31
Yearly Change			**0.44**			**0.07**			**0.70**
01/28/19	23.47	5458.48	-0.23	43.05	5461.91	-0.30	36.43	5463.74	-0.28
03/05/19	23.75	5458.20	-0.28	NR			NR		
03/28/19									
04/28/19									
05/28/19									
06/28/19									
07/28/19									
08/28/19									
09/28/19									
10/28/19									
11/28/19									
12/28/19									
Yearly Change			**-0.51**			**-0.30**			**-0.28**

1) Measuring point elevation changed April 2006 when well fitted with s

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID	224153		
	BMF05-4		
	SWL	ELEV.	Mo. Diff
		5542.37	(ft)
01/26/17	76.61	5465.76	-0.42
02/24/17	76.56	5465.81	0.05
03/27/17	76.58	5465.79	-0.02
04/25/17	76.70	5465.67	-0.12
05/31/17	76.77	5465.60	-0.07
06/26/17	76.85	5465.52	-0.08
07/26/17	77.07	5465.30	-0.22
08/30/17	76.91	5465.46	0.16
09/27/17	76.65	5465.72	0.26
10/30/17	76.24	5466.13	0.41
11/27/17	76.16	5466.21	0.08
12/28/17	76.04	5466.33	0.12
Yearly Change			**0.15**
01/25/18	75.97	5466.40	0.07
02/26/18	76.22	5466.15	-0.25
03/26/18	76.41	5465.96	-0.19
04/24/18	76.49	5465.88	-0.08
05/29/18	76.60	5465.77	-0.11
06/26/18	76.68	5465.69	-0.08
07/30/18	76.71	5465.66	-0.03
08/28/18	76.40	5465.97	0.31
09/30/18	75.79	5466.58	0.61
10/30/18	75.51	5466.86	0.28
11/30/18	75.24	5467.13	0.27
12/27/18	75.36	5467.01	-0.12
Yearly Change			**0.68**
01/28/19	75.49	5466.88	-0.13
03/05/19	75.64	5466.73	-0.15
03/28/19			
04/28/19			
05/28/19			
06/28/19			
07/28/19			
08/28/19			
09/28/19			
10/28/19			
11/28/19			
12/28/19			
Yearly Change			**-0.28**

urface mount cap.

Montana Bureau of Mines and Geology
Bedrock Water-Level Elevations
East Camp Mines and Bedrock Wells

Site Name/Monthly Elevations

DATE MO/YR	ANSELMO* SWL (FT)	ELEV (FT)	MO. DIFF (FT)	BELMONT SWL (FT)	ELEV (FT)	MO. DIFF (FT)	BERKELEY PIT ELEV (FT)(1)	MO. DIFF (FT)	GRANITE MTN SWL (FT)	ELEV (FT)	MO. DIFF (FT)	KELLEY SWL (FT)	ELEV (FT)	MO. DIFF (FT)	STEWARD SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL A SWL (FT)	ELEV (FT)	MO. DIFF (FT)
(MP Elev)	5783.80	5782.10			5604.00					6051.80		5877.52	5905.34	5906.27		5856.45			5525.00	5526.51
Jan-17	422.88	5359.22	0.44	NA			5337.67	0.88	NR			556.90	5349.37	0.53	501.80	5354.65	0.46	176.08	5350.43	0.33
Feb-17	422.49	5359.61	0.39	NA			5338.80	1.13	NR			556.43	5349.84	0.47	501.33	5355.12	0.47	175.15	5351.36	0.93
Mar-17	421.53	5360.57	0.96	NA			5339.30	0.50	NR			555.62	5350.65	0.81	500.38	5356.07	0.95	174.64	5351.87	0.51
Apr-17	420.92	5361.18	0.61	NA			5339.78	0.48	NR			555.56	5350.71	0.06	499.97	5356.48	0.41	173.83	5352.68	0.81
May-17	420.24	5361.86	0.68	NA			5340.27	0.49	NR			554.74	5351.53	0.82	499.44	5357.01	0.53	172.94	5353.57	0.89
Jun-17	418.68	5363.42	1.56	NA			5340.81	0.54	NR			553.55	5352.72	1.19	NR	0.00	0.00	172.58	5353.93	0.36
Jul-17	419.07	5363.03	-0.39	NA			5341.21	0.40	NR			552.65	5353.62	0.90	498.55	5357.90	0.89	173.38	5353.13	-0.80
Aug-17	418.62	5363.48	0.45	NA			5341.64	0.43	NR			552.26	5354.01	0.39	498.25	5358.20	0.30	173.09	5353.42	0.29
Sep-17	418.21	5363.89	0.41	NA			5342.29	0.65	NR			551.88	5354.39	0.38	497.63	5358.82	0.62	172.67	5353.84	0.42
Oct-17	417.38	5364.72	0.83	NA			5342.86	0.57	NR			551.16	5355.11	0.72	496.75	5359.70	0.88	171.73	5354.78	0.94
Nov-17	416.81	5365.29	0.57	NA			5343.32	0.46	NR			550.65	5355.62	0.51	496.26	5360.19	0.49	171.20	5355.31	0.53
Dec-17	416.21	5365.89	0.60	NA			5344.04	0.72	NR			550.16	5356.11	0.49	495.78	5360.67	0.48	170.47	5356.04	0.73
Yearly Change			7.11					7.25			0.00			7.27			6.48			5.94
Jan-18	415.63	5366.47	0.58	NA			5344.58	0.54	NR			549.68	5356.59	0.48	495.27	5361.18	0.51	169.87	5356.64	0.60
Feb-18	415.07	5367.03	0.56	NA			5345.09	0.51	NR			549.14	5357.13	0.54	494.74	5361.71	0.53	169.21	5357.30	0.66
Mar-18	414.49	5367.61	0.58	NA			5345.63	0.54	NR			548.64	5357.63	0.50	494.15	5362.30	0.59	168.66	5357.85	0.55
Apr-18	413.78	5368.32	0.71	NA			5346.38	0.75	NR			548.03	5358.24	0.61	493.50	5362.95	0.65	167.97	5358.54	0.69
May-18	412.67	5369.43	1.11	NA			5347.24	0.86	NR			547.01	5359.26	1.02	492.65	5363.80	0.85	167.13	5359.38	0.84
Jun-18	411.45	5370.65	1.22	NA			5348.27	1.03	NR			546.11	5360.16	0.90	491.94	5364.51	0.71	167.09	5359.42	0.04
Jul-18	412.11	5369.99	-0.66	NA			5348.68	0.41	NR			546.14	5360.13	-0.03	491.50	5364.95	0.44	165.95	5360.56	1.14
Aug-18	411.75	5370.35	0.36	NA			5349.08	0.40	NR			545.51	5360.76	0.63	491.33	5365.12	0.17	165.68	5360.83	0.27
Sep-18	411.36	5370.74	0.39	NA			5349.59	0.51	NR			544.82	5361.45	0.69	490.59	5365.86	0.74	165.22	5361.29	0.46
Oct-18	410.86	5371.24	0.50	NA			5350.18	0.59	NR			544.06	5362.21	0.76	489.78	5366.67	0.81	164.66	5361.85	0.56
Nov-18	410.22	5371.88	0.64	NA			5350.66	0.48	NR			543.90	5362.37	0.16	488.92	5367.53	0.86	163.88	5362.63	0.78
Dec-18	409.90	5372.20	0.32	NA			5351.25	0.59	NR			542.68	5363.59	1.22	488.45	5368.00	0.47	163.40	5363.11	0.48
Yearly Change			6.31					7.21			0.00			7.48			7.33			7.07
Jan-19	409.36	5372.74	0.54	0.00			5351.74	0.49	NR			542.05	5364.22	0.63	487.83	5368.62	0.62	162.62	5363.89	0.78
Feb-19	408.66	5373.44	0.70	0.00			5352.14	0.40	NR			541.18	5365.09	0.87	NR	0.00	0.00	161.76	5364.75	0.86
Mar-19																				
Apr-19																				
May-19																				
Jun-19																				
Jul-19																				
Aug-19																				
Sep-19																				
Oct-19																				
Nov-19																				
Dec-19																				
Yearly Change			1.24					0.89			0.00			1.50			0.62			1.64

* Measuring point elevation changed 3/91.

Dec 1992 Kelley Mine SWL is 1/21/93 measurement.

Kelley Mine measuring point changed 6/99; 11/08 measuring point elevation change.

(1) 12/97 Berkeley Pit water level adjusted based upon Cashell Engineers survey data. Correction lowered water-level 1.11ft.

SWL - Static water-level, in feet, below ground surface
ELEV - Water-level elevation, in feet USGS Datum)
NA - No water-level available due to access problems or obstructions
East Camp-Bdr-Sites-SWL

ED_014362_00000831-00028

Montana Bureau of Mines and Geology
Bedrock Water-Level Elevations
East Camp Mines and Bedrock Wells

Site Name/Monthly Elevations

DATE MO/YR	WELL B SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL C SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL D-1 SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL D-2 SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL E SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL F SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL G SWL (FT)	ELEV (FT)	MO. DIFF (FT)
(MP Elev)		5557.82			5578.00			5591.54			5579.50			5562.40			5487.48			5537.56	
Jan-17	146.07	5411.75	0.34	233.09	5344.91	0.54	244.45	5347.09	0.29	232.81	5346.69	0.45	162.04	5400.36	0.23	33.84	5453.64	-0.11	182.64	5354.92	0.54
Feb-17	145.42	5412.40	0.65	232.37	5345.63	0.72	243.36	5348.18	1.09	232.23	5347.27	0.58	161.23	5401.17	0.81	33.95	5453.53	-0.11	181.98	5355.58	0.66
Mar-17	145.33	5412.49	0.09	232.02	5345.98	0.35	243.17	5348.37	0.19	231.80	5347.70	0.43	161.27	5401.13	-0.04	34.11	5453.37	-0.16	181.65	5355.91	0.33
Apr-17	144.80	5413.02	0.53	231.27	5346.73	0.75	242.92	5348.62	0.25	228.91	5350.59	2.89	160.77	5401.63	0.50	34.02	5453.46	0.09	180.92	5356.64	0.73
May-17	144.40	5413.42	0.40	230.48	5347.52	0.79	241.68	5349.86	1.24	230.21	5349.29	-1.30	161.97	5400.43	-1.20	33.86	5453.62	0.16	180.14	5357.42	0.78
Jun-17	143.88	5413.94	0.52	230.24	5347.76	0.24	241.04	5350.50	0.64	229.61	5349.89	0.60	160.29	5402.11	1.68	34.01	5453.47	-0.15	180.35	5357.21	-0.21
Jul-17	150.23	5407.59	-6.35	230.05	5347.95	0.19	240.60	5350.94	0.44	229.23	5350.27	0.38	160.77	5401.63	-0.48	33.61	5453.87	0.40	179.52	5358.04	0.83
Aug-17	150.22	5407.60	0.01	229.75	5348.25	0.30	240.19	5351.35	0.41	228.89	5350.61	0.34	160.53	5401.87	0.24	33.36	5454.12	0.25	179.26	5358.30	0.26
Sep-17	153.41	5404.41	-3.19	229.35	5348.65	0.40	239.82	5351.72	0.37	228.41	5351.09	0.48	160.36	5402.04	0.17	33.29	5454.19	0.07	178.94	5358.62	0.32
Oct-17	148.91	5408.91	4.50	228.95	5349.05	0.40	238.97	5352.57	0.85	227.73	5351.77	0.68	159.88	5402.52	0.48	33.03	5454.45	0.26	178.38	5359.18	0.56
Nov-17	148.17	5409.65	0.74	228.27	5349.73	0.68	238.59	5352.95	0.38	227.10	5352.40	0.63	159.58	5402.82	0.30	33.17	5454.31	-0.14	177.91	5359.65	0.47
Dec-17	147.43	5410.39	0.74	227.71	5350.29	0.56	238.01	5353.53	0.58	226.69	5352.81	0.41	159.30	5403.10	0.28	33.27	5454.21	-0.10	177.42	5360.14	0.49
Yearly Change			-1.02			5.92			6.73			6.57			2.97			0.46			5.76
Jan-18	146.69	5411.13	0.74	227.16	5350.84	0.55	237.61	5353.93	0.40	226.10	5353.40	0.59	158.91	5403.49	0.39	33.51	5453.97	-0.24	176.89	5360.67	0.53
Feb-18	145.90	5411.92	0.79	226.55	5351.45	0.61	236.87	5354.67	0.74	225.43	5354.07	0.67	158.57	5403.83	0.34	33.64	5453.84	-0.13	176.29	5361.27	0.60
Mar-18	145.52	5412.30	0.38	225.96	5352.04	0.59	236.49	5355.05	0.38	225.03	5354.47	0.40	158.47	5403.93	0.10	33.74	5453.74	-0.10	175.84	5361.72	0.45
Apr-18	145.09	5412.73	0.43	225.49	5352.51	0.47	235.92	5355.62	0.57	224.64	5354.86	0.39	158.35	5404.05	0.12	33.67	5453.81	0.07	175.32	5362.24	0.52
May-18	145.30	5412.52	-0.21	222.04	5355.96	3.45	235.07	5356.47	0.85	223.59	5355.91	1.05	157.77	5404.63	0.58	33.49	5453.99	0.18	174.51	5363.05	0.81
Jun-18	143.85	5413.97	1.45	224.03	5353.97	-1.99	234.28	5357.26	0.79	222.84	5356.66	0.75	157.55	5404.85	0.22	33.00	5454.48	0.49	174.16	5363.40	0.35
Jul-18	143.42	5414.40	0.43	223.78	5354.22	0.25	233.84	5357.70	0.44	222.46	5357.04	0.38	157.42	5404.98	0.13	32.54	5454.94	0.46	173.67	5363.89	0.49
Aug-18	142.88	5414.94	0.54	223.34	5354.66	0.44	233.43	5358.11	0.41	221.99	5357.51	0.47	156.93	5405.47	0.49	32.25	5455.23	0.29	173.27	5364.29	0.40
Sep-18	142.50	5415.32	0.38	223.03	5354.97	0.31	233.08	5358.46	0.35	223.15	5356.35	-1.16	156.70	5405.70	0.23	31.93	5455.55	0.32	173.00	5364.56	0.27
Oct-18	142.19	5415.63	0.31	222.51	5355.49	0.52	232.28	5359.26	0.80	220.93	5358.57	2.22	156.37	5406.03	0.33	31.71	5455.77	0.22	172.45	5365.11	0.55
Nov-18	141.60	5416.22	0.59	221.93	5356.07	0.58	231.56	5359.98	0.72	220.15	5359.35	0.78	155.87	5406.53	0.50	31.82	5455.66	-0.11	171.83	5365.73	0.62
Dec-18	141.41	5416.41	0.19	221.50	5356.50	0.43	231.26	5360.28	0.30	219.87	5359.63	0.28	155.78	5406.62	0.09	32.01	5455.47	-0.19	171.41	5366.15	0.42
Yearly Change			6.02			6.21			6.75			6.82			3.52			1.26			6.01
Jan-19	141.09	5416.73	0.32	220.90	5357.10	0.60	230.54	5361.00	0.72	219.18	5360.32	0.69	155.48	5406.92	0.30	32.11	5455.37	-0.10	170.83	5366.73	0.58
Feb-19	140.63	5417.19	0.46	220.06	5357.94	0.84	229.81	5361.73	0.73	218.36	5361.14	0.82	155.05	5407.35	0.43	NR	0.00	0.00	169.99	5367.57	0.84
Mar-19																					
Apr-19																					
May-19																					
Jun-19																					
Jul-19																					
Aug-19																					
Sep-19																					
Oct-19																					
Nov-19																					
Dec-19																					
Yearly Change			0.78			1.44			1.45			1.51			0.73			-0.10			1.42

SWL - Static water-level, in feet, below ground surface
ELEV - Water-level elevation, in feet USGS Datum)
NA - No water-level available due to access problems or obstructions
East Camp-Bdr-Sites-SWL

ED_014362_00000831-00029

Montana Bureau of Mines and Geology
Bedrock Water-Level Elevations
East Camp Mines and Bedrock Wells

Site Name/Monthly Elevations

DATE MO/YR	WELL H SWL (FT)	ELEV (FT)	MO. DIFF (FT)	WELL J SWL (FT)	ELEV (FT)	MO. DIFF (FT)	LEXINGTON SWL (FT)	ELEV (FT)	MO. DIFF (FT)	PILOT BUTTE SWL (FT)	ELEV (FT)	MO. DIFF (FT)	BELMONT 1 SWL (FT)	ELEV (FT)	MO. DIFF (FT)	BELMONT 2 SWL (FT)	ELEV (FT)	MO. DIFF (FT)
(MP Elev)		5572.82		5530.03	5530.99			6216.59			6056.98			5600.82			5602.72	
Jan-17	Plugged&abandoned			190.14	5340.85	0.51	858.11	5358.48	0.45	696.63	5360.35	0.52	126.54	5474.28	-3.06	253.52	5349.20	0.29
Feb-17	Plugged&abandoned			189.52	5341.47	0.62	857.56	5359.03	0.55	696.11	5360.87	0.52	130.43	5470.39	-3.89	252.81	5349.91	0.71
Mar-17	Plugged&abandoned			188.88	5342.11	0.64	856.78	5359.81	0.78	695.26	5361.72	0.85	133.97	5466.85	-3.54	252.08	5350.64	0.73
Apr-17	Plugged&abandoned			188.16	5342.83	0.72	856.24	5360.35	0.54	694.67	5362.31	0.59	137.31	5463.51	-3.34	251.31	5351.41	0.77
May-17	Plugged&abandoned			187.34	5343.65	0.82	855.53	5361.06	0.71	693.74	5363.24	0.93	139.29	5461.53	-1.98	250.39	5352.33	0.92
Jun-17	Plugged&abandoned			186.82	5344.17	0.52	854.57	5362.02	0.96	692.19	5364.79	1.55	134.97	5465.85	4.32	249.53	5353.19	0.86
Jul-17	Plugged&abandoned			186.53	5344.46	0.29	854.59	5362.00	-0.02	691.19	5365.79	1.00	122.21	5478.61	12.76	249.49	5353.23	0.04
Aug-17	Plugged&abandoned			186.23	5344.76	0.30	854.44	5362.15	0.15	690.85	5366.13	0.34	117.54	5483.28	4.67	249.28	5353.44	0.21
Sep-17	Plugged&abandoned			185.71	5345.28	0.52	854.33	5362.26	0.11	690.73	5366.25	0.12	116.86	5483.96	0.68	248.82	5353.90	0.46
Oct-17	Plugged&abandoned			185.00	5345.99	0.71	853.63	5362.96	0.70	689.71	5367.27	1.02	116.64	5484.18	0.22	248.11	5354.61	0.71
Nov-17	Plugged&abandoned			184.35	5346.64	0.65	853.04	5363.55	0.59	689.24	5367.74	0.47	117.71	5483.11	-1.07	247.54	5355.18	0.57
Dec-17	Plugged&abandoned			183.85	5347.14	0.50	852.42	5364.17	0.62	688.67	5368.31	0.57	117.77	5483.05	-0.06	247.04	5355.68	0.50
Yearly Change						6.80			6.14			8.48			5.71			6.77
Jan-18	Plugged&abandoned			183.18	5347.81	0.67	851.75	5364.84	0.67	688.19	5368.79	0.48	120.58	5480.24	-2.81	246.57	5356.15	0.47
Feb-18	Plugged&abandoned			182.61	5348.38	0.57	851.15	5365.44	0.60	687.59	5369.39	0.60	125.40	5475.42	-4.82	245.91	5356.81	0.66
Mar-18	Plugged&abandoned			182.04	5348.95	0.57	850.61	5365.98	0.54	687.09	5369.89	0.50	130.00	5470.82	-4.60	245.44	5357.28	0.47
Apr-18	Plugged&abandoned			181.40	5349.59	0.64	849.98	5366.61	0.63	686.44	5370.54	0.65	133.68	5467.14	-3.68	244.77	5357.95	0.67
May-18	Plugged&abandoned			180.58	5350.41	0.82	849.06	5367.53	0.92	685.18	5371.80	1.26	131.31	5469.51	2.37	243.83	5358.89	0.94
Jun-18	Plugged&abandoned			179.79	5351.20	0.79	848.32	5368.27	0.74	684.14	5372.84	1.04	106.63	5494.19	24.68	243.06	5359.66	0.77
Jul-18	Plugged&abandoned			179.53	5351.46	0.26	848.38	5368.21	-0.06	683.30	5373.68	0.84	104.68	5496.14	1.95	242.37	5360.35	0.69
Aug-18	Plugged&abandoned			179.21	5351.78	0.32	847.85	5368.74	0.53	682.74	5374.24	0.56	109.21	5491.61	-4.53	242.01	5360.71	0.36
Sep-18	Plugged&abandoned			178.78	5352.21	0.43	847.09	5369.50	0.76	682.09	5374.89	0.65	108.76	5492.06	0.45	241.48	5361.24	0.53
Oct-18	Plugged&abandoned			178.05	5352.94	0.73	846.21	5370.38	0.88	681.33	5375.65	0.76	108.81	5492.01	-0.05	240.89	5361.83	0.59
Nov-18	Plugged&abandoned			177.41	5353.58	0.64	845.35	5371.24	0.86	680.53	5376.45	0.80	110.19	5490.63	-1.38	240.16	5362.56	0.73
Dec-18	Plugged&abandoned			176.88	5354.11	0.53	844.90	5371.69	0.45	680.12	5376.86	0.41	112.89	5487.93	-2.70	239.82	5362.90	0.34
Yearly Change						6.97			7.52			8.55			4.88			7.22
Jan-19	Plugged&abandoned			176.27	5354.72	0.61	NR	0.00	0.00	679.63	5377.35	0.49	114.91	5485.91	-2.02	239.32	5363.40	0.50
Feb-19	Plugged&abandoned			175.38	5355.61	0.89	843.43	5373.16	1.47	NR	0.00	0.00	NR	0.00	0.00	NR	0.00	0.00
Mar-19																		
Apr-19																		
May-19																		
Jun-19																		
Jul-19																		
Aug-19																		
Sep-19																		
Oct-19																		
Nov-19																		
Dec-19																		
Yearly Change						1.50			1.47			0.49			-2.02			0.50

SWL - Static water-level, in feet, below ground surface
ELEV - Water-level elevation, in feet USGS Datum)
NA - No water-level available due to access problems or obstructions
East Camp-Bdr-Sites-SWL

ED_014362_00000831-00030

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring

GWIC ID		4647			157638			4644		
		Parrot Park Well			Belmont Well #1			Hebgen Park Well		
Agency	Date	SWL(ft)	Elev(ft)	Diff (ft)**	SWL(ft)	Elev(ft)	Diff (ft)**	SWL(ft)	Elev(ft)	Diff (ft)**
	(mm/dd/yy)	(mp=ct)	5520.66		(mp=ct)	5600.82		(mp=ct)	5516.15	
MBMG	01/27/17	117.94	5402.72	-0.25	126.54	5474.28	-3.06	26.10	5490.05	-0.98
MBMG	02/27/17	118.31	5402.35	-0.37	130.43	5470.39	-3.89	26.34	5489.81	-0.24
MBMG	03/27/17	118.64	5402.02	-0.33	133.97	5466.85	-3.54	26.25	5489.90	0.09
MBMG	04/25/17	118.75	5401.91	-0.11	137.31	5463.51	-3.34	26.25	5489.90	0.00
MBMG	05/31/17	118.90	5401.76	-0.15	139.29	5461.53	-1.98	25.49	5490.66	0.76
MBMG	06/26/17	118.81	5401.85	0.09	134.97	5465.85	4.32	23.61	5492.54	1.88
MBMG	07/26/17	115.97	5404.69	2.84	122.21	5478.61	12.76	24.10	5492.05	-0.49
MBMG	08/30/17	115.16	5405.50	0.81	117.54	5483.28	4.67	24.15	5492.00	-0.05
MBMG	09/27/17	111.78	5408.88	3.38	116.86	5483.96	0.68	24.39	5491.76	-0.24
MBMG	10/30/17	113.70	5406.96	-1.92	116.64	5484.18	0.22	24.38	5491.77	0.01
MBMG	11/27/17	114.82	5405.84	-1.12	117.71	5483.11	-1.07	24.66	5491.49	-0.28
MBMG	12/28/17	115.79	5404.87	-0.97	117.77	5483.05	-0.06	24.93	5491.22	-0.27
MBMG	01/26/18	116.62	5404.04	-0.83	120.58	5480.24	-2.81	25.41	5490.74	-0.48
MBMG	02/27/18	117.38	5403.28	-0.76	125.40	5475.42	-4.82	25.84	5490.31	-0.43
MBMG	03/26/18	118.08	5402.58	-0.70	130.00	5470.82	-4.60	26.22	5489.93	-0.38
MBMG	04/24/18	117.99	5402.67	0.09	133.68	5467.14	-3.68	25.53	5490.62	0.69
MBMG	05/29/18	117.80	5402.86	0.19	131.31	5469.51	2.37	24.07	5492.08	1.46
MBMG	06/26/18	117.06	5403.60	0.74	106.63	5494.19	24.68	22.09	5494.06	1.98
MBMG	07/30/18	112.79	5407.87	4.27	104.68	5496.14	1.95	19.74	5496.41	2.35
MBMG	08/28/18	112.04	5408.62	0.75	109.21	5491.61	-4.53	19.18	5496.97	0.56
MBMG	09/28/18	112.29	5408.37	-0.25	108.76	5492.06	0.45	19.12	5497.03	0.06
MBMG	10/30/18	113.03	5407.63	-0.74	108.81	5492.01	-0.05	19.92	5496.23	-0.80
MBMG	11/27/18	113.12	5407.54	-0.09	110.19	5490.63	-1.38	20.46	5495.69	-0.54
MBMG	12/27/18	113.64	5407.02	-0.52	112.89	5487.93	-2.70	21.53	5494.62	-1.07
MBMG	01/28/19	114.54	5406.12	-0.90	114.91	5485.91	-2.02	22.67	5493.48	-1.14
MBMG	03/06/19	NR			NR			23.59	5492.56	-0.92
TOTAL CHANGE ==>			FROM 11/94==>	5.97		FROM 8/96 ==>	-25.99			-2.17

SWL-Data-All

Montana Bureau of Mines and Geology
Butte Mine Flooding
West Camp Water-Levels

SITE NAME/MONTHLY ELEVATIONS

DATE MO/YR (MP Elev)	TRAVONA SWL (FT)	ELEV (FT) 5590.60	MO. DIFF (FT) 5591.98	EMMA SWL (FT)	ELEV (FT) 5636.80	MO. DIFF (FT)	OPHIR SWL (FT)	ELEV (FT) 5530.29	MO. DIFF (FT) 5533.16	WELL 21 SWL (FT)	ELEV (FT) 5471.50	MO. DIFF (FT)	CHESTER STEELE SWL (FT)	ELEV (FT) 5629.57	MO. DIFF (FT)
01/28/15	169.89	5422.09	-0.07	215.66	5421.14	-0.08	111.82	5421.34	-0.02				46.83	5582.74	-2.65
02/24/15	169.93	5422.05	-0.04	215.67	5421.13	-0.01	111.86	5421.30	-0.04				49.22	5580.35	-2.39
03/25/15	169.87	5422.11	0.06	215.67	5421.13	0.00	111.86	5421.30	0.00				51.31	5578.26	-2.09
04/28/15	169.76	5422.22	0.11	215.60	5421.20	0.07	111.84	5421.32	0.02				40.16	5589.41	11.15
05/27/15	169.96	5422.02	-0.20	215.77	5421.03	-0.17	111.89	5421.27	-0.05				40.90	5588.67	-0.74
06/30/15	169.67	5422.31	0.29	215.40	5421.40	0.37	111.65	5421.51	0.24				43.73	5585.84	-2.83
07/28/15	169.61	5422.37	0.06	215.36	5421.44	0.04	111.60	5421.56	0.05				45.48	5584.09	-1.75
08/26/15	169.68	5422.30	-0.07	215.40	5421.40	-0.04	111.62	5421.54	-0.02				44.27	5585.30	1.21
09/29/15	169.55	5422.43	0.13	215.00	5421.80	0.40	111.19	5421.97	0.43				43.48	5586.09	0.79
10/30/15	169.81	5422.17	-0.26	215.58	5421.22	-0.58	111.76	5421.40	-0.57				43.65	5585.92	-0.17
11/25/15	169.84	5422.14	-0.03	215.58	5421.22	0.00	111.72	5421.44	0.04				45.10	5584.47	-1.45
12/22/15	169.98	5422.00	-0.14	215.73	5421.07	-0.15	111.88	5421.28	-0.16				47.82	5581.75	-2.72
Yearly Change			-0.16			-0.15			-0.08			0.00			-3.64
01/26/16	170.15	5421.83	-0.17	215.89	5420.91	-0.16	111.99	5421.17	-0.11				50.42	5579.15	-2.60
02/26/16	168.99	5422.99	1.16	214.76	5422.04	1.13	110.84	5422.32	1.15				52.33	5577.24	-1.91
03/29/16	170.06	5421.92	-1.07	215.85	5420.95	-1.09	111.87	5421.29	-1.03				54.88	5574.69	-2.55
04/25/16	169.85	5422.13	0.21	215.60	5421.20	0.25	111.70	5421.46	0.17				56.56	5573.01	-1.68
05/24/16	170.03	5421.95	-0.18	215.75	5421.05	-0.15	111.84	5421.32	-0.14				43.08	5586.49	13.48
06/30/16	169.93	5422.05	0.10	215.65	5421.15	0.10	111.77	5421.39	0.07				44.51	5585.06	-1.43
07/26/16	169.73	5422.25	0.20	215.48	5421.32	0.17	111.59	5421.57	0.18				45.90	5583.67	-1.39
08/26/16	169.68	5422.30	0.05	215.61	5421.19	-0.13	111.69	5421.47	-0.10				44.38	5585.19	1.52
09/30/16	169.65	5422.33	0.03	215.39	5421.41	0.22	111.41	5421.75	0.28				43.55	5586.02	0.83
10/28/16	169.89	5422.09	-0.24	215.53	5421.27	-0.14	111.64	5421.52	-0.23				43.58	5585.99	-0.03
11/25/16	170.01	5421.97	-0.12	215.74	5421.06	-0.21	111.80	5421.36	-0.16				44.74	5584.83	-1.16
12/22/16	170.20	5421.78	-0.19	215.94	5420.86	-0.20	112.04	5421.12	-0.24				47.03	5582.54	-2.29
Yearly Change			-0.22			-0.21			-0.16			0.00			0.79
01/26/17	170.37	5421.61	-0.17	216.12	5420.68	-0.18	112.20	5420.96	-0.16				49.33	5580.24	-2.30
02/24/17	169.90	5422.08	0.47	215.62	5421.18	0.50	111.73	5421.43	0.47				51.37	5578.20	-2.04
03/27/17	169.71	5422.27	0.19	215.43	5421.37	0.19	111.56	5421.60	0.17				52.59	5576.98	-1.22
04/25/17	169.76	5422.22	-0.05	215.50	5421.30	-0.07	111.61	5421.55	-0.05				53.73	5575.84	-1.14
05/30/17	169.34	5422.64	0.42	215.11	5421.69	0.39	111.21	5421.95	0.40				52.94	5576.63	0.79
06/26/17	168.59	5423.39	0.75	214.26	5422.54	0.85	110.38	5422.78	0.83				34.18	5595.39	18.76
07/26/17	168.53	5423.45	0.06	214.23	5422.57	0.03	110.45	5422.71	-0.07				29.37	5600.20	4.81
08/28/17	168.38	5423.60	0.15	214.16	5422.64	0.07	110.31	5422.85	0.14				30.31	5599.26	-0.94
09/27/17	168.70	5423.28	-0.32	214.44	5422.36	-0.28	110.70	5422.46	-0.39				33.24	5596.33	-2.93
10/30/17	168.41	5423.57	0.29	214.17	5422.63	0.27	110.43	5422.73	0.27				35.20	5594.37	-1.96
11/27/17	168.61	5423.37	-0.20	214.37	5422.43	-0.20	110.56	5422.60	-0.13				37.09	5592.48	-1.89
12/28/17	168.88	5423.10	-0.27	214.64	5422.16	-0.27	110.78	5422.38	-0.22				35.54	5594.03	1.55
Yearly Change			1.32			1.30			1.26			0.00			11.49
01/25/18	168.86	5423.12	0.02	214.63	5422.17	0.01	110.81	5422.35	-0.03				31.57	5598.00	3.97
02/26/18	169.03	5422.95	-0.17	214.79	5422.01	-0.16	110.96	5422.20	-0.15				28.62	5600.95	2.95
03/26/18	168.56	5423.42	0.47	214.31	5422.49	0.48	110.47	5422.69	0.49				32.54	5597.03	-3.92
04/24/18	168.68	5423.30	-0.12	214.43	5422.37	-0.12	110.60	5422.56	-0.13				36.52	5593.05	-3.98
05/29/18	168.61	5423.37	0.07	214.34	5422.46	0.09	110.48	5422.68	0.12				38.24	5591.33	-1.72
06/26/18	165.56	5426.42	3.05	211.31	5425.49	3.03	107.48	5425.68	3.00				36.58	5592.99	1.66
07/30/18	166.28	5425.70	-0.72	212.04	5424.76	-0.73	108.07	5425.09	-0.59				28.69	5600.88	7.89
08/28/18	167.90	5424.08	-1.62	213.62	5423.18	-1.58	109.61	5423.55	-1.54				28.93	5600.64	-0.24
09/27/18	168.84	5423.14	-0.94	214.58	5422.22	-0.96	110.56	5422.60	-0.95				31.39	5598.18	-2.46
10/30/18	169.11	5422.87	-0.27	214.83	5421.97	-0.25	110.79	5422.37	-0.23				34.97	5594.60	-3.58
11/27/18	168.58	5423.40	0.53	214.33	5422.47	0.50	110.32	5422.84	0.47				36.97	5592.60	-2.00
12/27/18	168.69	5423.29	-0.11	214.42	5422.38	-0.09	110.40	5422.76	-0.08				39.49	5590.08	-2.52
Yearly Change			0.19			0.22			0.38			0.00			-3.95
01/28/19	168.84	5423.14	-0.15	214.59	5422.21	-0.17	110.58	5422.58	-0.18				42.59	5586.98	-3.10
03/05/19	169.04	5422.94	-0.20	214.69	5422.11	-0.10	110.71	5422.45	-0.13				45.79	5583.78	-3.20
03/28/19															
04/28/19															
05/28/19															
06/28/19															
07/28/19															
08/28/19															
09/28/19															
10/28/19															
11/28/19															
12/28/19															
Yearly Change			-0.35			-0.27			-0.31			0.00			-6.30

SWL - STATIC WATER LEVEL, IN FEET, BELOW GROUND SURFACE(MP)

ELEV - WATER LEVEL ELEVATION, IN FEET, ABOVE MEAN SEA LEVEL (USGS DATUM)

NA - NO WATER LEVELS AVAILABLE DUE TO ACCESS PROBLEMS OR OBSTRUCTIONS

Ophir Mine Elevation changed April 2005 after casing repair.

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring Data
West Camp Ground-Water Sites

	AMC-21			BMF96-1D			BMF96-1S			BMF96-2			BMF96-3			BMF96-4		
GWIC ID	4993			158224			158225			158226			158231			164443		
Date	SWL (ft)	Elev. (ft) 5471.50	Change (ft)	SWL (gs) (ft)	Elev. (ft) 5471.12	Change (ft) 5471.59	SWL (gs) (ft)	Elev. (ft) 5470.16	Change (ft)	SWL (gs) (ft)	Elev. (ft) 5473.05	Change (ft)	SWL (gs) (ft)	Elev. (ft) 5467.27	Change (ft)	SWL (gs) 5490.93	Elev. (ft) 5491.30	Change (ft) 5489.20
01/28/15	Plugged			50.72	5420.87	-0.02	21.56	5448.60	-0.50	13.80	5459.25	-0.18	9.44	5457.83	-0.27	51.37	5437.83	-0.50
02/25/15	Plugged			50.79	5420.80	-0.07	20.58	5449.58	0.98	13.52	5459.53	0.28	9.35	5457.92	0.09	51.45	5437.75	-0.08
03/25/15	Plugged			50.72	5420.87	0.07	21.36	5448.80	-0.78	13.87	5459.18	-0.35	9.61	5457.66	-0.26	51.78	5437.42	-0.33
04/28/15	Plugged			50.60	5420.99	0.12	21.81	5448.35	-0.45	14.08	5458.97	-0.21	9.48	5457.79	0.13	52.49	5436.71	-0.71
05/27/15	Plugged			50.70	5420.89	-0.10	21.45	5448.71	0.36	14.12	5458.93	-0.04	9.10	5458.17	0.38	52.66	5436.54	-0.17
06/30/15	Plugged			50.56	5421.03	0.14	20.33	5449.83	1.12	14.25	5458.80	-0.13	8.95	5458.32	0.15	52.64	5436.56	0.02
07/28/15	Plugged			50.57	5421.02	-0.01	21.09	5449.07	-0.76	14.64	5458.41	-0.39	8.50	5458.77	0.45	52.67	5436.53	-0.03
08/25/15	Plugged			50.55	5421.04	0.02	20.67	5449.49	0.42	14.81	5458.24	-0.17	8.80	5458.47	-0.30	52.12	5437.08	0.55
09/29/15	Plugged			50.30	5421.29	0.25	20.11	5450.05	0.56	14.43	5458.62	0.38	8.60	5458.67	0.20	51.42	5437.78	0.70
10/26/15	Plugged			50.69	5420.90	-0.39	20.23	5449.93	-0.12	14.72	5458.33	-0.29	9.15	5458.12	-0.55	51.05	5438.15	0.37
11/24/15	Plugged			50.71	5420.88	-0.02	20.71	5449.45	-0.48	14.48	5458.57	0.24	9.32	5457.95	-0.17	51.01	5438.19	0.04
12/28/15	Plugged			50.84	5420.75	-0.13	21.88	5448.28	-1.17	14.95	5458.10	-0.47	9.63	5457.64	-0.31	51.42	5437.78	-0.41
01/26/16	Plugged			50.87	5420.72	-0.03	22.79	5447.37	-0.91	15.34	5457.71	-0.39	9.96	5457.31	-0.33	52.17	5437.03	-0.75
02/23/16	Plugged			49.72	5421.87	1.15	22.18	5447.98	0.61	14.14	5458.91	1.20	9.67	5457.60	0.29	52.13	5437.07	0.04
03/29/16	Plugged			50.82	5420.77	-1.10	21.66	5448.50	0.52	14.18	5458.87	-0.04	9.74	5457.53	-0.07	52.38	5436.82	-0.25
04/25/16	Plugged			50.70	5420.89	0.12	21.71	5448.45	-0.05	14.17	5458.88	0.01	9.58	5457.69	0.16	52.52	5436.68	-0.14
05/24/16	Plugged			50.87	5420.72	-0.17	21.57	5448.59	0.14	14.34	5458.71	-0.17	9.43	5457.84	0.15	52.80	5436.40	-0.28
06/28/16	Plugged			50.79	5420.80	0.08	20.49	5449.67	1.08	14.48	5458.57	-0.14	9.17	5458.10	0.26	53.04	5436.16	-0.24
07/26/16	Plugged			50.62	5420.97	0.17	20.29	5449.87	0.20	14.75	5458.30	-0.27	9.01	5458.26	0.16	52.72	5436.48	0.32
08/26/16	Plugged			50.71	5420.88	-0.09	20.08	5450.08	0.21	14.94	5458.11	-0.19	8.82	5458.45	0.19	51.81	5437.39	0.91
10/03/16	Plugged			50.53	5421.06	0.18	20.86	5449.30	-0.78	14.95	5458.10	-0.01	9.01	5458.26	-0.19	50.76	5438.44	1.05
10/28/16	Plugged			50.77	5420.82	-0.24	20.87	5449.29	-0.01	14.58	5458.47	0.37	9.05	5458.22	-0.04	50.89	5438.31	-0.13
11/28/16	Plugged			50.44	5421.15	0.33	20.65	5449.51	0.22	14.52	5458.53	0.06	9.23	5458.04	-0.18	50.68	5438.52	0.21
12/28/16	Plugged			51.10	5420.49	-0.66	21.89	5448.27	-1.24	15.12	5457.93	-0.60	9.61	5457.66	-0.38	51.10	5438.10	-0.42
01/26/17	Plugged			51.25	5420.34	-0.15	22.91	5447.25	-1.02	15.44	5457.61	-0.32	9.85	5457.42	-0.24	51.84	5437.36	-0.74
02/24/17	Plugged			50.80	5420.79	0.45	22.13	5448.03	0.78	13.81	5459.24	1.63	9.62	5457.65	0.23	51.83	5437.37	0.01
03/27/17	Plugged			50.69	5420.90	0.11	20.68	5449.48	1.45	13.24	5459.81	0.57	9.25	5458.02	0.37	51.98	5437.22	-0.15
04/25/17	Plugged			50.62	5420.97	0.07	20.17	5449.99	0.51	13.48	5459.57	-0.24	8.97	5458.30	0.28	52.09	5437.11	-0.11
05/30/17	Plugged			50.22	5421.37	0.40	18.27	5451.89	1.90	12.81	5460.24	0.67	8.24	5459.03	0.73	52.13	5437.07	-0.04
06/26/17	Plugged			49.40	5422.19	0.82	16.67	5453.49	1.60	12.35	5460.70	0.46	7.86	5459.41	0.38	51.50	5437.70	0.63
07/26/17	Plugged			49.50	5422.09	-0.10	18.33	5451.83	-1.66	13.52	5459.53	-1.17	8.18	5459.09	-0.32	50.97	5438.23	0.53
08/28/17	Plugged			49.32	5422.27	0.18	20.42	5449.74	-2.09	14.15	5458.90	-0.63	8.31	5458.96	-0.13	50.26	5438.94	0.71
09/27/17	Plugged			49.61	5421.98	-0.29	21.47	5448.69	-1.05	14.23	5458.82	-0.08	8.47	5458.80	-0.16	50.08	5439.12	0.18
10/30/17	Plugged			49.32	5422.27	0.29	21.62	5448.54	-0.15	14.36	5458.69	-0.13	8.72	5458.55	-0.25	49.80	5439.40	0.28
11/27/17	Plugged			49.50	5422.09	-0.18	21.77	5448.39	-0.15	13.73	5459.32	0.63	8.66	5458.61	0.06	49.80	5439.40	0.00
12/28/17	Plugged			49.76	5421.83	-0.26	22.14	5448.02	-0.37	14.43	5458.62	-0.70	8.98	5458.29	-0.32	50.25	5438.95	-0.45
01/25/18	Plugged			49.75	5421.84	0.01	22.79	5447.37	-0.65	14.56	5458.49	-0.13	9.22	5458.05	-0.24	50.19	5439.01	0.06
02/26/18	Plugged			49.91	5421.68	-0.16	22.77	5447.39	0.02	14.67	5458.38	-0.11	9.37	5457.90	-0.15	50.84	5438.36	-0.65
03/26/18	Plugged			49.44	5422.15	0.47	20.31	5449.85	2.46	11.99	5461.06	2.68	8.87	5458.40	0.50	51.19	5438.01	-0.35
04/24/18	Plugged			49.54	5422.05	-0.10	17.84	5452.32	2.47	12.33	5460.72	-0.34	8.44	5458.83	0.43	51.44	5437.76	-0.25
05/29/18	Plugged			49.45	5422.14	0.09	16.63	5453.53	1.21	12.43	5460.62	-0.10	8.03	5459.24	0.41	51.06	5438.14	0.38
06/26/18	Plugged			46.43	5425.16	3.02	14.63	5455.53	2.00	11.52	5461.53	0.91	7.67	5459.60	0.36	50.16	5439.04	0.90
07/30/18	Plugged			47.18	5424.41	-0.75	16.12	5454.04	-1.49	12.81	5460.24	-1.29	8.16	5459.11	-0.49	48.79	5440.41	1.37
08/28/18	Plugged			48.78	5422.81	-1.60	17.48	5452.68	-1.36	13.32	5459.73	-0.51	8.17	5459.10	-0.01	48.50	5440.70	0.29
09/27/18	Plugged			49.75	5421.84	-0.97	18.44	5451.72	-0.96	13.56	5459.49	-0.24	8.42	5458.85	-0.25	48.41	5440.79	0.09
10/30/18	Plugged			49.99	5421.60	-0.24	19.55	5450.61	-1.11	13.79	5459.26	-0.23	8.91	5458.36	-0.49	48.79	5440.41	-0.38
11/27/18	Plugged			49.48	5422.11	0.51	20.28	5449.88	-0.73	13.78	5459.27	0.01	9.06	5458.21	-0.15	48.72	5440.48	0.07
12/27/18	Plugged			49.56	5422.03	-0.08	21.40	5448.76	-1.12	14.32	5458.73	-0.54	9.38	5457.89	-0.32	49.37	5439.83	-0.65
01/28/19	Plugged			49.72	5421.87	-0.16	22.44	5447.72	-1.04	14.70	5458.35	-0.38	9.68	5457.59	-0.30	50.09	5439.11	-0.72
03/05/19	Plugged			49.87	5421.72	-0.15	23.31	5446.85	-0.87	15.09	5457.96	-0.39	9.83	5457.44	-0.15	NR	0.00	0.00

MP elevations
changed 7/99
(BMF96-1D)
and 7/04
(BMF96-4)

Montana Bureau of Mines and Geology
Butte Mine Flooding Monitoring Data
West Camp Ground-Water Sites

	WCPW-1		Chester Steele			WC Extraction Well Data						
GWIC ID	184133		4773									
Date	SWL (gs)	Elev. (ft) Change 5471.35	SWL (gs) (ft)	Elev. (ft) 5629.57	Change (ft)	Reading	Diff (gallons)	Daily Avg. (gallons)	Pump Rate (gpm)	Monthly Average Pumping Rate (gpm)	Monthly Total Pumped (Gallons)	Monthly Total Pumped (Acre-Ft)
01/28/15	NA		46.83	5582.74	-2.65	NA	7,105,053	263,150	183	183	7,105,053	21.80
02/25/15	NA		49.22	5580.35	-2.39	NA	6,829,580	243,914	169	169	6,829,580	20.96
03/25/15	NA		51.31	5578.26	-2.09	NA	7,734,949	276,248	192	192	7,734,949	23.74
04/28/15	NA		40.16	5589.41	11.15	NA	5,722,244	168,301	117	117	5,722,244	17.56
05/27/15	NA		40.90	5588.67	-0.74	NA	5,470,047	188,622	131	131	5,470,047	16.79
06/30/15	NA		43.73	5585.84	-2.83	NA	6,940,926	204,145	142	142	6,940,926	21.30
07/28/15	NA		45.48	5584.09	-1.75	NA	5,988,507	213,875	149	149	5,988,507	18.38
08/25/15	NA		44.27	5585.30	1.21	NA	6,754,700	241,239	168	168	6,754,700	20.73
09/29/15	NA		43.48	5586.09	0.79	NA	8,853,840	252,967	176	176	8,853,840	27.17
10/26/15	NA		43.65	5585.92	-0.17	NA	7,437,206	275,452	191	191	7,437,206	22.82
11/24/15	NA		45.10	5584.47	-1.45	NA	6,819,909	235,169	163	163	6,819,909	20.93
12/28/15	NA		47.82	5581.75	-2.72	NA	7,775,304	228,685	159	159	7,775,304	23.86
01/26/16	NA		02/19/00	5579.15			5632320.00	194217.93	134.87	134.87	5632320.00	17.28
02/23/16	NA		52.33	5577.24	-1.91	NA	5,077,449	181,337	126	126	5,077,449	15.58
03/29/16	NA		54.88	5574.69	-2.55	NA	6,926,015	197,886	137	137	6,926,015	21.26
04/25/16	NA		56.56	5573.01	-1.68	NA	5,197,616	192,504	134	134	5,197,616	15.95
05/24/16	NA		43.08	5586.49	13.48	NA	5,181,567	178,675	124	124	5,181,567	15.90
06/28/16	NA		44.51	5585.06	-1.43	NA	6,561,620	187,475	130	130	6,561,620	20.14
07/26/16	NA		45.90	5583.67	-1.39	NA	5,690,808	203,243	141	141	5,690,808	17.46
08/26/16	NA		44.38	5585.19	1.52	NA	8,181,122	263,907	183	183	8,181,122	25.11
10/03/16	NA		43.55	5586.02	0.83	NA	8,811,943	231,893	161	161	8,811,943	27.04
10/28/16	NA		43.58	5585.99	-0.03	NA	7,039,616	281,585	196	196	7,039,616	21.60
11/28/16	NA		44.74	5584.83	-1.16	NA	6,741,637	217,472	151	151	6,741,637	20.69
12/28/16	NA		47.03	5582.54	-2.29	NA	7,914,721	263,824	183	183	7,914,721	24.29
01/26/17	NA		49.33	5580.24	-2.30	NA	6,023,230	207,698	144	144	6,023,230	18.48
02/24/17	NA		51.37	5578.20	-2.04	NA	5,695,825	196,408	136	136	5,695,825	17.48
03/27/17	NA		52.59	5576.98	-1.22	NA	7,048,176	227,361	158	158	7,048,176	21.63
04/25/17	NA		53.73	5575.84	-1.14	NA	5,582,824	192,511	134	134	5,582,824	17.13
05/30/17	NA		52.94	5576.63	0.79	NA	5,304,941	151,570	105	105	5,304,941	16.28
06/26/17	NA		34.18	5595.39	18.76	NA	7,827,145	289,894	201	201	7,827,145	24.02
07/26/17	NA		29.37	5600.20	4.81	NA	10,552,627	351,754	244	244	10,552,627	32.38
08/28/17	NA		30.31	5599.26	-0.94	NA	13,720,006	415,758	289	289	13,720,006	42.11
09/27/17	NA		33.24	5596.33	-2.93	NA	10,374,456	345,815	240	240	10,374,456	31.84
10/30/17	NA		35.20	5594.37	-1.96	NA	9,477,726	287,204	199	199	9,477,726	29.09
11/27/17	NA		37.09	5592.48	-1.89	NA	10,560,111	377,147	262	262	10,560,111	32.41
12/28/17	NA		35.54	5594.03	1.55	NA	7,936,423	256,014	178	178	7,936,423	24.36
01/25/18	NA		31.57	5598.00	3.97	NA	9,573,614	341,915	237	237	9,573,614	29.38
02/26/18	NA		28.62	5600.95	2.95	NA	7,307,262	228,352	159	159	7,307,262	22.43
03/26/18	NA		32.54	5597.03	-3.92	NA	6,963,105	248,682	173	173	6,963,105	21.37
04/24/18	NA		36.52	5593.05	-3.98	NA	7,051,286	243,148	169	169	7,051,286	21.64
05/29/18	NA		38.24	5591.33	-1.72	NA	9,455,995	270,171	188	188	9,455,995	29.02
06/26/18	NA		36.58	5592.99	1.66	NA	7,275,331	259,833	180	180	7,275,331	22.33
07/30/18	NA		28.69	5600.88	7.89	NA	8,939,642	262,931	183	183	8,939,642	27.43
08/28/18	NA		28.93	5600.64	-0.24	NA	14,437,249	497,836	346	346	14,437,249	44.31
09/27/18	NA		31.39	5598.18	-2.46	NA	11,502,200	383,407	266	266	11,502,200	35.30
10/30/18	NA		34.97	5594.60	-3.58	NA	10,646,537	322,622	224	224	10,646,537	32.67
11/27/18	NA		36.97	5592.60	-2.00	NA	12,032,115	429,718	298	298	12,032,115	36.93
12/27/18	NA		39.49	5590.08	-2.52	NA	8,979,582	299,319	208	208	8,979,582	27.56
01/28/19	NA		42.59	5586.98	-3.10	NA	8,583,077	268,221	186	186	8,583,077	26.34
03/05/19	NA		45.79	5583.78	-3.20	NA	10,162,827	282,301	196	196	10,162,827	31.19

MP elevations changed 7/99 (BMF96-1D) and 7/04 (BMF96-4)

ED_014362_00000831-00034

GWIC ID / Date	Comments
01/28/15	Flow data from Pioneer records. Q~170 gpm.
02/25/15	Flow data from Pioneer records. Q~160 gpm.
03/25/15	Flow data from Pioneer records. Q~160 gpm.
04/28/15	Flow data from Pioneer records. Q~140 gpm. STP dewatering completed.
05/27/15	Flow data from Pioneer records. Q~135-140 gpm.
06/30/15	Flow data from Pioneer records. Q~140 gpm.
07/28/15	Flow data from Pioneer records. Q~140 gpm.
08/25/15	Flow data from Pioneer records. Q~165-175 gpm.
09/29/15	Flow data from Pioneer records. Q~165-175 gpm.
10/26/15	Flow data from Pioneer records. Q~165-175 gpm.
11/24/15	Flow data from Pioneer records. Q~165-175 gpm.
12/28/15	Flow data from Pioneer records. Q~165-175 gpm.
01/26/16	Flow data from Pioneer records. Q~140 gpm.
02/23/16	Flow data from Pioneer records. Q~125 gpm.
03/29/16	Flow data from Pioneer records. Q~135 gpm.
04/25/16	Flow data from Pioneer records. Q~129 gpm.
05/24/16	Flow data from Pioneer records. Q~128 gpm.
06/28/16	Flow data from Pioneer records. Q~131 gpm.
07/26/16	Flow data from Pioneer records. Q~141 gpm.
08/26/16	Flow data from Pioneer records. Q~162 gpm.
10/03/16	Flow data from Pioneer records. Q~176 gpm.
10/28/16	Flow data from Pioneer records. Q~174 gpm.
11/28/16	Flow data from Pioneer records. Q~167 gpm.
12/28/16	Flow data from Pioneer records. Q~156 gpm.
01/26/17	Flow data from Pioneer records. Q~148 gpm.
02/24/17	Flow data from Pioneer records. Q~141 gpm.
03/27/17	Flow data from Pioneer records. Q~140 gpm.
04/25/17	Flow data from Pioneer records. Q~138 gpm.
05/30/17	Flow data from Pioneer records. Q~130 gpm.
06/26/17	Flow data from Pioneer records. Q~154 gpm.
07/26/17	Flow data from Pioneer records. Q~262 gpm.
08/28/17	Flow data from Pioneer records. Q~269 gpm.
09/27/17	Flow data from Pioneer records. Q~257 gpm.
10/30/17	Flow data from Pioneer records. Q~234 gpm.
11/27/17	Flow data from Pioneer records. Q~209 gpm.
12/28/17	Flow data from Pioneer records. Q~197 gpm.
01/25/18	Flow data from Pioneer records. Q~190 gpm.
02/26/18	Flow data from Pioneer records. Q~181 gpm.
03/26/18	Flow data from Pioneer records. Q~175 gpm.
04/24/18	Flow data from Pioneer records. Q~175 gpm.
05/29/18	Flow data from Pioneer records. Q~188 gpm.
06/26/18	Flow data from Pioneer records. Q~180 gpm.
07/30/18	Flow data from Pioneer records. Q~222 gpm.
08/28/18	Flow data from Pioneer records. Q~286 gpm.
09/27/18	Flow data from Pioneer records. Q~285 gpm.
10/30/18	Flow data from Pioneer records. Q~264 gpm.
11/27/18	Flow data from Pioneer records. Q~238 gpm.
12/27/18	Flow data from Pioneer records. Q~223 gpm.
01/28/19	Flow data from Pioneer records. Q~211 gpm.
03/05/19	Flow data from Pioneer records. Q~201 gpm.
MP elevations changed 7/99 (BMF96-1D) and 7/04 (BMF96-4)	

ED_014362_00000831-00035

MBMG
Outer Camp

GWIC ID	4732				4725				892116				4822			
				MAS	Well			S-4				Tech Well				Orphan Boy
DATE (mmddyy)	**MAS SWL (ft)**	**Elev (ft)**	**Diff (ft)**	**Yearly Change**	**S-4 SWL (ft)**	**Elev (ft)**	**Diff (ft)**	**Yearly Change**	**Tech Well SWL (ft)**	**Elev (ft)**	**Diff (ft)**	**Yearly Change**	**Orphan Boy SWL (ft)**	**Elev (ft)**	**Diff (ft)**	**Yearly Change**
		6304.00				6290				5650.00	5651.86			5689.66	5691.25	
01/30/17	79.84	6224.16	-0.20		59.87	6230.13	-0.14		73.05	5578.81	-0.37		109.09	5582.16	-0.25	
02/24/17	79.95	6224.05	-0.11		60.07	6229.93	-0.20		73.71	5578.15	-0.66		109.24	5582.01	-0.15	
03/30/17	79.43	6224.57	0.52		59.32	6230.68	0.75		73.46	5578.40	0.25		108.95	5582.30	0.29	
04/25/17	78.81	6225.19	0.62		59.24	6230.76	0.08		73.37	5578.49	0.09		108.72	5582.53	0.23	
05/25/17	78.47	6225.53	0.34		59.26	6230.74	-0.02		72.63	5579.23	0.74		108.29	5582.96	0.43	
06/26/17	77.33	6226.67	1.14		58.98	6231.02	0.28		71.22	5580.64	1.41		106.98	5584.27	1.31	
07/26/17	77.12	6226.88	0.21		57.64	6232.36	1.34		73.53	5578.33	-2.31		105.39	5585.86	1.59	
08/28/17	76.78	6227.22	0.34		56.15	6233.85	1.49		72.96	5578.90	0.57		104.94	5586.31	0.45	
09/26/17	76.69	6227.31	0.09		55.44	6234.56	0.71		72.91	5578.95	0.05		105.02	5586.23	-0.08	
10/31/17	76.52	6227.48	0.17		54.78	6235.22	0.66		72.98	5578.88	-0.07		105.21	5586.04	-0.19	
11/30/17	76.66	6227.34	-0.14		54.88	6235.12	-0.10		73.01	5578.85	-0.03		105.32	5585.93	-0.11	
12/27/17	76.67	6227.33	-0.01		54.97	6235.03	-0.09		73.36	5578.50	-0.35		105.75	5585.50	-0.43	
Yearly Change				**2.97**				**4.76**				**-0.68**				**3.09**
01/25/18	76.93	6227.07	-0.26		55.39	6234.61	-0.42		73.79	5578.07	-0.43		105.94	5585.31	-0.19	
02/27/18	77.04	6226.96	-0.11		55.60	6234.40	-0.21		73.93	5577.93	-0.14		106.46	5584.79	-0.52	
03/26/18	NR				NR				73.95	5577.91	-0.02		106.51	5584.74	-0.05	
04/24/18	76.93	6227.07	0.11		55.51	6234.49	0.09		72.60	5579.26	1.35		105.37	5585.88	1.14	
05/29/18	71.47	6232.53	5.46		51.08	6238.92	4.43		70.82	5581.04	1.78		103.81	5587.44	1.56	
06/26/18	67.91	6236.09	3.56		48.87	6241.13	2.21		69.52	5582.34	1.30		102.57	5588.68	1.24	
07/30/18	64.64	6239.36	3.27		44.69	6245.31	4.18		68.05	5583.81	1.47		101.09	5590.16	1.48	
08/28/18	64.39	6239.61	0.25		42.76	6247.24	1.93		69.22	5582.64	-1.17		102.67	5588.58	-1.58	
09/27/18	65.14	6238.86	-0.75		42.47	6247.53	0.29		70.49	5581.37	-1.27		104.37	5586.88	-1.70	
10/29/18	66.11	6237.89	-0.97		42.97	6247.03	-0.50		70.18	5581.68	0.31		103.64	5587.61	0.73	
11/27/18	66.99	6237.01	-0.88		43.61	6246.39	-0.64		71.43	5580.43	-1.25		105.42	5585.83	-1.78	
12/26/18	67.87	6236.13	-0.88		44.48	6245.52	-0.87		70.51	5581.35	0.92		103.91	5587.34	1.51	
Yearly Change				**8.80**				**10.49**				**2.85**				**1.84**
01/28/19	NR				NR				71.33	5580.53	-0.82		104.59	5586.66	-0.68	
03/05/19	NR				NR				70.62	5581.24	0.71		103.59	5587.66	1.00	
03/28/19																
04/28/19																
05/28/19																
06/28/19																
07/28/19																
08/28/19																
09/28/19																
10/28/19																
11/28/19																
12/28/19																
Yearly Change				**0.00**				**0.00**				**-0.11**				**0.32**

Orphan Boy Mine elevation changed following February 2005 survey, due to installation of casing into mine shaft for monitoring purposes.