Final - 2019 Water Resources Monitoring Summary

Beal Mountain Mine, Silver Bow County, Montana

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March, 2020

PRESENTED TO

USDA Forest Service
Northern Region
P.O. Box 7669
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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
cfs	Cubic Feet Per Second
CNWAD	Weak Acid Dissociable Cyanide
GPM	Gallons Per Minute
HDPE	High-density polyethylene
HHS	Human Health Standard
LAD	Land Application Disposal
MDEQ	Department of Environmental Quality
mg/L	Milligrams per Liter
µS	MicroSiemens
SAP	Sampling and Analysis Plan
SNOTEL	Snow Telemetry
SOP	Standard Operating Procedure
SOW	Statement of Work
SPR	Spring Location
s.u.	Standard Units
SW	Surface Water
PQL	Practical Quantitation Limit
QC	Quality Control
TDS	Total Dissolved Solids
TSS	Total Suspended Solids
USDA-FS	United States Department of Agriculture – Forest Service

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) conducted water quality monitoring at the Beal Mountain Mine site near Butte, Montana, (**Figure 1-1**) during the months of June and September 2019. Monitoring activities were completed under contract GS-00F-168CA/BPA 12034318A0011 and Modification #1 (12034318F0492) with the United States Department of Agriculture – Forest Service (USDA-FS), Northern Region for the Beal Mountain Mine property.

This report provides a brief site background discussion, sampling methods, then summarizes and interprets the resulting field and laboratory analytical data. The data are generally arranged into three categories:

- surface water, including streams springs and ponds
- groundwater
- other; including leach pad solution levels, precipitation, and slide area dewatering.

Figures are included in the body of this report. Tables of water quality data, sampling logs, and laboratory analytical reports for the 2019 monitoring period are included in Appendices A, B, and C, respectively. An electronic copy of the Microsoft Access project database is included as Appendix D.

Monitoring activities were completed in accordance with Tetra Tech's approved Sampling and Analysis Plan (SAP) dated November 24, 2014, (Tetra Tech, 2014a), the Statement of Work (SOW) dated August 16, 2018, (Tetra Tech, 2018a), and Modification #1 dated March 13, 2019 (Tetra Tech, 2019a). Deviations from the SAP, per the SOW, were due primarily to budget restrictions and prioritization of data needs by USDA-FS. Deviations from the SAP for work completed in 2019 include the following:

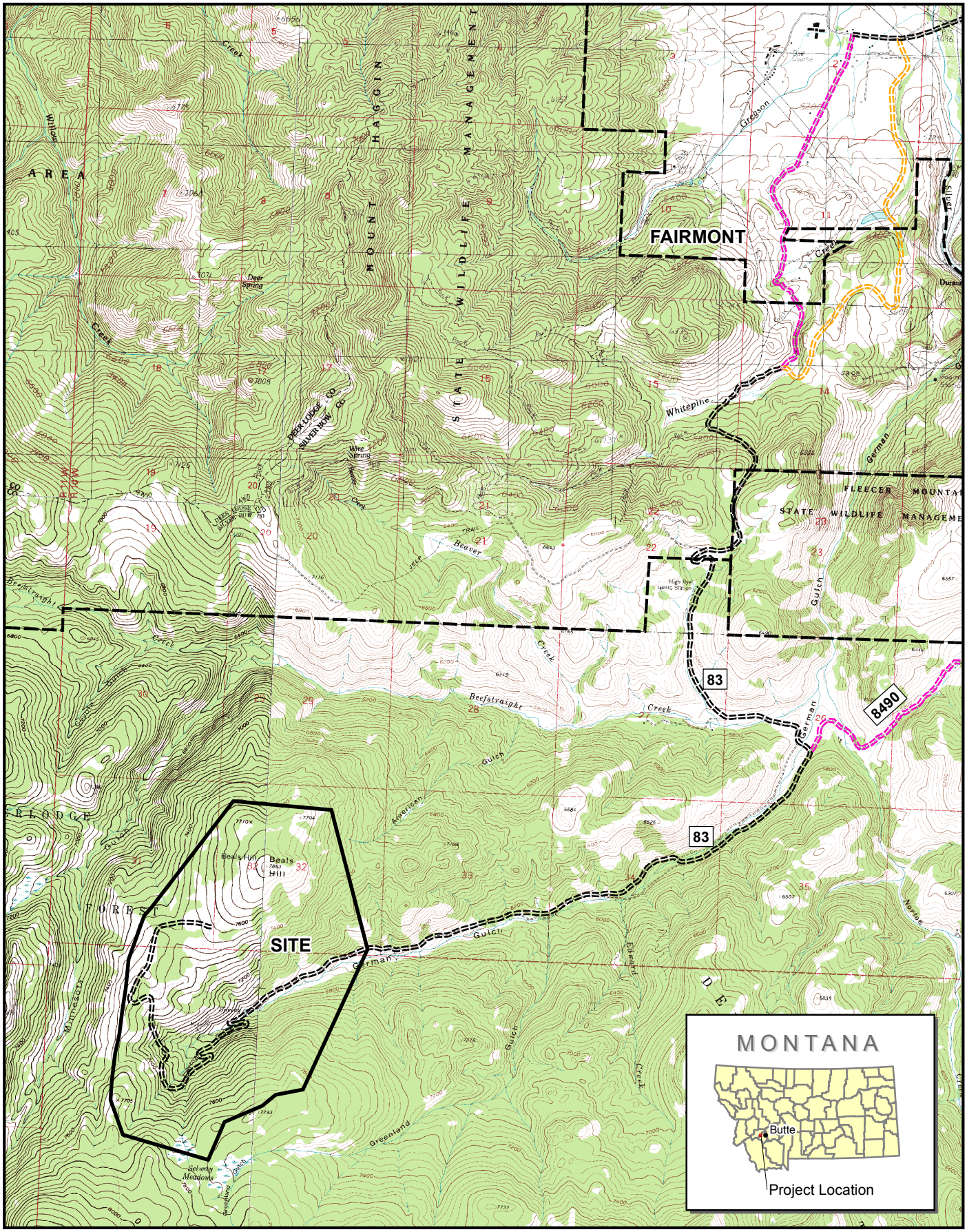
- Surface water discharge was not measured except at the three-leach pad underdrain pond inlets per the 2019 SOW.
- Locations MINN-DN, SPR-D4, and SPR-19 within the Minnesota Gulch drainage were not monitored during 2019.
- Location BS-D within the Beefstraight Creek drainage was not monitored during 2019.
- Locations associated with the waste rock dump were sampled during June and September 2019; however, the analytic list was reduced to include only total alkalinity, sulfate, and total recoverable selenium. Additionally, the field parameters pH, specific conductance, temperature and flow (except at location SPR-5) were measured at the time of sample collection.
- Surface water monitoring within German Gulch consisted of Stations STA-2, STA-3A, and SPR-3. A grab sample of opportunity (STA-3B) was collected in June and September from German Gulch immediately downstream of the waste rock drain infiltration gallery bypass outlet to evaluate the effect of not using the infiltration galleries, which had become unusable due to a malfunctioning valve.
- Arsenic was not analyzed for in any samples.
- Groundwater samples were not collected from WRMW-1, SBB-88-02, LPMW-3, LPPZ-3 or LPPZ-5.
- Surface water was sampled in the vicinity of land application discharge (LAD) areas at springs SPR-2, SPR-18, and SPR-D2 to assess natural attenuation of total cyanide and weak acid dissociable cyanide (CNWAD) in these areas.
- Three wells (SBB-88-20, OW-5, and DW-5) were instrumented with continuous water level recorders and sampled in September as part of the leach pad area groundwater monitoring program.

Stream and spring water quality samples were collected during June and September from six established sampling stations (STA-2, STA-3A, SPR-3, SPR-2, SPR-18, and SPR-D2) and the influent to two leach pad under drain collection ponds (BCD, BCD Barren, and BCD-A) (**Figure 1-2**). Abbreviated sampling was completed in the vicinity of the waste rock dump. Groundwater elevation was monitored continuously at eight locations along the north edge of the leach pad with an additional three locations instrumented in September 2019 along the south edge of the

leach pad. Four leach pad area groundwater locations (SBB-91-29, LPMW-5, LPMW-6 and LPPZ-4) were sampled during June and September 2019 with an additional three locations (SBB-88-20, OW-5, and DW-10) also sampled in September 2019 (**Figure 1-3**).

The objectives of monitoring activities were to:

- Document water quality being discharged to German Gulch and leaving the site;
- Collect depth to groundwater data along the north side of the leach pad to evaluate the effectiveness of the French drain installed in 2011;
- Collect depth to groundwater and water quality data along the south side of the leach pad to assess their response to water levels within the leach pad;
- Document natural attenuation of cyanide exhibited in LAD area springs;
- Document groundwater quality near the reclaimed Barren Pond for comparison to pre-pond removal chemistry.



O:\T-Z\Tetra Tech Division\114-560451 - Beal Site Wide 2014-2015\120-GIS\F-01-Vicinity Map.mxd

USGS 24K SERIES TOPOGRAPHIC MAP

N
W E
S

0 0.25 0.5 1 Miles

Common Access Route

Leased Access Route

USFS Access Route

83 USFS Road Route Number

Vicinity Map
Beal Mountain Mine
Silver Bow County, Montana
FIGURE 1-1

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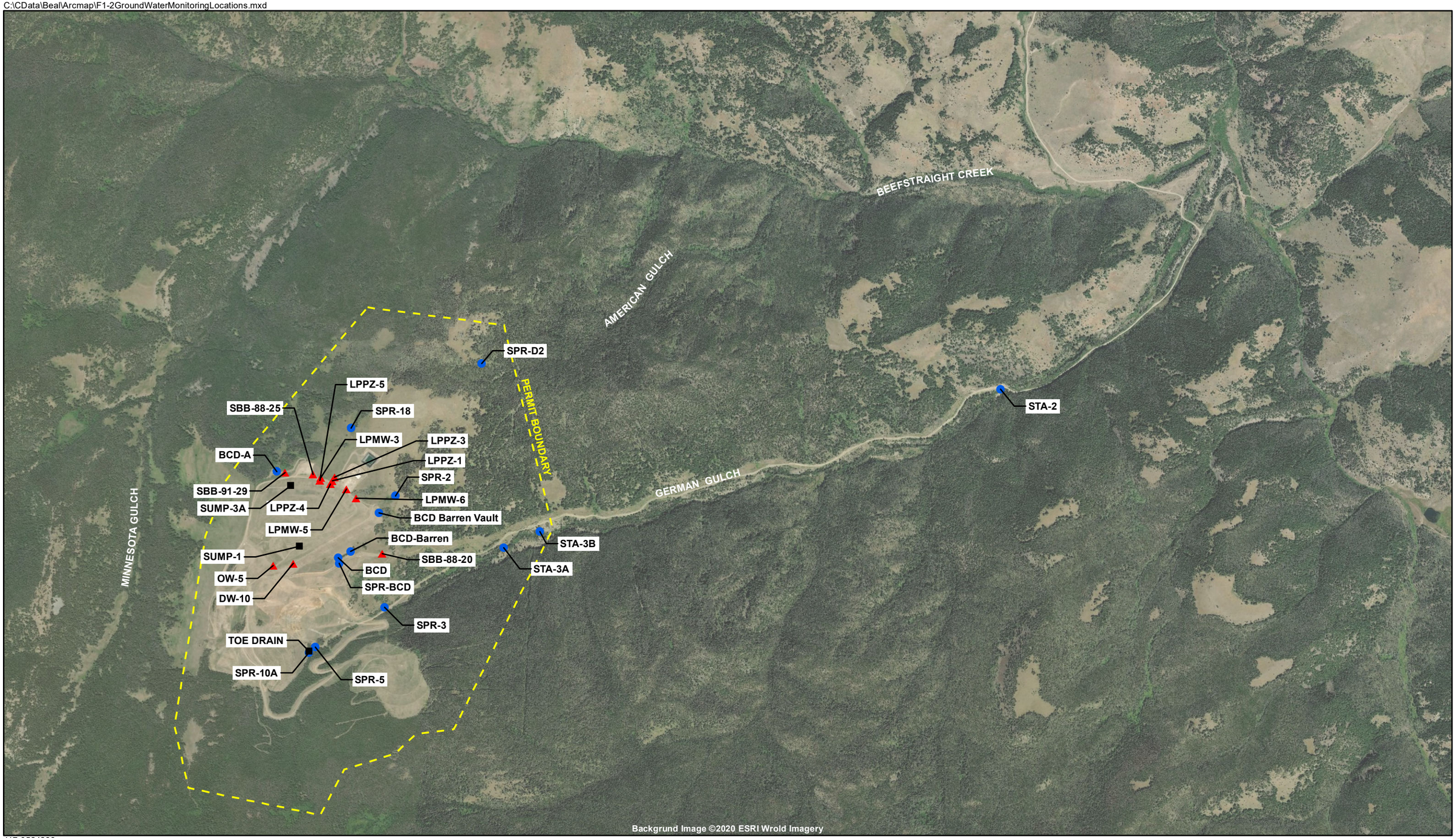

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1:24,000
Feet
0 1,000 2,000

▲ 2019 Groundwater Monitoring Location
● 2019 Surface Water or Spring Location
■ 2019 Other Monitoring Location

2019 Water Monitoring Locations
Beal Mountain Mine
Silver Bow County, Montana
FIGURE 1-2

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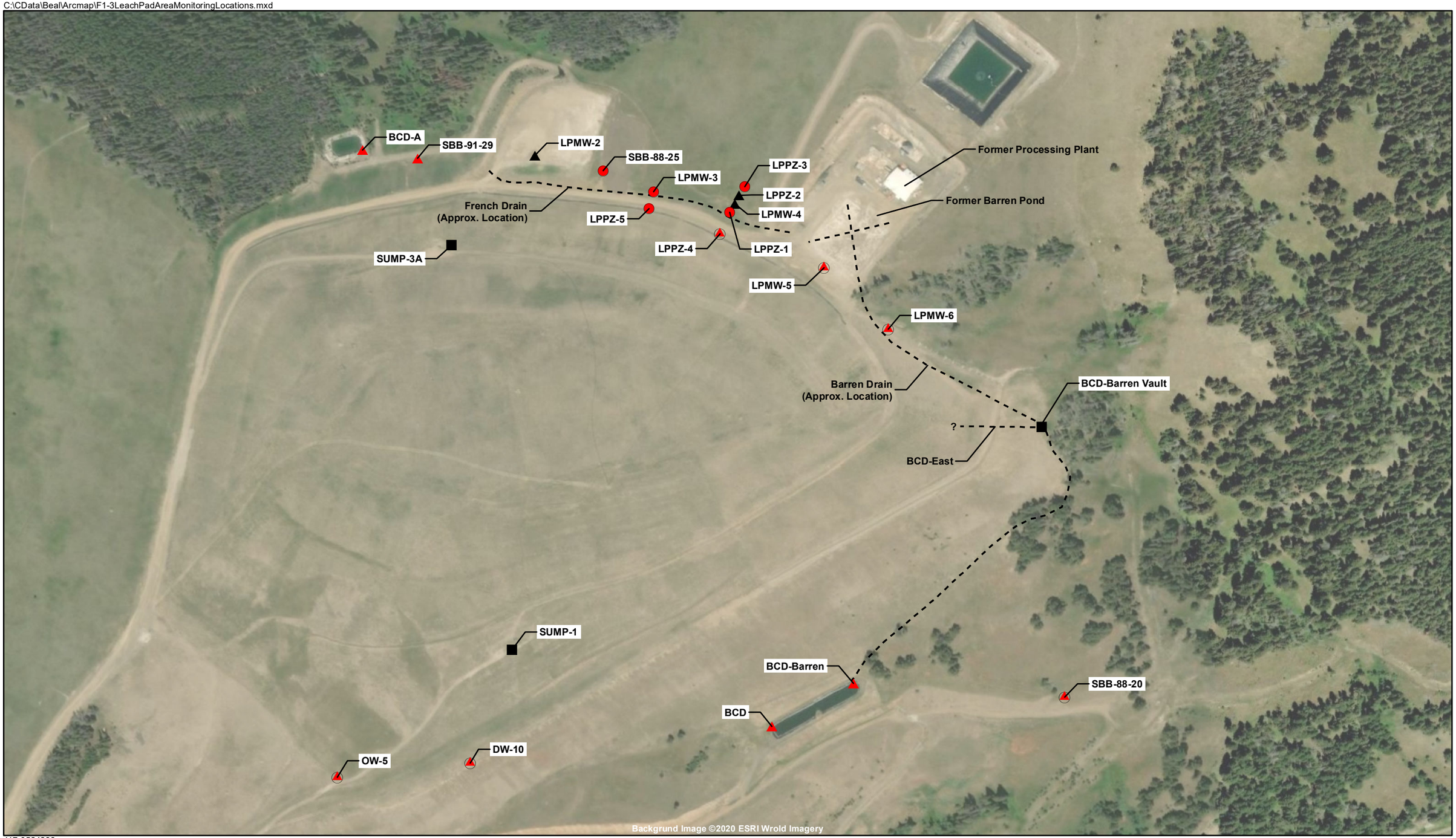

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Feet
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- 2019 Groundwater Quality, No Continuous Groundwater Elevation
- 2019 Continuous Groundwater Elevation Only
- 2019 Other Water Quality and Continuous Water Elevation
- 2019 Groundwater Quality and Continuous Water Elevation
- Not Sampled Or Monitored Continuously for Groundwater Elevation in 2019

Leach Pad Area
2019 Groundwater Monitoring Locations
Beal Mountain Mine
Silver Bow County, Montana
FIGURE 1-3

2.0 BACKGROUND

The Beal Mountain Mine is located in the headwaters of German Gulch in the Pioneer Mountains, Silver Bow County, Montana, about 16 miles west-southwest of Butte and 10 miles southwest of Fairmont (Gregson) Hot Springs, Montana (**Figure 1-1**). The mine is situated on land managed by the USDA-FS, Beaverhead-Deerlodge National Forest. Pegasus Gold Corporation began open pit mining operations in 1988 and completed open pit mining operations at the Beal Mountain Mine in 1997. Gold recovery from the heap leach pad continued until 1999. With the bankruptcy filing by Pegasus in 1998, and exhaustion of bonding funds to complete reclamation, the USDA-FS became the lead agency responsible for final mine closure in 2003.

Water resource monitoring continues at the site to track and address, where possible, elevated concentrations of selenium and cyanide in surface water and groundwater associated with various onsite facilities, and to address the accumulation of ambient water within the closed leach pad.

The mine is located at an elevation ranging from approximately 6,600 feet to 7,800 feet. During mine operations a climate monitoring station was maintained at the site. Also, during reclamation, an onsite seasonal rain gauge operated from October 2014 through July 2017. Site-specific precipitation and evaporation data are available for the relatively short period of record from April 1988 through September 1988 and January 1989 through April 2005. Based on this data, about half of the average annual precipitation occurs during the period from April to July. June has the highest average monthly precipitation (2.39 inches; 18% of total annual precipitation), and February has the lowest average monthly precipitation (0.66 inch; 4% of total annual precipitation).

The next closest and most representative precipitation monitoring station to the site is the Basin Creek Snow Telemetry (SNOTEL) station located approximately 22 miles to the southeast. Although the Basin Creek station generally receives more precipitation than Beal Mountain (even though the elevation of the two sites is similar), it is a useful site to make relative comparisons with conditions at Beal, especially with regard to the cumulative amounts of precipitation and timing of the snow-melt period. For the period of record (October 1, 1979, through September 30, 2019), the Basin Creek station recorded a maximum annual precipitation of 32.9 inches (1995) and a minimum annual precipitation of 18.2 inches (1992), with a mean annual of 24.59 inches. The total amount of precipitation recorded at the Basin Creek SNOTEL station during water year 2019 (25.2 inches) was approximately 9% less than the annual amount received during the previous year. Comparison of historic (1989 through 2004) mine site climate data and the Basin Creek station data indicates Beal Mountain generally receives approximately 32.6% less precipitation than the Basin Creek station.

3.0 METHODS

Field activities included collecting water quality samples from surface water, springs, drains and groundwater and measuring depth to groundwater at locations across the site. All activities were conducted in accordance with Tetra Tech's standard operating procedures (SOPs) included in the project SAP (Tetra Tech, 2014a) and deviations identified in Section 1.0.

3.1 SURFACE WATER AND SPRINGS

Water quality grab samples were collected from two established stream monitoring stations (STA-2 and STA-3A) and three established spring stations (SPR-2, SPR-3, and BCD-SPR) within German Gulch (**Figure 1-2**) during June and September. One additional stream grab sample of opportunity (STA-3B) was collected during June and September, approximately 770 feet downstream of STA-3A (approximately 375 feet downstream of waste rock drain system bypass discharge). Also, additional grab samples were collected from established spring stations SPR-18 within the Minnesota Gulch drainage and SPR-D2 at the headwaters of American Gulch.

During the June and September events, samples were also collected from SPR-5, SPR-10A, and Toe Drain to evaluate water chemistry leaving the waste rock dump. Finally, the influent to two leach pad blanket underdrain collection ponds (BCD and BCD-A) were sampled and inflow measured. Both influent locations for pond BCD (BCD and BCD-Barren) were monitored independently.

3.1.1 Field Parameters

Field measurements of pH, specific conductance, and temperature were made at the time of sample collection using a daily calibrated portable field meter. All field data and observations were recorded in field notebooks or on appropriate field forms at each monitoring location during each sampling event and entered into the project database (**Appendix D**). All field notes are included in **Appendix B**.

3.1.2 Flow Measurement

Flows at surface water and spring stations were not measured during 2019. Monitoring of waste rock sites SPR-10A and Toe Drain included flow measurements by the v-notch weir method. Flow was also measured at the outlets of the blanket collection drain pipes using the timed-volume method.

There are two leach pad underdrain collection ponds (BCD and BCD-A) at the Beal Mountain Mine. Underdrain collection pond BCD-A on the north side of the leach pad has one inlet at the southeast corner of the pond, which is labeled as "BCD-A". Underdrain collection pond BCD on the south side of the leach pad has two inlet pipes. One pipe discharges to collection pond BCD at the brim of the pond in the southwest corner and has been labeled as station "BCD". This pipe drains water from a blanket collection drain system constructed beneath the bottom liner on the south side (largest area) of the leach pad. The second piped inlet to the BCD pond is located at the northeast corner and is known as "BCD-Barren". This pipe is the outlet from an underdrain system installed beneath the former Barren Pond located on the north side of the leach pad and immediately south of the historic processing plant. The significance of the differentiation between these two pipes was unknown during 2008 and 2009 sampling activities, which collected samples only from the BCD pond surface. No samples were collected from the BCD or BCD-Barren pipe outlets during 2008 or 2009.

Figure 3-1 below presents available discharge data for the blanket collection drains. Final segments of the underdrain collection system and associated pond construction were completed in 1989. Prior to 1992, discharge from the south underdrain system (BCD) averaged approximately 7 gallons per minute (gpm) while the limited data available for the north underdrain (BCD-A) prior to 1992 suggests an average of 0.3 gpm. During the period of 1993 through 2019, the south underdrain system discharge has been significantly less averaging 0.24 gpm. During this same period (1993-2019) the much smaller north underdrain system has exhibited greater discharge

averaging 7 gpm. This data suggests that since 1993, most of the shallow groundwater beneath the leach pad that was previously collected by the south underdrain system is currently being captured by the north underdrain system and diverted to the north BCD-A pond.

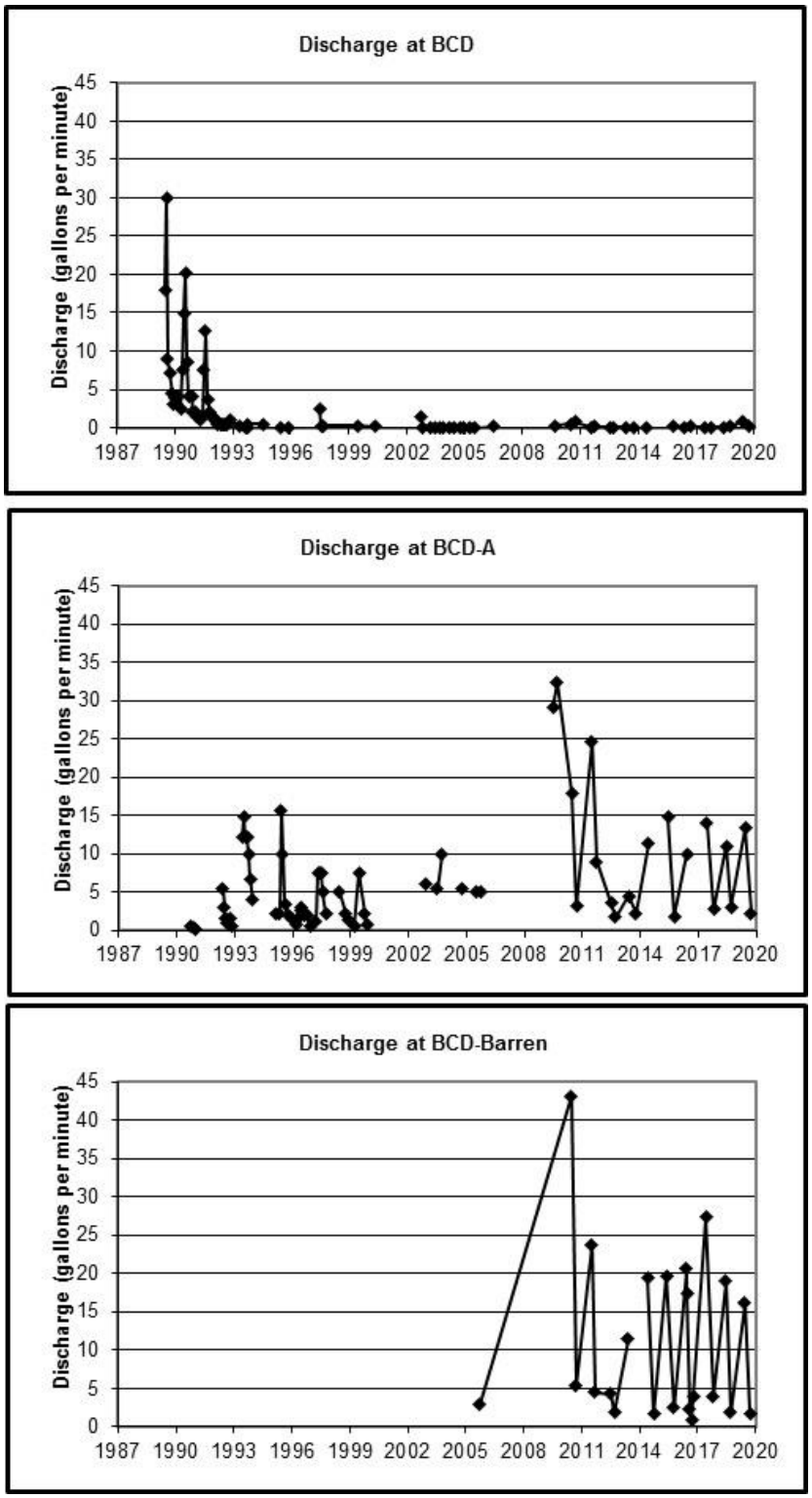


Figure 3-1. Underdrain Discharge

A vault discovered in 2016 at the easternmost toe of the leach pad (BCD Barren Vault) contains a manifold, which joins the 2-inch High-density polyethylene (HDPE) Barren Pond underdrain pipe with a 4-inch HDPE pipe that is assumed to be a leach pad underdrain collection pipe. Within this vault, these pipes have been named “Barren Drain” and “BCD-East”, respectively. It is assumed that these two sources, Barren Drain and BCD-East, together are then routed to the northeast corner of the BCD pond to the pipe outlet historically known as BCD-Barren. Prior to September 2018, flow and chemistry of these two locations could not be separated. In September 2018 (prior to routine sampling activities), additional valves and piping were installed to allow independent monitoring of these two sources. Monitoring during September 2018 and June 2019 documented that there was no flow or pressure exhibited by the 4-inch HDPE pipe on either occasion and that the “Barren Drain” pipe within the vault exhibited the same flow and chemistry as the BCD-Barren pipe outlet in the northeast corner of the BCD pond. As of June 2019, the valve setting for the “BCD-East” pipe was left closed to eliminate the possibility of flow from the “Barren Drain” backflowing up the “BCD-East” pipe under the leach pad.

Throughout mine closure, both ponds BCD and BCD-A have remained partially full to brimful with excess water spilling over their embankments. To accurately measure flow rates into the ponds from their respective sources and collect samples representative of those sources, both ponds were drained down using a gas-powered pump to levels below their respective pipe inlets. Inflow was then recorded by measuring the time to fill a container of known volume. Surplus water from pond drain down efforts was discharged directly outside of the pond embankment on the downslope side in a manner that would not cause erosion.

3.1.3 Sample Collection

Grab surface water samples were collected following established surface water sample collection and sample preservation methods (Tetra Tech, 2014a). Sampling frequency is presented in **Table 3-1**. Samples were containerized, preserved, and delivered under chain-of-custody protocol to Energy Laboratories, Inc. in Helena, Montana, for analysis of total suspended solids (TSS), total cyanide, CNWAD, free cyanide, ammonia and total recoverable selenium.

Table 3-1. 2019 Surface Water Monitoring Schedule

BEAL MOUNTAIN MINE					
Site Name	**Type**	**Location**	**June**	**Sept.**	**Justification**
German Gulch					
STA-2	SW	German Gulch, below Edward Creek Confluence	X	X	Monitors potential downstream LAD / mine related impacts in middle German Gulch
STA-3A	SW	German Gulch, 315 yards upstream of site access gate	X	X	Monitors potential downstream LAD / mine related impacts in upper German Gulch
STA-3B	SW	German Gulch, 65 yards upstream of the site access gate	X	X	Evaluate influence of waste rock drain system infiltration gallery bypass
SPR-BCD	SPR	Immediately west of BCD pond at toe of leach pad embankment	X		Monitor seepage from leach pad
SPR-3	SPR	Northeast of Main Beal Pit	X	X	Monitors seepage from LAD and south leach pad dike for comparison to baseline data.

BEAL MOUNTAIN MINE					
Site Name	**Type**	**Location**	**June**	**Sept.**	**Justification**
SPR-2	SPR	Northeast of Main Beal Pit	X	X	Monitor natural attenuation of potential LAD impacts in upper German Gulch
SPR-5	SPR	South of Main Beal Pit	X	X	Monitors seepage from the waste rock storage facility
SPR-10A	SPR	South of Main Beal Pit	X	X	Monitors buried springs in upper waste rock storage facility
Toe Drain	OTHER	Sampled at vault at toe of waste rock dump	X	X	Monitors seepage from the waste rock storage facility
Beefstraight Creek					
SPR-D2	SPR	Northeast flank of Beals Hill, American Gulch headwaters	X	X	Monitor natural attenuation of potential LAD impacts to American Gulch
Minnesota Gulch					
SPR-18	SPR	Southwest flank of American Gulch	X	X	Monitor natural attenuation of potential LAD impacts
Ponds					
BCD	POND	South of leach pad, underdrain collection	X	X	Monitors south side leach pad liner integrity
BCD-Barren	POND	South of leach pad, underdrain collection	X	X	Monitors seepage from Barren Pond area
Barren Drain	POND	Vault east of leach pad, 300 yards SE of treatment building	X		Investigate water source of BCD-Barren
BCD-A	POND	North of leach pad, underdrain collection	X	X	Monitors north side leach pad liner integrity
Quality Control					
Duplicate	QC	At discretion of field staff	X	X	Measure of quality assurance
Notes:	SW – Surface Water (Stream Location) SPR – Spring Location QC – Quality Control LAD – Land Application Disposal X – Indicates Sample Collection				

3.2 GROUNDWATER

Groundwater elevation was monitored continuously at eight locations along the north edge of the leach pad, three locations along the south edge of the leach pad, and groundwater sampling was completed at seven leach pad area locations (SBB-91-29, LPMW-5, LPMW-6, LPPZ-4, OW-5, DW-10, and SBB-88-20) (**Figure 1-3**) during 2019. Water quality samples collected from leach pad Sump-1 as part of water treatment operations are discussed under a separate cover (Tetra Tech, 2020).

3.2.1 Depth to Water

Depth to water was periodically measured in all wells listed in **Table 3-2** using a decontaminated electronic water level probe. Continuous water level recorders present in eight wells (LPMW-3, LPMW-5, LPMW-6, LPPZ-1, LPPZ-3, LPPZ-4, LPPZ-5, SBB-88-25) monitor groundwater elevation along the north edge of the leach pad. Three additional continuous water level recorders were installed along the southern edge of the leach pad in wells OW-5, DW-10, and SBB-88-20 during September 2019. Data from the recorders were periodically downloaded during 2019. Manual depth to water measurements were recorded for each continuous monitoring location at the time of data downloads. All depth to water measurements were referenced to the preexisting surveyed marking on the top of PVC casing or to the top north side of PVC in the absence of a marking. All field data and observations were recorded in field notebooks or on appropriate field forms at each monitoring location during each sampling event (**Appendix B**).

3.2.2 Field Parameters

During the June sampling event, field measurements of pH, specific conductance, and temperature were made after each of three casing volumes was purged and at the time of sample collection using a daily calibrated portable field meter. During the September sampling event, low-flow sampling protocols were used and field measurements of pH, specific conductance, temperature, dissolved oxygen, and oxidation reduction potential were collected approximately every 10 minutes until all parameters stabilized within ±5% of previous readings. All field data and observations were recorded in field notebooks or on appropriate field forms at each monitoring location during each sampling event. All field notes are included in **Appendix B**.

3.2.3 Sample Collection

During the June sampling event, groundwater samples were collected following the purging of three casing volumes. Purge methods included use of disposable bailers or a non-dedicated submersible electric pump equipped with disposable tubing. During the September sampling event, groundwater samples were collected following low flow sampling protocols. These protocols use a non-dedicated submersible bladder pump equipped with disposable bladders and tubing. All non-disposable equipment was decontaminated prior to use by washing with a Liquinox soap solution followed by a distilled water rinse.

Sampling frequency is presented in **Table 3-2**. Samples were containerized, preserved, and delivered under chain-of-custody protocol to Energy Laboratories, Inc. in Helena, Montana. Samples collected as part of the groundwater monitoring program were submitted for the Leach Pad Area Groundwater analytical suite which included total dissolved solids (TDS), free cyanide, CNWAD, and total cyanide as defined in the 2014 SAP (Tetra Tech, 2014a).

Table 3-2. 2019 Groundwater and Leach Pad Monitoring Schedule

BEAL MOUNTAIN MINE						
Site Name	**Type**	**Location**	**Cont.**	**Spring**	**Fall**	**Justification**
Leach Pad Area - Minnesota Gulch Drainage						
SBB-88-25	GW	North of leach pad between former shop pad and former fuel storage	C			Monitors groundwater elevation adjacent to leach pad
SBB-91-29	GW	North of leach pad near pond BCD-A		X	X	Monitors groundwater chemistry adjacent to leach pad
LPMW-3	GW	North of leach pad up gradient of French Drain paired with LPPZ-5	C			Monitors groundwater chemistry and elevation adjacent to north of leach pad up gradient of French Drain
LPMW-5	GW	North of leach pad between pad and Barren Pond	C	X	X	Monitors groundwater elevation adjacent to leach pad and chemistry adjacent to Barren Pond
LPPZ-1	GW	North of leach pad up gradient of French Drain paired with LPPZ-4	C			Monitors groundwater elevation adjacent to leach pad up gradient of French Drain.
LPPZ-3	GW	North of leach pad up gradient of French Drain	C			Monitors groundwater chemistry and elevation up gradient of leach pad
LPPZ-4	GW	North of leach pad between French Drain and leach pad paired with LPPZ-1	C	X	X	Monitors groundwater chemistry and elevation adjacent to leach pad south of French Drain
LPPZ-5	GW	North of leach pad between French Drain and leach pad paired with LPMW-3	C			Monitors groundwater chemistry and elevation adjacent to leach pad south of French Drain
Leach Pad Area - German Gulch						
LPMW-6	GW	Northeast of leach pad	C	X	X	Monitors groundwater elevation adjacent to leach pad and

BEAL MOUNTAIN MINE						
Site Name	**Type**	**Location**	**Cont.**	**Spring**	**Fall**	**Justification**
						chemistry adjacent to Barren Pond
OW-5	GW	Southwest corner of leach pad	C		X	Monitor water levels and chemistry downgradient of leach pad
DW-10	GW	South central perimeter of leach pad	C		X	Monitor water levels and chemistry downgradient of leach pad
SBB-88-20	GW0	Southeast corner of leach pad	C		X	Monitor water levels and chemistry downgradient of leach pad
Leach Pad Solution						
Sump 1	Sump	South face of leach pad	C*			Monitors solution elevation within leach pad
Sump 3A	Sump	North face of leach pad	C*			Monitors solution within leach pad
Quality Control						
Duplicate	QC	At discretion of field staff			X	Measure of quality assurance
Notes:	GW – Groundwater Location QC – Quality Control Cont. – Continuous water level recorder installed. C – Indicates ground water elevation is monitored. X – Indicates sample collection for chemistry analysis. * - Sump solution levels monitored manually, monthly June through October. Blank cell indicates no action.					

4.0 RESULTS

This section presents results of site water quality monitoring, and depth to groundwater measurements completed during 2019 and compares the results to previous monitoring values and water quality standards.

4.1 SURFACE WATER AND SPRINGS WATER QUALITY

Since mining stopped in 1997, there have been periodic surface water exceedances of Montana Department of Environmental Quality (MDEQ) Human Health Standards (HHSs) and/or aquatic life standards. Field parameters and analytical data for constituents measured at all surface water and spring sampling stations for the period of record are summarized in **Tables A-1** and **A-2** in **Appendix A**. During 2019, field pH in surface water and springs ranged from 6.3 standard units (s.u.) (SPR-D2) to 8.3 s.u. (BCD), and field specific conductivity ranged from 91 microSiemens (µS) (SPR-D2) to 2,087 µS (BCD). These values are all within historic ranges.

4.1.1 Total Suspended Solids

All surface water and spring locations sampled during 2019 exhibited TSS concentrations below the laboratory practical quantitation limit (PQL) of 5 milligrams per liter (mg/L). Historic TSS concentrations across the site exceeding 10 mg/L are rare. Historic values greater than 10 mg/L are likely due to natural factors such as stream bank erosion, wildlife/livestock disturbance, etc. increasing turbidity rather than mine disturbance, reclamation or water treatment activities.

4.1.2 Ammonia

During 2019, ammonia was below the laboratory PQL of 0.05 mg/L or 0.1 mg/L (depending on sampling event), and therefore, below the chronic aquatic life standard at all surface water and spring locations sampled. Ammonia has been below the laboratory PQL site wide since 2009.

4.1.3 Cyanide

Concentrations for total cyanide in samples from STA-2, STA-3A, and SPR-3 along German Gulch in June and September were below the PQL and HHS of 0.004 mg/L. Recent total cyanide trends show a general decrease in concentration over the period 2003 through 2010. Since 2010, concentrations in surface water have remained at or below the laboratory PQL (**Table A-1**) (**Figure 4-1**). The decrease in concentration presented on **Figure 4-1** during 2009 and again beginning in 2017 is an artifact of laboratory PQL decrease from 0.005 mg/L to 0.0016 mg/L and from 0.005 mg/L to 0.004 mg/L, respectively and is not representative of actual site concentrations.

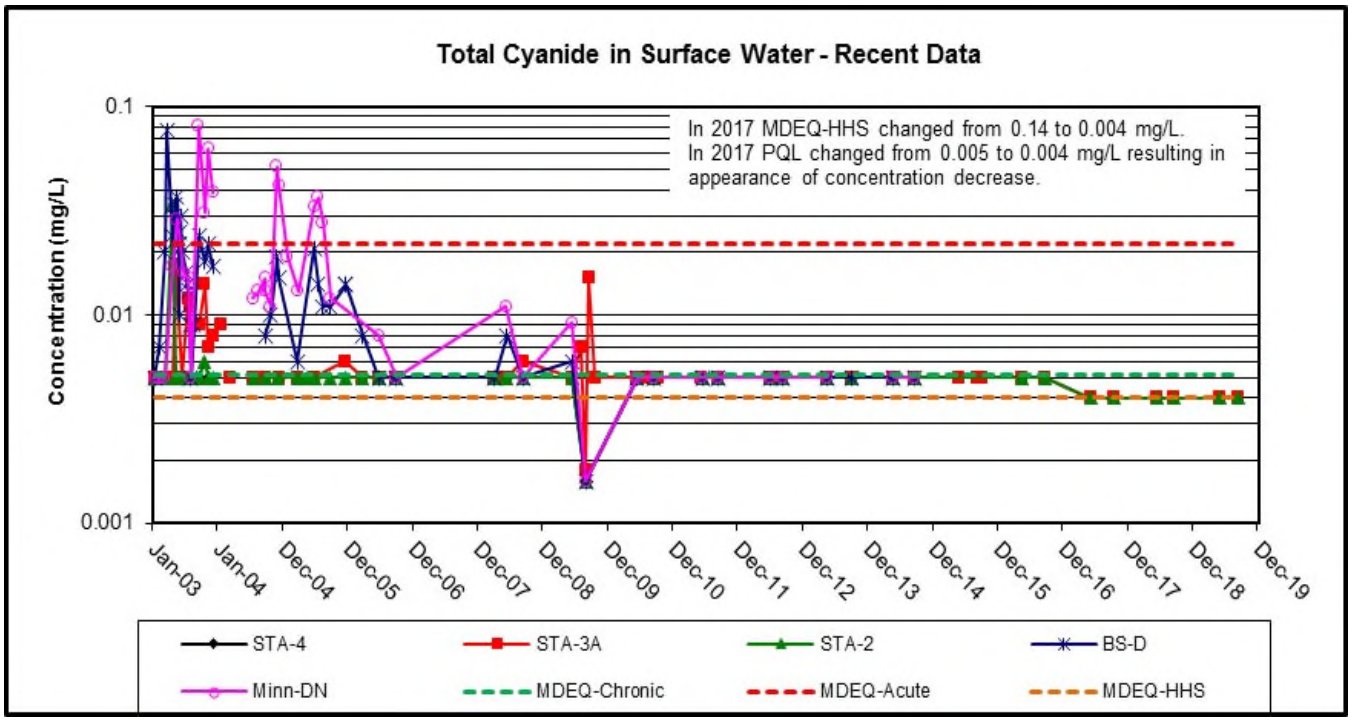
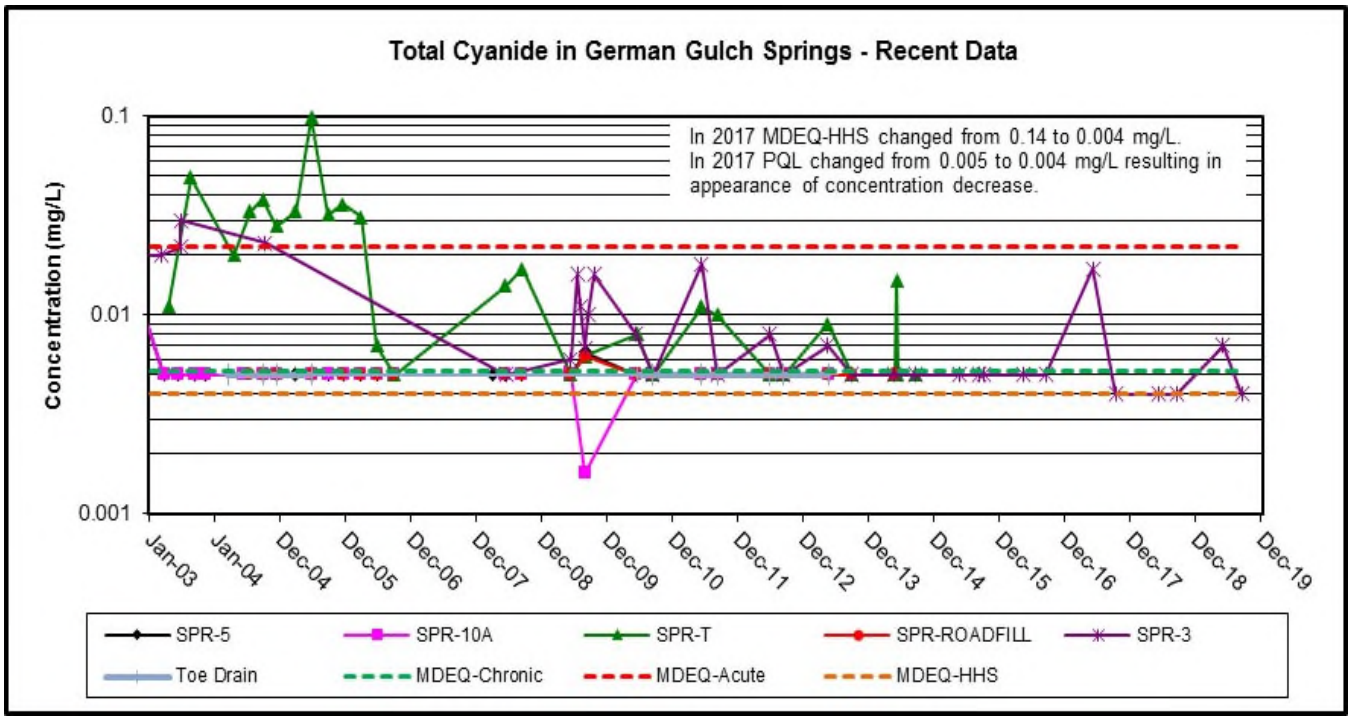


Figure 4-1. Total Cyanide Concentrations in Surface Water

Figure 4-2 shows total cyanide concentrations measured over time at routine spring and waste rock drain water sampling stations within the German Gulch drainage. Waste rock locations (SPR-10A, and Toe Drain) have been below the PQL for cyanide since 2002 and are no longer sampled for cyanide. Several LAD area springs were last sampled in either 2011 or 2014 due to relatively stable analytic results, **Figure 4-3**. During 2019, SPR-2, SPR-D2, and SPR-18, which were last sampled in 2011, were sampled to evaluate natural attenuation. Results indicate spring SPR-2 continues to exhibit a seasonal pattern of concentrations at or below the chronic aquatic life standard (0.0052 mg/L) during spring runoff periods followed by higher concentrations near the acute aquatic life standard (0.022 mg/L) during late summer or early fall monitoring events. Spring SPR-D2 continues to exhibit a trend of decreasing concentrations, however, concentrations remain above the acute aquatic life standard. Spring SPR-18 exhibited a relatively significant decrease in total cyanide concentration to the PQL of 0.004 mg/L during the 2019 spring runoff period yet increased to slightly below historic levels just below the acute aquatic life standard.

All samples for spring SPR-3 have been below the PQL, and, therefore, below the chronic aquatic life standard (0.0052 mg/L) since September 2013, except for a concentration of 0.017 mg/L and 0.007 mg/L which exceeded the chronic aquatic life standard and HHS in June 2017 and June 2019, respectively. Both the June 2017 and the June 2019 samples were collected before water treatment discharge from the Fresh Water Pond started for the season and represent natural seasonal drainage.



Note: Data for SPR-5, SPR-10A, SPR-Roadfill, Toe Drain, and SPR-T all plot on top of each other along with the green dashed line for the Chronic Standard and cannot be distinguished from each other.

Figure 4-2. Total Cyanide Concentrations in German Gulch Spring Water

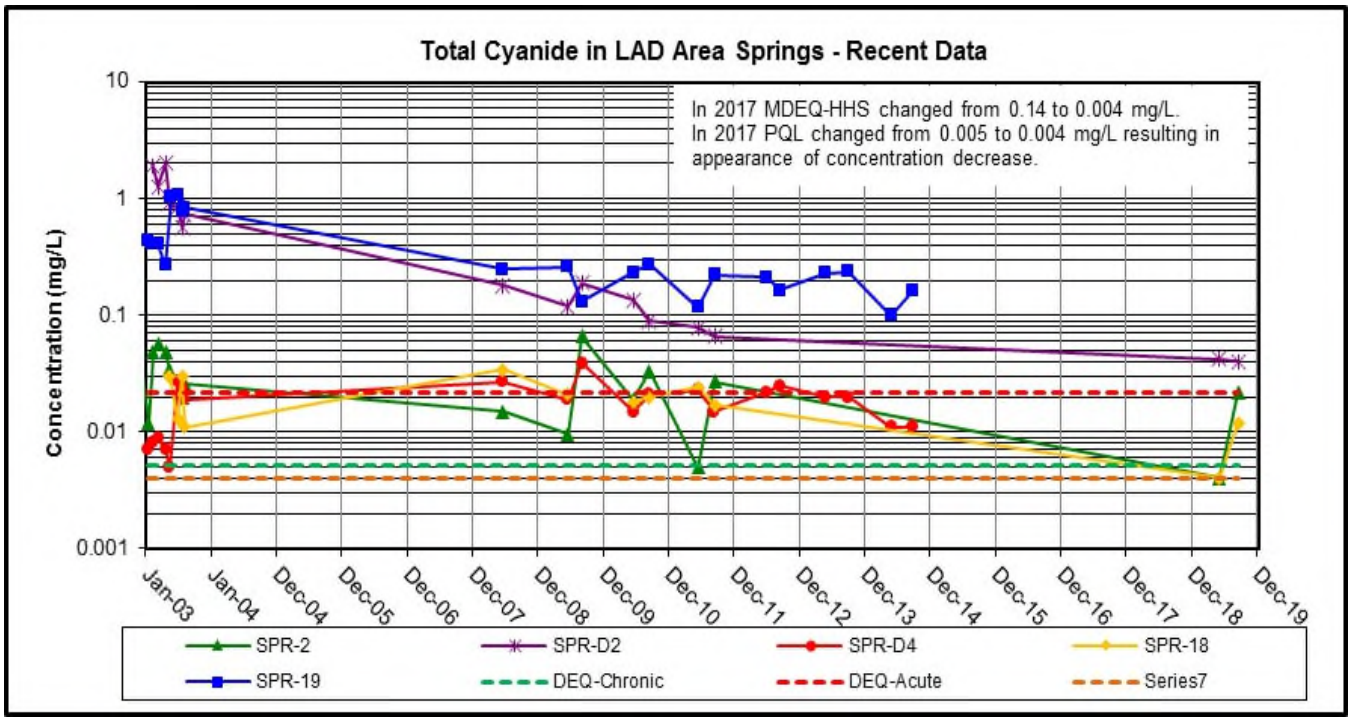
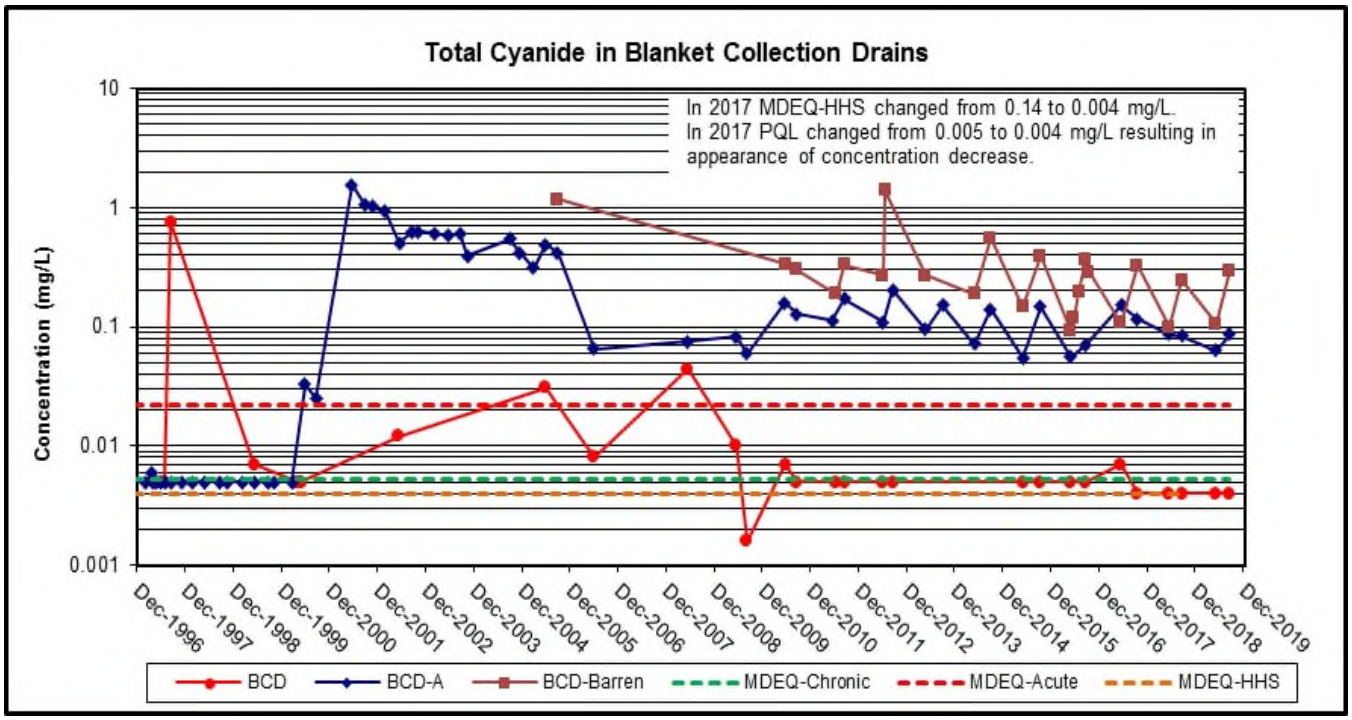


Figure 4-3. Total Cyanide in LAD Area Springs

Grab samples were collected from the BCD pipe outlet (i.e. water from beneath the leach pad bottom liner) during 2019 with total cyanide concentrations below the PQL of 0.004 mg/L in June and September (**Figure 4-4**). HHSs and aquatic life standards were exceeded in samples collected from the BCD-Barren pipe discharge during 2019 with total cyanide concentrations of 0.106 mg/L in June and 0.297 mg/L in October. The 2019 total cyanide concentrations for locations BCD and BCD-Barren were within their respective ranges previously reported and continue a possible decreasing trend. The BCD pond discharges water toward German Gulch via a diversion ditch when it overtops. However, overflow from pond BCD infiltrates to native soils of the unlined diversion ditch prior to reaching the German Gulch stream and may contribute to water quality observed in SPR-3. A seasonal spring identified as SPR-BCD, located immediately west of the BCD pond was also monitored during 2019. Discharge at this location during June 2019, was approximately 0.015 cubic feet per second (cfs) (6.84 gpm) with total cyanide concentrations below the 0.004 mg/L PQL. The location was dry during the September 2019 sampling event.

Water collected by a blanket collection drain system beneath the bottom liner on the north side of the leach pad reports by pipe to the southeast corner of Pond BCD-A. This pond was full to capacity during both the 2008 and 2009 sampling activities. During these events, grab samples were collected from the pond surface adjacent to the submerged pipe outlet. Since June 2010, the pond has been drained down during sampling events in order to sample directly from the pipe outlet. During 2019, total cyanide concentrations at BCD-A exceeded the HHS and acute aquatic standard during June and September with values of 0.063 mg/L and 0.086 mg/L (**Figure 4-4**). Concentrations have remained above the acute aquatic life standard since 2000. The BCD-A pond discharges water toward Minnesota Gulch via a forested hillside when it overtops from mid-May to late September. Overflow from pond BCD-A infiltrates to native soils prior to reaching the Minnesota Gulch stream except during spring runoff periods.



Note: With the exception of data for 2004, it is unknown if data prior to 2010 for sample location BCD represent BCD pipe outlet or BCD pond, which would be a combination of BCD pipe outlet and BCD-Barren pipe outlet. Post 2010 data is representative of individual pipe outlets.

Figure 4-4. Total Cyanide Concentrations in Leach Pad Underdrains

Free cyanide concentrations were below the laboratory PQL of 0.02 mg/L at all surface water and spring locations sampled in 2019.

In 2019, CNWAD at all sampled surface water and spring locations site wide was below the laboratory PQL of 0.004 mg/L. Prior to 2016, CNWAD at BCD-A and BCD-Barren had consistently been above the acute aquatic life standard of 0.022 mg/L (**Figure 4-5**). CNWAD concentrations reported for 2019 exhibit a one to two order magnitude decrease compared to data as recent as 2015. These lower values are likely the result of removing the cyanide containing material from the Barren Pond in 2015.

Although recent data for BCD-A and BCD-Barren presented in **Figure 4-5** show a drop in CNWAD concentrations since 2015, a corresponding decrease in total cyanide at these locations (**Figure 4-4**) has not been observed. The lack of free cyanide or CNWAD compared to total cyanide suggests the majority of cyanide present is in the form of relatively stable, low-toxicity, strong metal-cyanide complexes. These complexes readily sorb to soils with high anion exchange capacities such as clays (Dzombak, et.al. 2006).

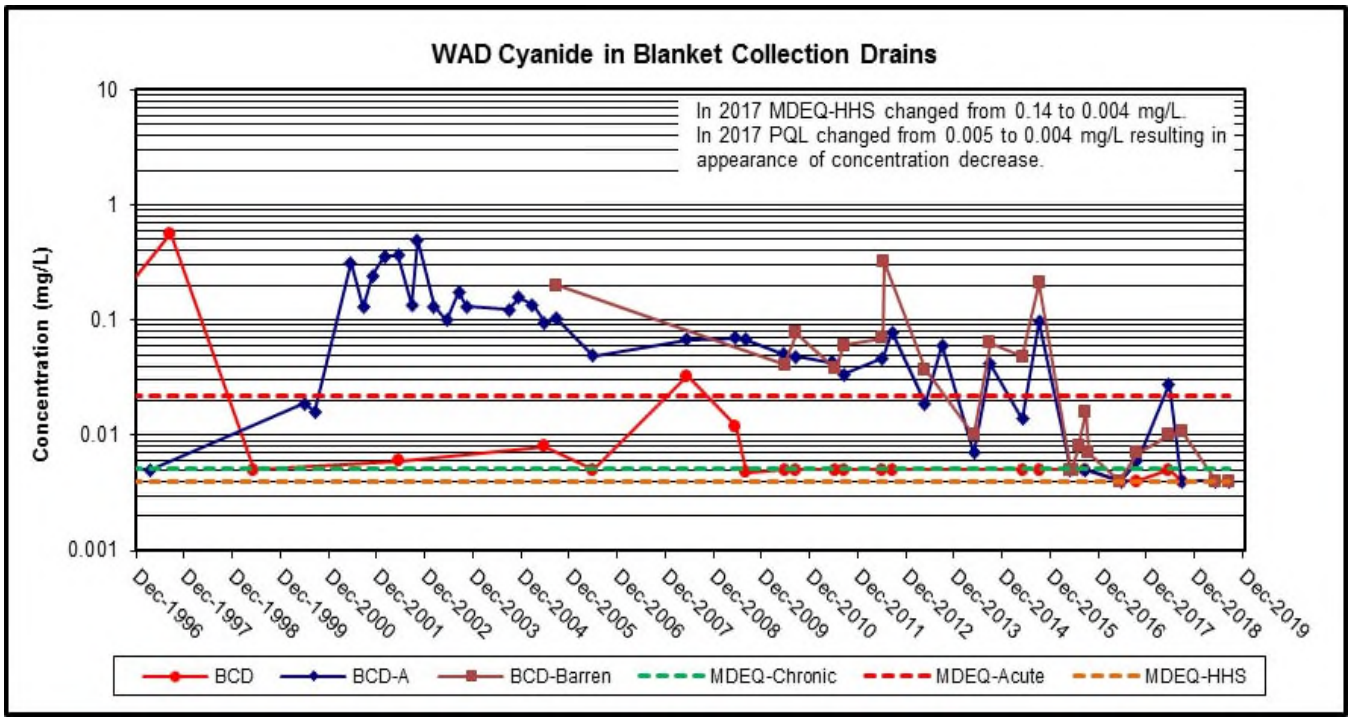


Figure 4-5. WAD Cyanide Concentrations in Leach Pad Underdrains

4.1.4 Selenium

Data from previous monitoring indicate total recoverable selenium measured has been present entirely in the dissolved phase. During 2019, site wide monitoring included analysis for total recoverable selenium. The 0.002 mg/L selenium concentration at surface water station STA-2 was less than the chronic aquatic life standard (0.005 mg/L) during June and September (**Table A-1**). Samples collected from the next routine upstream station, STA-3A, were also below the chronic aquatic life standard during June and September with concentrations of 0.003 mg/L in June and 0.004 mg/L in September. These concentrations are consistent with past monitoring events and may indicate a decreasing trend. **Figure 4-6** shows total recoverable selenium concentrations over time for surface water sampling stations.

During 2019, the waste rock drain system discharge was diverted from the infiltration galleries located between STA-2 and STA-3A to a point discharge located approximately 400 feet downstream of STA-3A. To evaluate the influence of this bypass discharge, an additional stream grab sample of opportunity (STA-3B) was collected during June and September, approximately 770 feet downstream of STA-3A (approximately 375 feet downstream of waste rock drain system bypass discharge). Results for both June and September exceeded the chronic aquatic life standard (0.005 mg/L) with concentrations of 0.006 mg/L and 0.009 mg/L but were below the 0.02 mg/L acute aquatic life standard and historic concentrations reported for location STA-3A upstream.

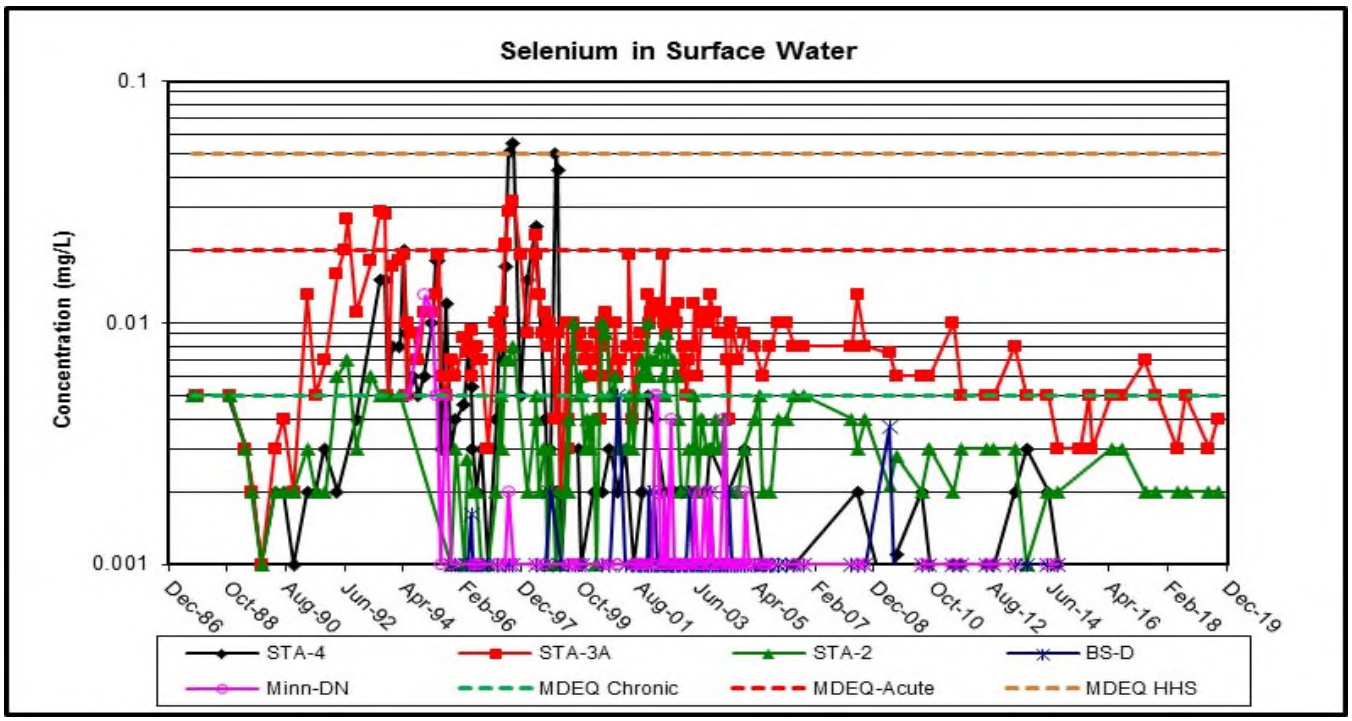


Figure 4-6. Total Recoverable Selenium Concentrations in Surface Water

Spring SPR-3 exceeded the total selenium chronic aquatic life standard in June with a value of 0.007 mg/L and was below the standard in September with a value of 0.001 mg/L (**Table A-2**). **Figure 4-7** shows selenium concentrations measured over time for German Gulch spring sampling stations. Concentrations at SPR-3 continue a decreasing trend begun in 2014.

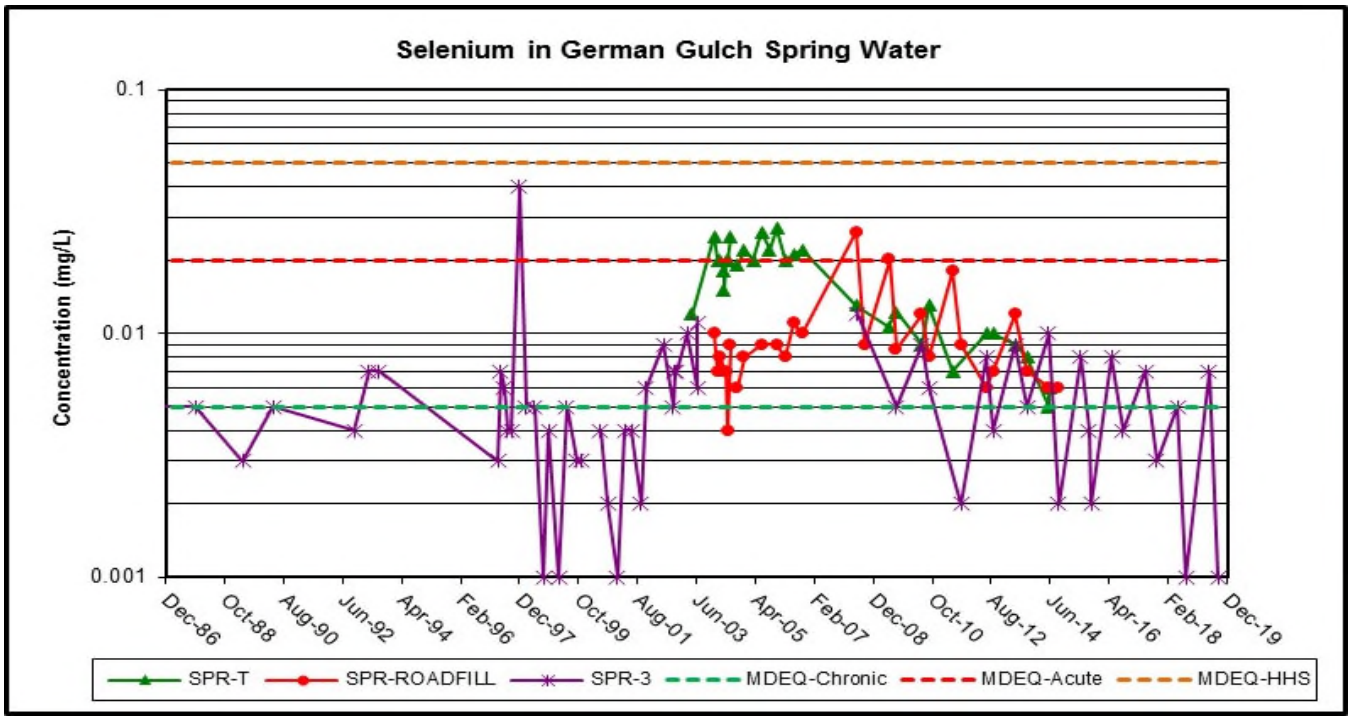


Figure 4-7. Total Recoverable Selenium Concentrations in German Gulch Spring Water

Grab samples were collected from the BCD pipe outlet (i.e. water from beneath the south side of the leach pad liner) during 2019. This location exhibited selenium concentrations slightly below the HHS of 0.05 mg/L (0.041 mg/L in June and 0.046 mg/L in September) (**Table A-1**). Values from BCD pipe outlet continue the decreasing concentration trend that began in 2004. Samples collected from the BCD-Barren pipe discharge during June and September and the Barren Drain in June exhibited concentrations of 0.008 mg/L, 0.018 mg/L, and 0.007 mg/L, respectively, exceeding the chronic aquatic life standard but remaining below the acute aquatic life standard. Values from BCD-Barren pipe are similar to those previously reported. Pond BCD discharges water toward German Gulch via a diversion ditch when it overtops. However, overflow from pond BCD infiltrates to native soils of the unlined diversion ditch prior to reaching the German Gulch stream. A seasonal spring identified as SPR-BCD, located immediately west of the BCD pond was also monitored during 2019. Total selenium concentration during June (0.01 mg/L) exceeded the chronic aquatic life standard. The location was dry during the September 2019 sampling event therefore no sample was collected.

Blanket collection drain BCD-A (north side of leach pad) exceeded the chronic aquatic standard during June and September 2019 with values of 0.012 mg/L and 0.009 mg/L, respectively. Total selenium concentrations at BCD-A have been stable with minor fluctuations since 2002.

The presence of selenium in the underdrain system may be due to groundwater interaction with native bedrock beneath the leach pad. **Figure 4-8** shows selenium concentrations measured over time for pond stations BCD and BCD-A. Concentrations of the blanket collection drain system appear similar to values reported for the last six years with a possible decreasing trend occurring at location BCD.

Samples were collected from the Waste Rock Dump area (i.e. SPR-5, SPR-10A, and Toe Drain) during 2019. Location SPR-5 exhibited selenium concentrations of 0.057 mg/L and 0.033 mg/L, while spring SPR-10A and Toe Drain exhibited concentrations of 0.064 mg/L and 0.072 mg/L (**Table A-1) (Figure 4-9)**. These values are similar to those reported for the past several years

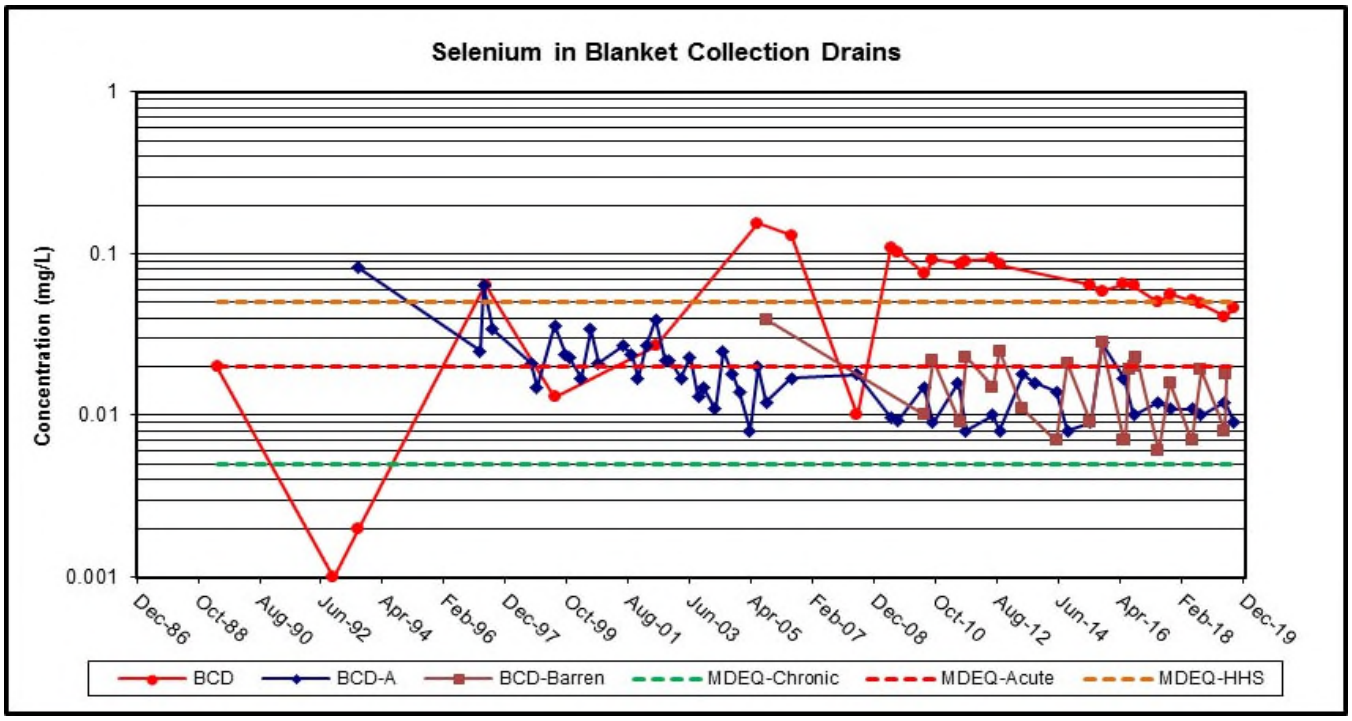


Figure 4-8. Total Recoverable Selenium Concentrations in Leach Pad Underdrains

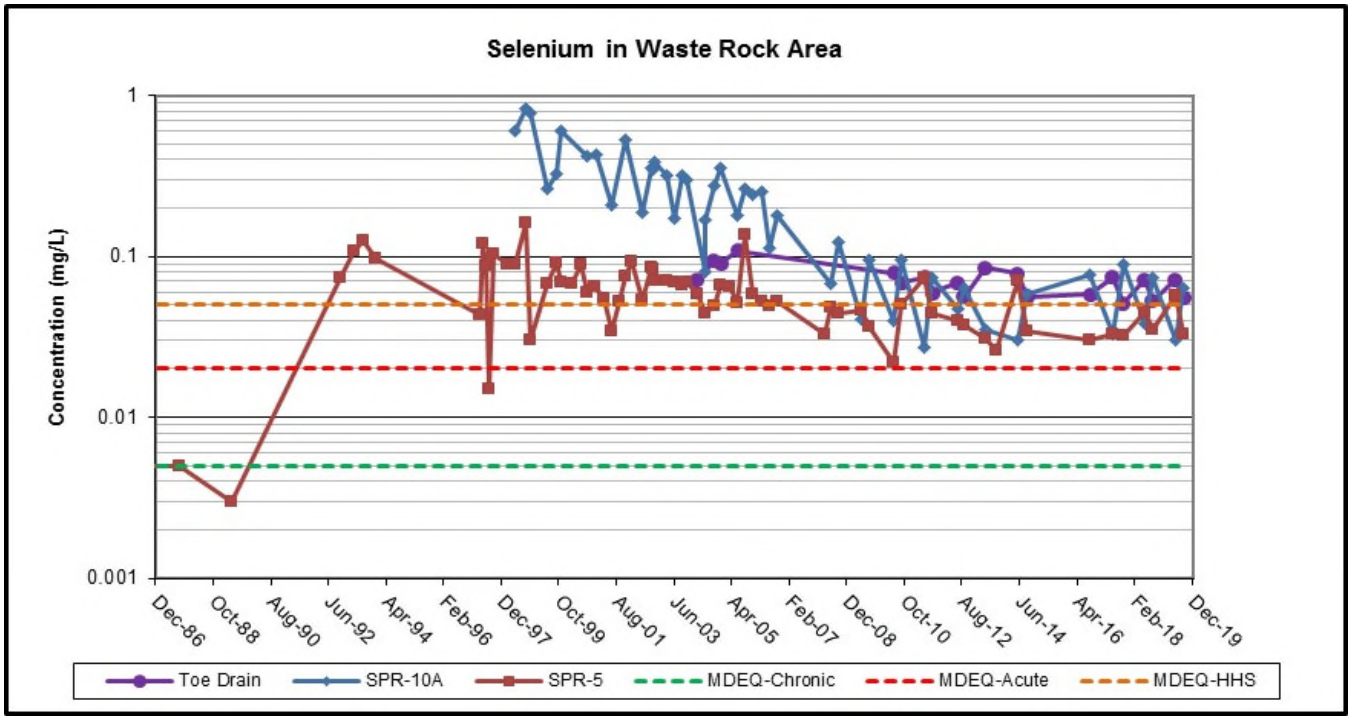


Figure 4-9. Total Recoverable Selenium Concentrations in Waste Rock Area

4.1.5 Total Alkalinity and Sulfate

During 2019, total alkalinity and sulfate were analyzed for spring and drain samples associated with the waste rock dump (Toe Drain, SPR-5 and SPR-10A). All locations continue to exhibit relatively stable concentrations of total alkalinity and sulfate with minor seasonal fluctuations (**Table A-2**) (**Figures 4-10** and **4-11**).

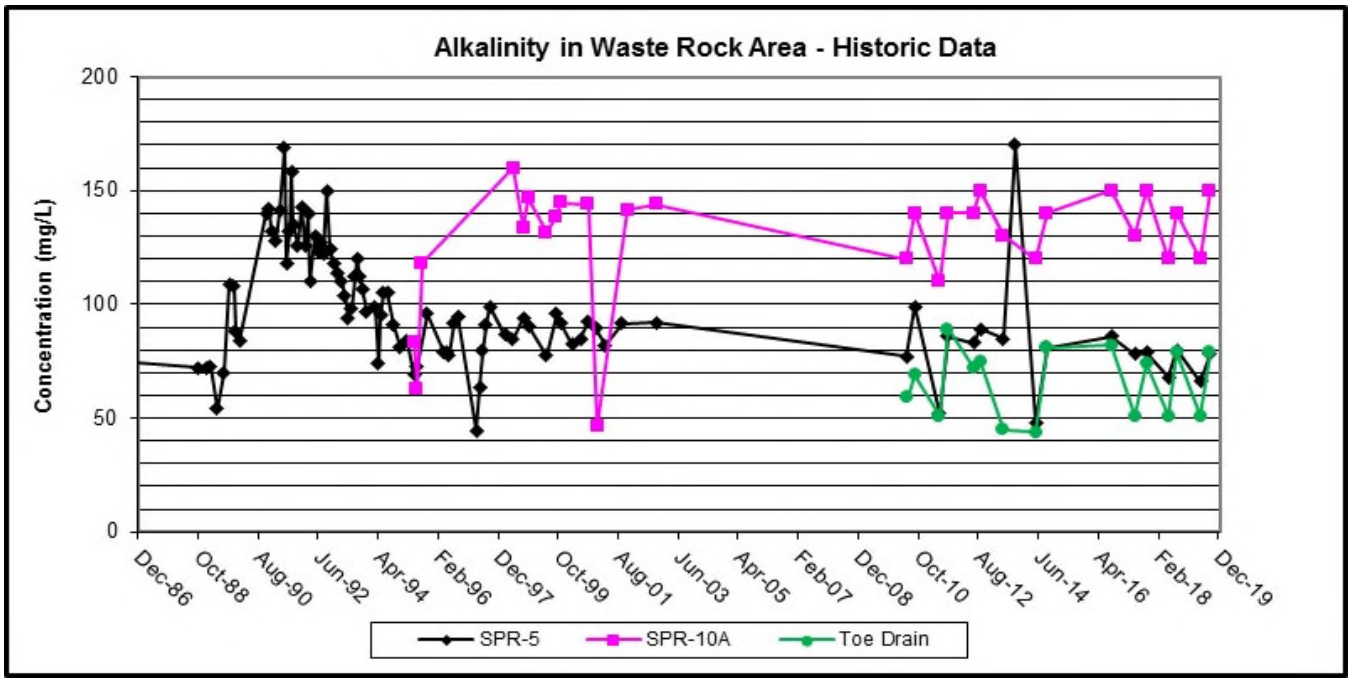


Figure 4-10. Total Alkalinity in Waste Rock Area

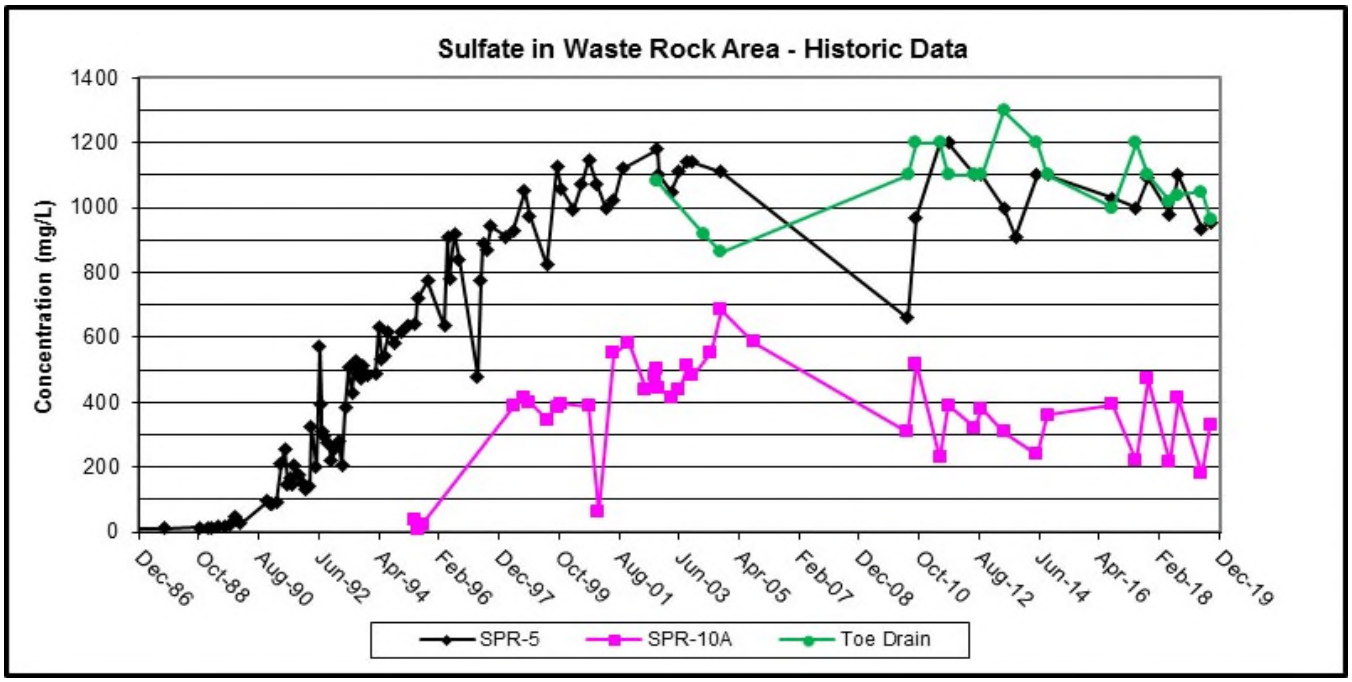


Figure 4-11. Sulfate in Waste Rock Area

4.2 LEACH PAD AREA GROUNDWATER ELEVATION

Groundwater elevation was monitored continuously at eight locations along the north edge of the leach pad during 2019 (**Figure 1-3**). During September 2019, continuous water level recorders were also installed at three locations along the south edge of the leach pad (**Figure 1-3**). The approximate groundwater potentiometric surface for September 16, 2019 is depicted in **Figure 4-12**. Potentiometric contours depicted correspond reasonably well with historic topography however, groundwater flow direction is likely heavily influenced by bedrock fractures and possibly the leach pad under drain system. Potentiometric contours may also be influenced by seasonal surface pooling and dewatering well operations near the south east corner of the leach pad.

Groundwater elevation results are presented in graphical form in **Figures 4-13 and 4-14**. Water levels exhibited seasonality in all wells (except OW-5, DW-10, and SBB-88-20 on the south side of the leach pad, which lack adequate data to determine). Wells LPPZ-4 and LPPZ-5 are located proximal to the north edge of the leach pad and are paired with distal wells LPPZ-1 and LPMW-3, respectively (i.e., LPPZ-1/LPPZ-4 and LPMW-3/LPPZ-5 well pairs). During 2011, a French drain was installed parallel to the north edge of the leach pad between well pairs to capture shallow (less than 6 feet below ground surface) groundwater, which had the potential of overtopping the leach pad liner embankment. Results of 2019 groundwater elevation monitoring indicate all recorded groundwater elevations remained below the nearest leach pad embankment liner elevation reported in the Phase II Leach Pad Investigation Report (Tetra Tech, 2011a). Groundwater elevations in the vicinity of these well pairs equaled or exceeded the French drain trench bottom elevation. The difference between groundwater elevations in well pairs LPPZ-1/LPPZ-4 and LPMW-3/LPPZ-5 and the nearest French drain trench bottom suggests the French drain bedding is likely intercepting groundwater in these areas. However, discharge from the French Drain outlet has never been observed. It is believed that groundwater intercepted by the gravel bedding at higher elevation drain reaches escapes out of bedding at lower elevation reaches.

Since continuous groundwater elevation monitoring began along the north side of the leach pad in 2011, well LPPZ-5 has reliably exhibited a groundwater elevation slightly higher than LPMW-3. This difference suggests a groundwater flow away from the leach pad in this vicinity or the possibility of top of casing measuring point survey elevation discrepancy. In contrast, Well LPPZ-1 reliably exhibits a groundwater elevation higher than LPPZ-4 suggesting a groundwater flow in this area toward the leach pad. Shallow flow in this area may be intercepted by the French drain bedding. However, the data also suggests periods in which groundwater elevations in LPPZ-1 are higher than those recorded for upslope location LPPZ-3. This difference may represent the recharge influence of a surface channel located immediately north of LPPZ-1 that receives runoff from the process plant area.

4.3 GROUNDWATER QUALITY

Water quality samples were collected from four groundwater wells (LPPZ-4, LPMW-5, LPMW-6, and SBB-91-29) (**Table 3-2**) during June and September 2019 (**Figure 1-3**). Three additional locations (OW-5, DW-10, and SBB-88-20) were sampled during September 2019. Samples were analyzed for TDS, total cyanide, CNWAD, and free cyanide. The purpose of this monitoring was to continue documenting groundwater chemistry near the leach pad and to evaluate the impact of Barren Pond removal actions completed in 2015. Sampling events were scheduled to occur during high and low seasonal groundwater. Field parameters and analytical data for constituents measured at all groundwater and leach pad sampling stations are summarized in **Tables A-3** – **A-5** in **Appendix A**.

4.3.1 Total Dissolved Solids

Of the wells sampled, highest TDS has been consistently reported in the Barren Pond area and near the BCD-A pond. Well LPMW-5 (Barren Pond area) exhibited concentrations of 1,370 mg/L for the spring and fall events, while SBB-91-29 (BCD-A pond area) exhibited 993 mg/L and 1,020 mg/L (**Table A-4**). Wells on the south side of the leach pad ranged from 350 mg/L (DW-5) to 849 mg/L (OW-5) during the September sampling event.

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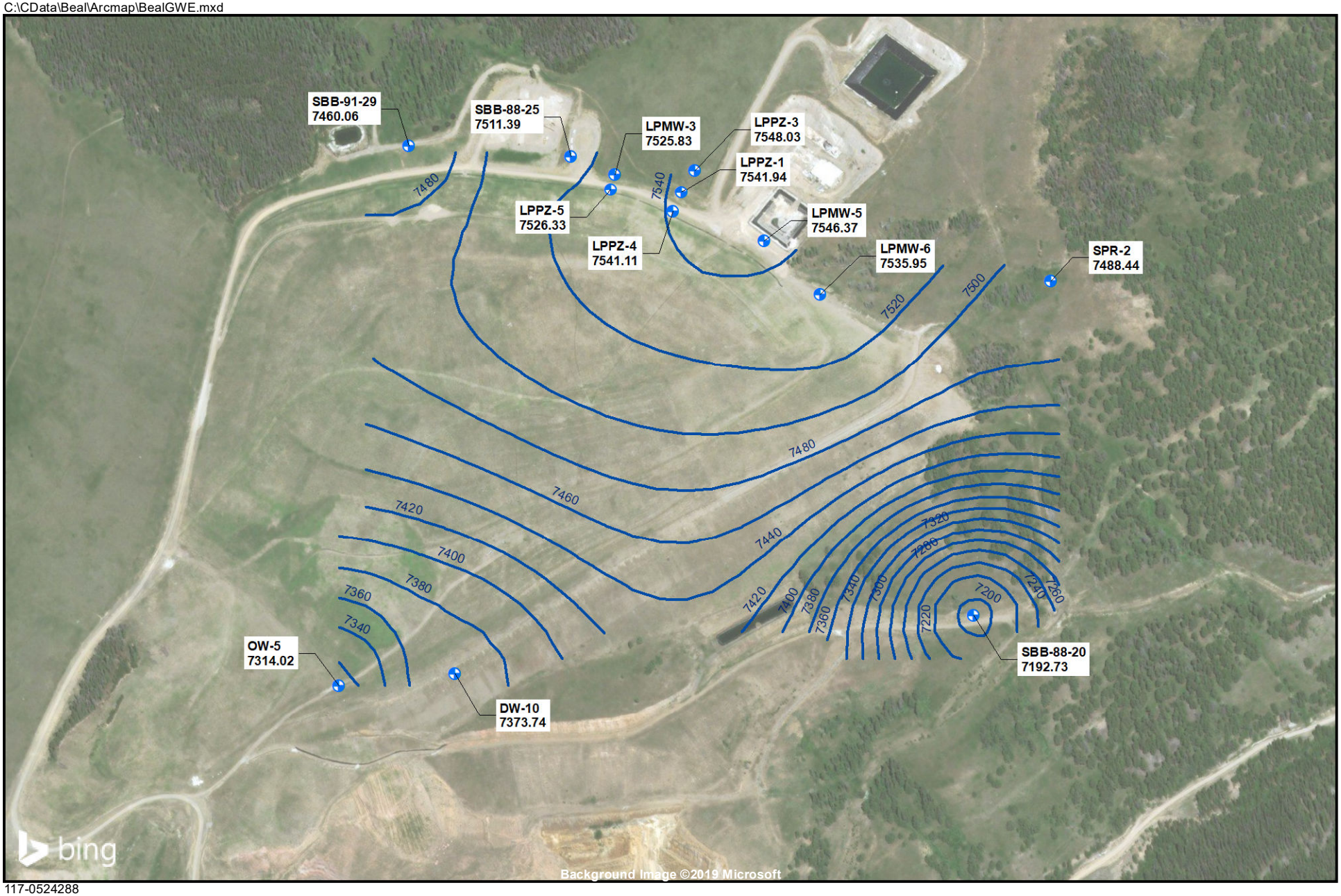

117-0524288
12/6/2019

N
W E
S

0 125 250 500 Feet

Approximate Potentiometric Contour (feet amsl)

September 16, 2019 Groundwater Potentiometric Elevation Contours
Beal Mountain Mine
Silver Bow County, Montana
FIGURE 4-12

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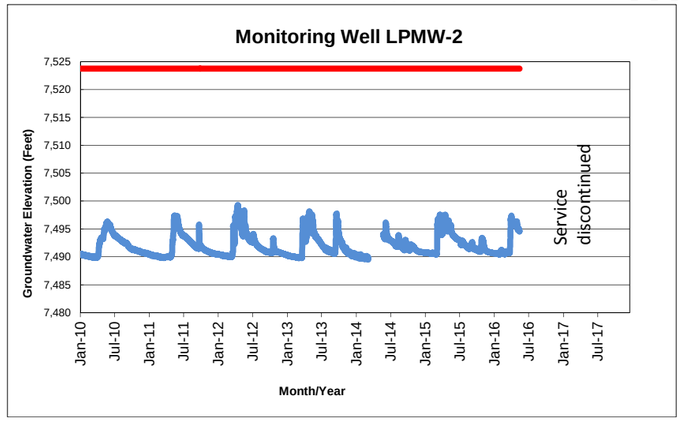

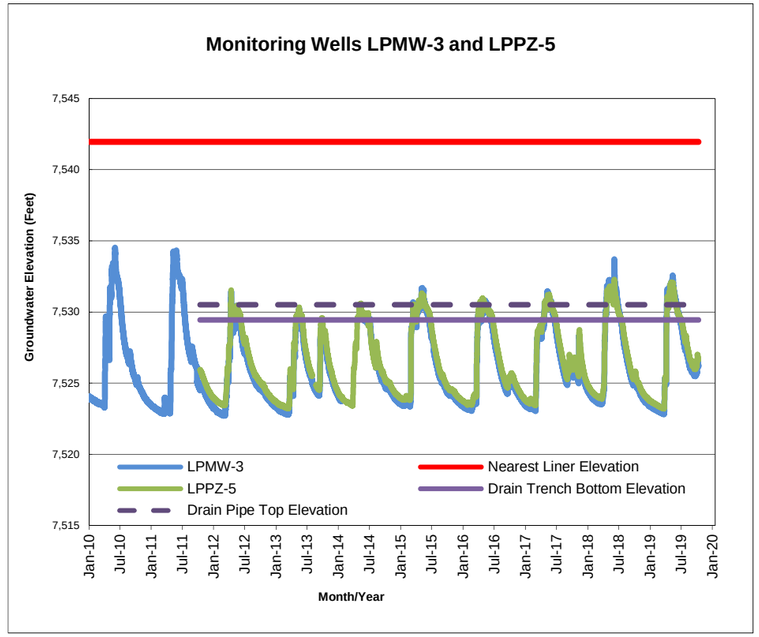

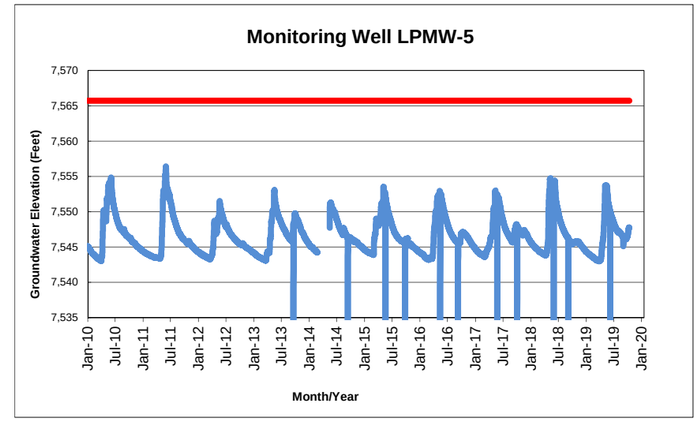

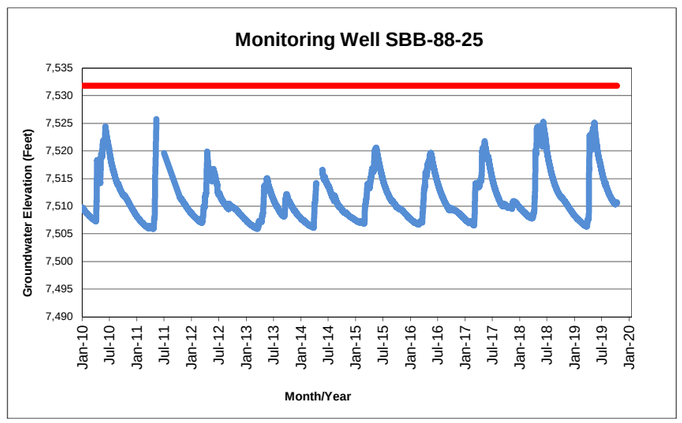

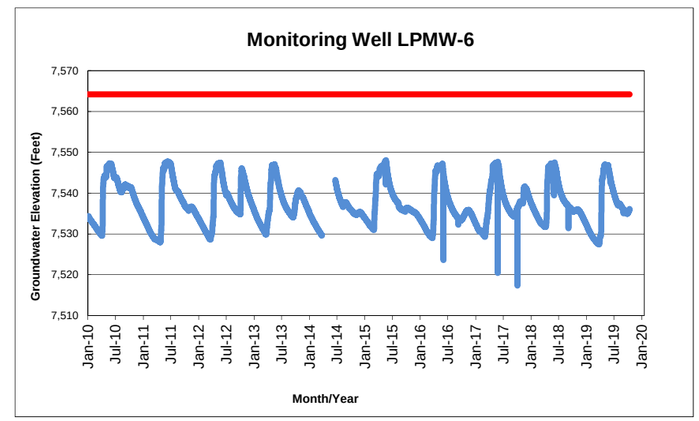

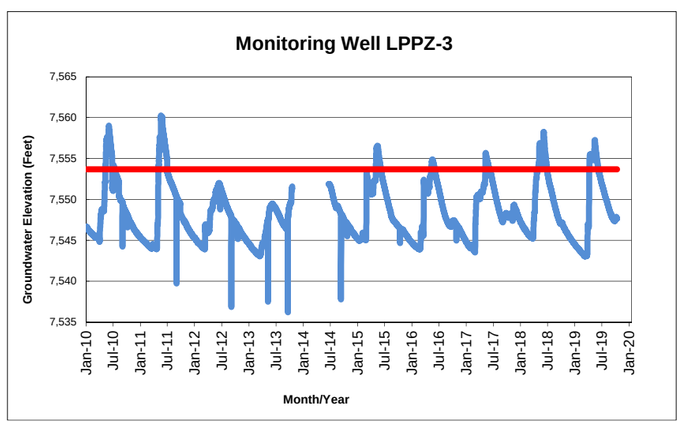

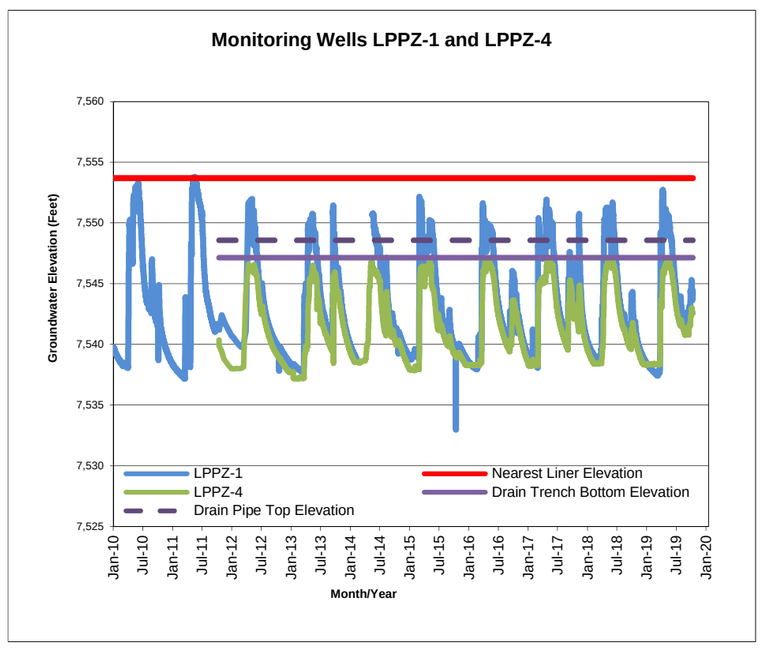

Groundwater Elevation

Nearest Leach Pad Liner Elevation

Groundwater Elevations vs Time
Beal Mountain Mine
North of Leach Pad Area
FIGURE 4-13

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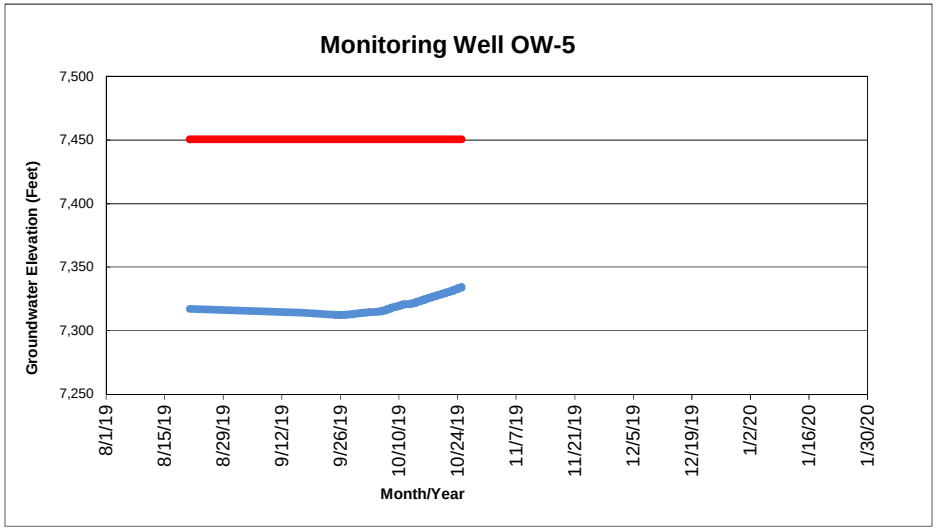
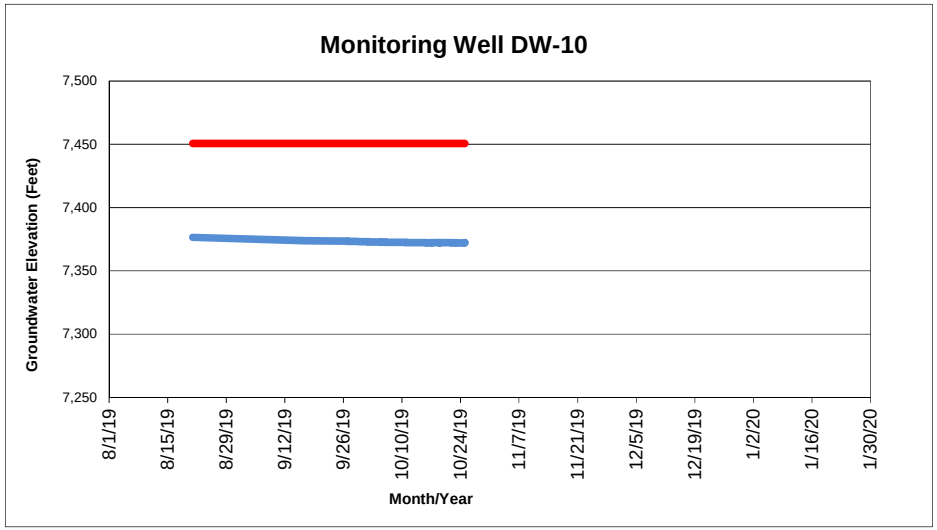
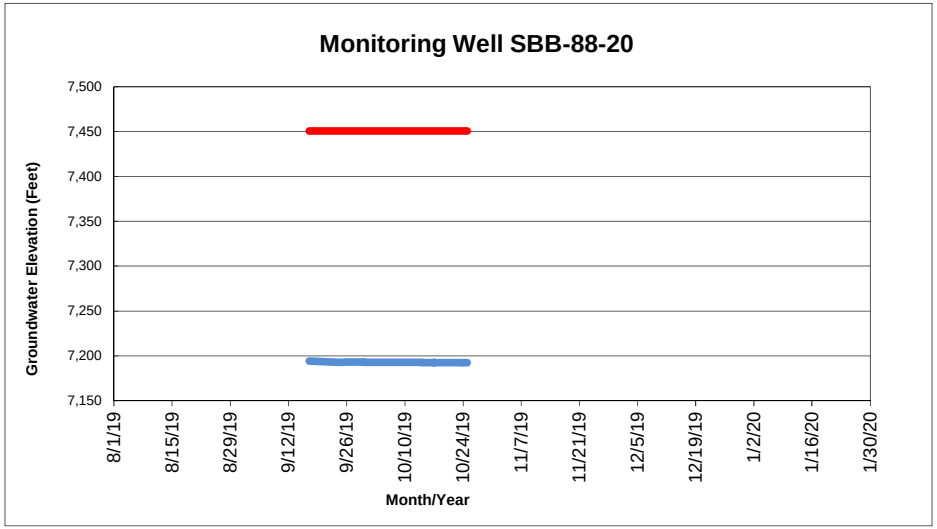






Groundwater Elevation

Bottom Leach Pad Liner Elevation

Groundwater Elevations vs Time
Beal Mountain Mine
South of Leach Pad Area
FIGURE 4-14

4.3.2 Cyanide

Leach pad area groundwater wells exhibited total cyanide concentrations below the groundwater HHS (0.2 mg/L) during both June and September 2019 (**Table A-4**). Maximum total cyanide concentrations are present in wells LPMW-5 and SBB-91-29 and range from 0.103 mg/L (LPMW-5, September) to 0.174 mg/L (SBB-91-29, June). **Figure 4-15** shows total cyanide concentrations measured over time in leach pad area groundwater wells. Values reported in 2019 are similar to those reported previously with possible slow declining trends. Wells located along the south-central perimeter or south-west corner (DW-10 and OW-5, respectively) were at or below the method detection limit of 0.004 mg/L for total cyanide. September 2019 is the first time in the period of record that these wells were sampled for total cyanide. Well SBB-88-20 near the southeast corner of the leach pad was last sampled in 2005. In September 2019 well SBB-88-20 exhibited 0.011 mg/L total cyanide which was similar to nearby springs SPR-2 and SPR-3. For the period of 1988 through 2001, well SBB-88-20 had routinely been below the method detection limit for total cyanide (**Table A-4**).

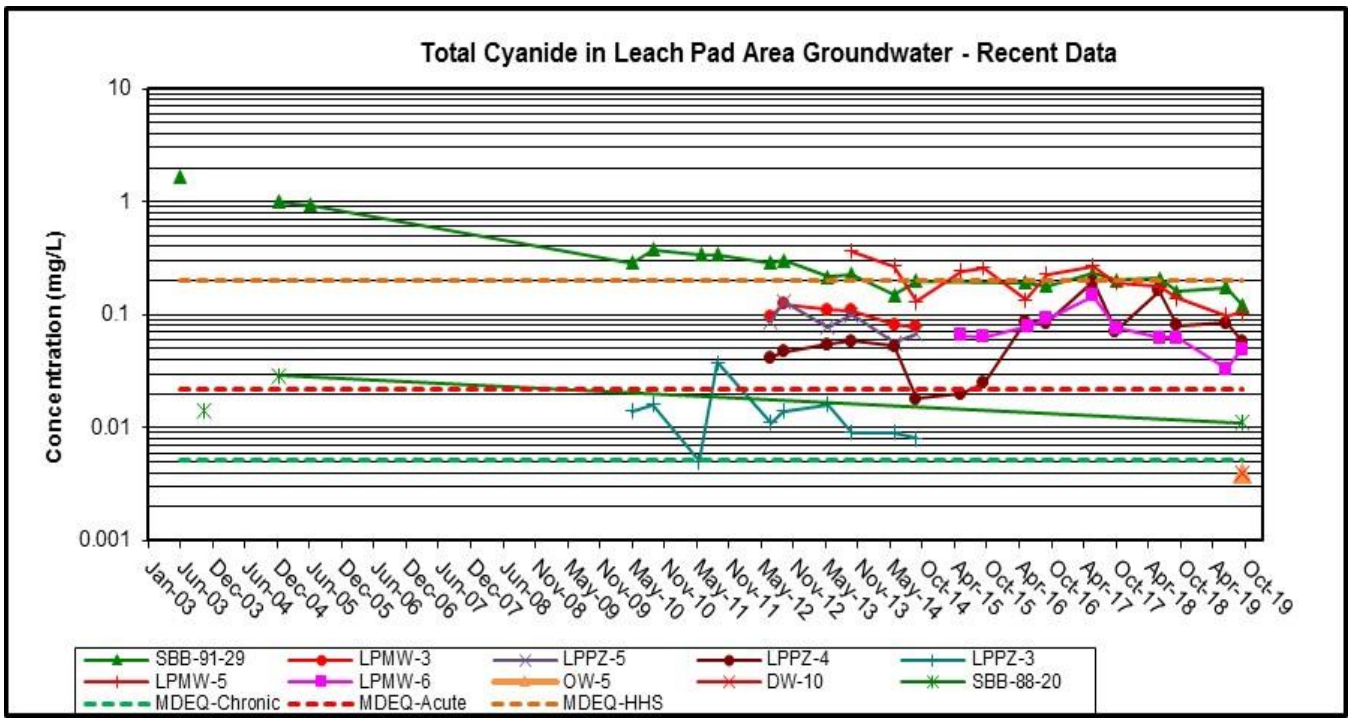


Figure 4-15. Total Cyanide Trends in Leach Pad Area Groundwater

Concentrations of CNWAD in groundwater during 2019 were at or below the method detection limit of 0.004 mg/L in all wells sampled (**Figure 4-16**). The relative lack of CNWAD and free cyanide relative to total cyanide suggests the majority of cyanide present is in the form of relatively stable, low-toxicity, strong metal-cyanide complexes. These complexes readily sorb to soils with high anion exchange capacities, such as clays (Dzombak et.al. 2006).

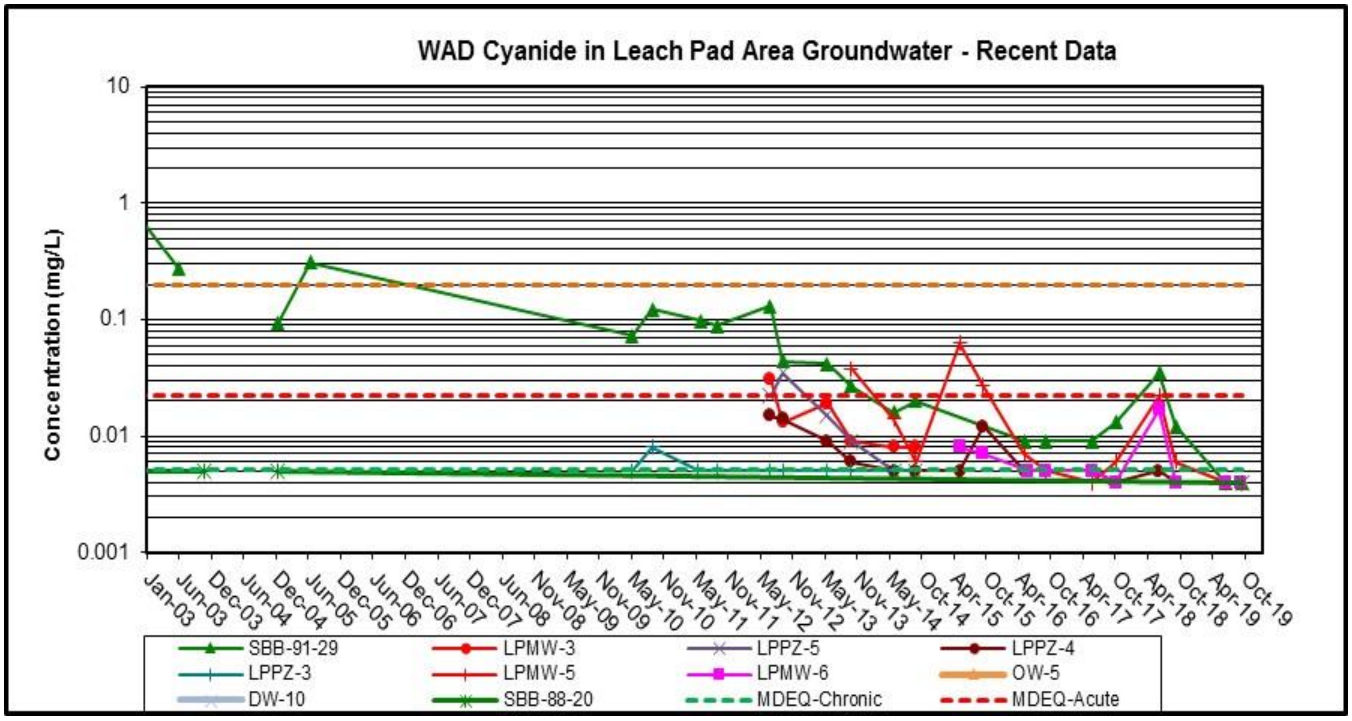


Figure 4-16. WAD Cyanide Trends in Leach Pad Area Groundwater

4.4 LEACH PAD CHEMISTRY

No leach pad chemistry samples were proposed or collected in 2019 under site-wide monitoring activities. Six samples were collected from Sump-1 during water treatment activities and are discussed in the 2019 water treatment yearly operations summary (Tetra Tech, 2020).

4.5 LEACH PAD SOLUTION LEVEL

Leach pad solution level was monitored continuously at two locations (Sump-1 and Sump-3A) within the leach pad during 2019 (**Figure 1-3**). A malfunctioning Sump-3A pressure transducer/data logger was identified in May. No Sump-3A data are available for the period of March through July 2019, due to a malfunctioning pressure transducer/data logger whose condition was identified during initial site visits in May. The unit was submitted for factory service and reinstalled in early August. Available solution elevations are presented in graphical form in **Figure 4-17** and **Figure 4-18**. During 2019, the leach pad solution level in Sump-1 peaked at approximately 7492.17 feet elevation (June 24) with a minimum of approximately 7482.16 feet elevation (October 14) (**Figure 4-17**). 2019 water treatment operated during the period of May 30 through October 14.

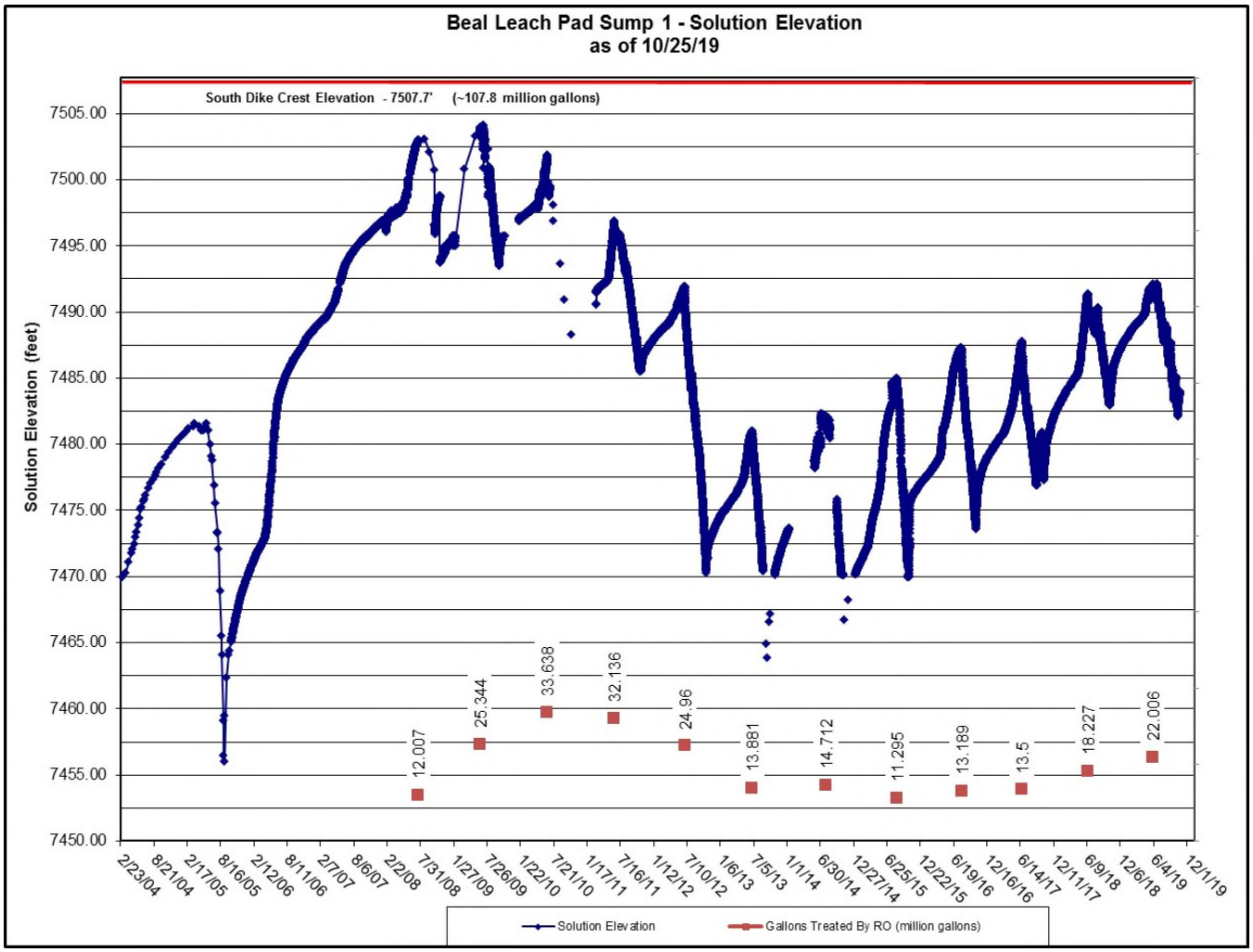


Figure 4-17. Leach Pad Solution Elevation - Sump-1

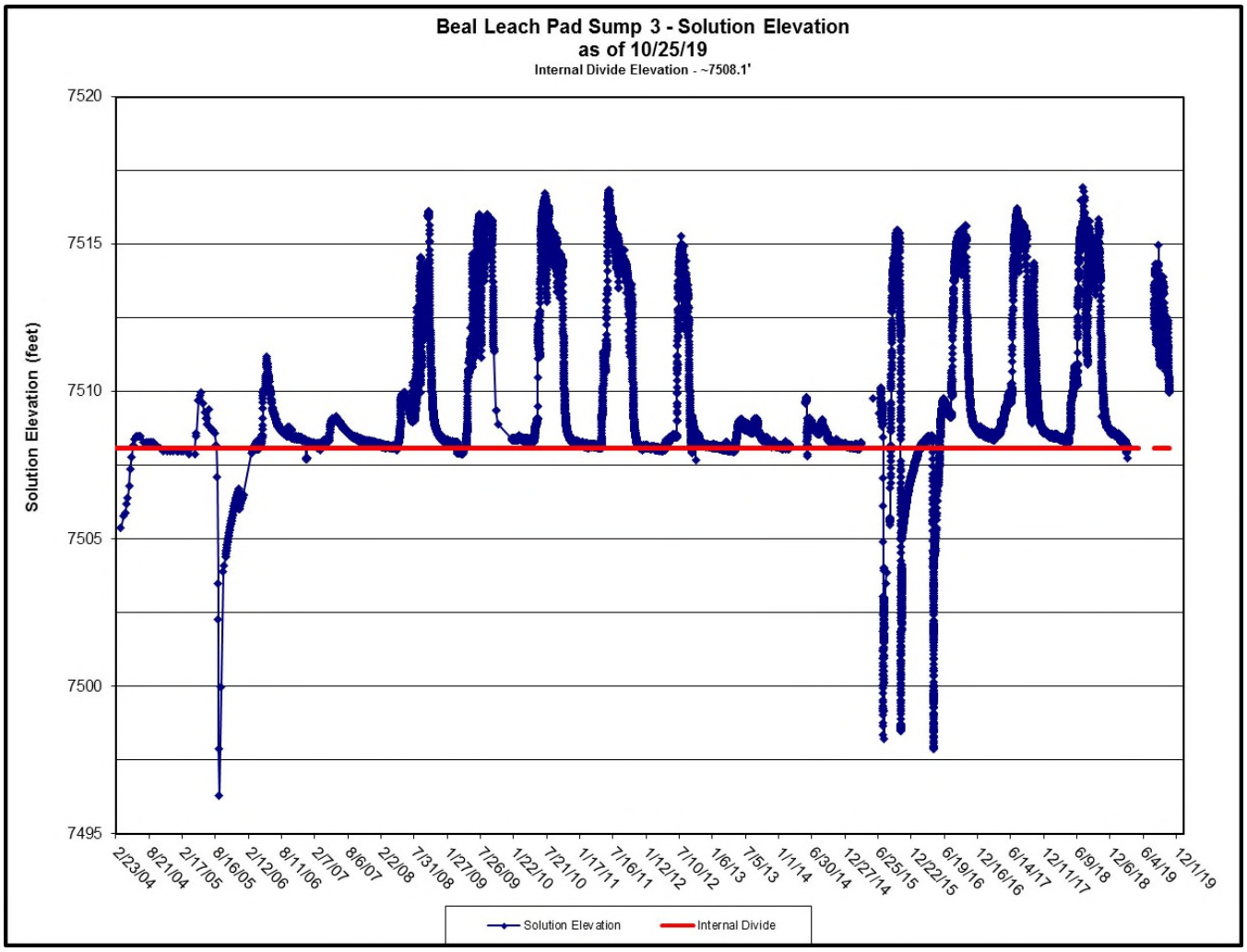


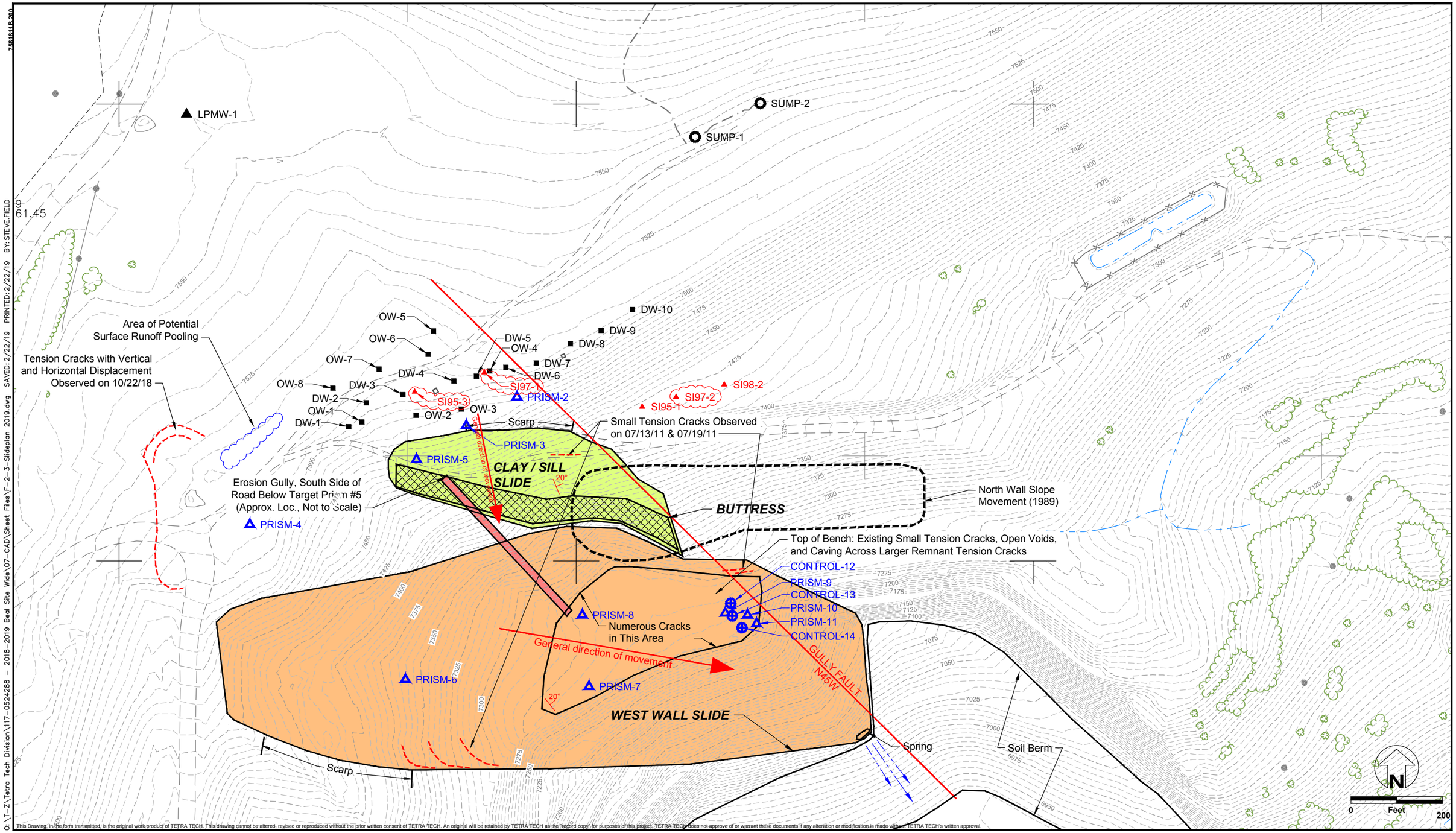
Figure 4-18. Leach Pad Solution Elevation - Sump-3A

4.6 SLIDE AREA DEWATERING

Slide area dewatering consists of several wells of which four (wells DW-2, DW-3, DW-4, and DW-5) (**Figure 4-19**) are equipped with pumps and controls. Wells DW-2 and DW-4 operated May 9 through October 4, 2019, to facilitate removal of groundwater from the main Beal pit highwall slide area (**Figure 4-19**). On June 6, 2019, DW-5 was returned to service with the replacement of the pump motor. Well DW-5 operated through October 4, 2019 without any problems. Inline flow meters at wells DW-2, DW-4, and DW-5 and visual observations, indicate pumps operated automatically throughout the 2019 season.

In 2016, the Coyote control device for well DW-3 was returned to the manufacturer for repair. The device was repaired, reinstalled and found to be operating correctly by the end of the 2016 season. However, well DW-3 has not operated since 2016 as the pump has not been able to start. Troubleshooting has not been able to identify the cause of the malfunction. Well DW-3 has not been repaired as it is the lowest producing well of the four pump equipped wells and therefore the lowest priority.

Since 2013, total volumes pumped have not been tracked due to the potential for flow meter totalizers to exceed maximum values and auto reset resulting in erroneous values. Production records for the period of 2011 through 2013 indicate well DW-5 is ranked as the highest producing well with an average of 127,000 gallons per season. Well DW-2 is ranked second with an average of 119,000 gallons per season. Well DW-4 is ranked third with an average production of 85,000 gallons per season, and well DW-3 is ranked fourth with an average production of only 30,000 gallons per season (Tetra Tech 2012, 2013, and 2014b).



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O:\T-Z\Tetra Tech Division\117-0524288 - 2018-2019 Beal Site Wide\07-CAD\Sheet Files\F-2-3-Slideplan 2019.dwg SAVED: 2/22/19 PRINTED: 2/22/19 BY: STEVE.FIELD

OW-7 ■ Dewatering or Observation Well
S195-3 ▲ Geotechnical Slope Inclinometers
Geotechnical Prisms
Geotechnical Crack Monitoring Controls
Spring Flow
Tension Cracks
Active

Main Beal Pit Slides
Beal Mountain Mine
Silver Bow County, Montana
FIGURE 4-19

5.0 WATER QUALITY SUMMARY

5.1 SITEWIDE OVERVIEW

In 2019, water quality monitoring that was completed was significantly reduced from the 2014 SAP to focus on German Gulch, the area surrounding the leach pad facility, and the waste rock dump. Stream water locations were at or below water quality standards for TSS, ammonia, cyanide, and selenium during both June and September. Leach Pad blanket collection drain BCD continued to exhibit a decreasing selenium trend with concentrations just below the HHS. Low levels of total recoverable selenium concentrations present in SPR-3 are likely attributed to mining-related activities however current values are at or slightly greater than baseline / pre-mining data. Total recoverable selenium in German Gulch surface water also appears to have returned to baseline/ pre-mining concentrations.

5.2 LAD AREAS

Three springs within or downgradient of historic LAD areas were sampled in 2019 for total cyanide and CNWAD. These springs were last sampled in 2011. During 2019, total cyanide concentrations exceeded the chronic aquatic life standard with SPR-D2 exceeding the acute aquatic life standard. All concentrations were similar to those last reported in 2011 with possible slow decreasing trends.

These results suggest that the LAD activities are a lingering source of relatively low total cyanide concentrations.

Total cyanide concentrations present at various locations at the site are generally an order of magnitude greater than CNWAD, which suggests the majority of cyanide present is in the form of a relatively stable, low-toxicity, strong metal-cyanide complex. These complexes readily sorb to soils with high anion exchange capacities such as clays (Dzombak et.al. 2006).

5.3 WASTE ROCK DUMP

Total recoverable selenium concentrations near the waste rock dump remain elevated and similar to values reported for the past several years. Concentrations remain above the acute aquatic life standard (0.02 mg/L) and periodically exceed the HHS of 0.05 mg/L. All locations also continue to exhibit relatively stable concentrations of total alkalinity and sulfate with minor fluctuations. Field pH also remains relatively stable. At this time there are no indications of waste rock drainage becoming acidic.

5.4 LEACH PAD

Data was collected in 2019 from the blanket collection drain system (stations BCD-Barren, BCD, and BCD-A), which collects water from beneath the lower liner of the leach pad and the former Barren Pond area.

Final closure of the Barren Pond occurred during 2018. The BCD-Barren pipe collects water from beneath the former Barren Pond and reports it to the northeast corner of the BCD pond. This location consistently shows concentrations of total cyanide exceeding the acute aquatic life standard and HHS. Information gathered during the 2015 Barren Pond removal indicates this pond contained a relatively large mass of cyanide in free, WAD, and total forms that were interacting with local groundwater. Removal of the Barren Pond does not appear to have significantly reduced the total cyanide concentrations but instead appear to continue a gradual decline like that observed before pond removal. This suggests an unknown mass of relatively stable cyanide complexes are bound to soils and weathered bedrock in this area.

Concentrations of CNWAD observed in BCD-Barren since 2016 have been an order of magnitude less than reported for the period of 2003 through 2015. In 2019 CNWAD was non-detect in BCD-Barren. To date, the decrease of

CNWAD paired with relatively stable or slightly decreasing total cyanide suggests that as CNWAD remaining in the area after source removal degrades or dissociates, a portion of the released cyanide ion reacted to form a more stable metal cyanide complex thereby maintaining total cyanide concentrations. It is anticipated that once complexes making up the CNWAD concentration are either flushed from the system or dissociated, total cyanide concentration will begin to exhibit a more rapid decline.

Selenium concentrations in the BCD-Barren area are stable and continue to generally exceed the chronic aquatic life standard but have not exceeded the acute aquatic life standard since 2016.

A vault discovered in 2016 at the easternmost toe of the leach pad (BCD Barren Vault) contains a manifold, which joins the 2-inch HDPE Barren Pond underdrain pipe with a 4-inch HDPE pipe that is assumed to be a leach pad underdrain collection pipe. Within this vault, these pipes have been named “Barren Drain” and “BCD-East”, respectively. These two sources, Barren Drain and BCD-East, are then routed to the northeast corner of the BCD pond to the pipe outlet historically known as BCD-Barren. Prior to September 2018, flow and chemistry of these two locations could not be separated. In September 2018 (prior to routine sampling activities) additional valves and piping were installed to allow independent monitoring of these two sources (Barren Drain and BCD-East). During September 2018 and June 2019; no flow was observed from the 4-inch BCD-East leach pad underdrain pipe. Flow and chemistry of the Barren Drain pipe and sample location BCD-Barren have been nearly identical. Given the head present in the Barren Drain and lack of head in the BCD-East pipe, it is possible that BCD-East has inadvertently been backflowing water up under the leach pad. Valve settings have been positioned to eliminate this possibility. No additional monitoring of these locations is planned for 2020.

Station BCD is the outlet of the pipe network that drains the area beneath the south side of the leach pad. Although this location represents the largest area and the greatest number of historic springs or seeps beneath the pad, it has historically shown numerous periods of being dry. Most recent data for BCD indicates cyanide concentrations have generally been below the method detection limit since 2010. During 2019, selenium concentrations continued a decreasing trend and were below the HHS for the first time since 2005. Pond BCD, which includes contributions from BCD-Barren mentioned above, discharges water toward German Gulch via a diversion ditch when it overtops. Overflow from pond BCD infiltrates to native soils of the unlined diversion ditch prior to reaching the German Gulch stream which may contribute to selenium concentrations observed downslope in SPR-3, which contributes flow directly to German Gulch.

Station BCD-A is the outlet of the pipe network that drains the area beneath the north side of the leach pad. This location consistently shows concentrations of total cyanide exceeding the acute aquatic life standard and HHS similar to location BCD-Barren. Beginning in 2016, the concentrations of CNWAD observed in BCD-A have been an order of magnitude less than reported for the period of 2000 through 2015. This reduction corresponds to the removal of the Barren pond and agrees with that observed for location BCD-Barren as discussed above. Selenium concentrations in the BCD-A area continue to consistently exceed the chronic aquatic life standard but remain below the acute aquatic life standard. These values have remained stable since 2016. Pond BCD-A discharges water toward Minnesota Gulch via a forested hillside when the pond overtops during the period of mid-May until late September and may contribute to water quality degradation previously reported in downgradient springs.

Total cyanide concentrations in leach pad area groundwater during 2019 were below the groundwater HHS (0.2 mg/L). 2019 values are similar to those reported previously with possible slow declining trends noted. Wells located along the south-central perimeter or south-west corner of the leach pad were at or below the total cyanide method detection limit of 0.004 mg/L. CNWAD concentrations in all sampled wells during 2019 were below the method detection limit (0.004 mg/L) for the first time since prior to 2004.

Based on groundwater elevations, and potentiometric contours, the former Barren Pond appears to be located in the vicinity of a groundwater divide. It is unclear how much influence the Barren Pond underdrain or surface recharge from the process plant area have on the groundwater divide location. The calculated potentiometric contours correspond reasonably well with historic topography however; groundwater flow direction is likely controlled by bedrock fractures. Lower CNWAD concentrations beneath the leach pad north pool (BCD-A) and

along the north perimeter of the leach pad (LPMW-5 and SBB-91-29) following Barren Pond removal suggest a portion of groundwater in the former pond vicinity flows to the west. Total cyanide concentrations in leach pad down gradient well SBB-88-20 suggest the lower cyanide concentrations beneath the leach pad south pool (BCD) compared to the Barren Pond area are likely due to either: 1) there is little flow from the Barren Pond area toward the southwest resulting in low cyanide concentrations beneath this part of the leach pad; or 2) concentrations moving from the Barren Pond area are diluted by cleaner water.

6.0 QUALITY ASSURANCE EVALUATION

The following data review, verification, and validation were completed in accordance with the 2014 Water Monitoring SAP (Tetra Tech, 2014a).

All samples collected during 2019 semi-annual monitoring events (June and September) were hand delivered to Energy Laboratories, Inc. in Helena within appropriate holding times, with the exception of pH. All samples arrived at the laboratory within the acceptable temperature range of 2 to 6 °C. Quality assurance parameters include:

- **Precision** - All analyses of the natural/duplicate surface water and groundwater pairs collected by Tetra Tech personnel were within the acceptable relative percent difference and absolute value difference during the June and September 2019 groundwater and surface water sampling events.
- **Accuracy** - All laboratory control matrix spike sample recoveries were within appropriate ranges with the exception of total cyanide for laboratory report H19060570 (June groundwater samples). Matrix spike recoveries ranged from 80% to 86% which was below the 90% low limit. Low matrix spike recoveries suggest the sample results may be biased low. High matrix spike recoveries suggest sample results may be biased high. The effected data have been assigned the appropriate qualifier in the project database.

  Historically, numerous laboratories have been used to conduct analysis of water samples from the Beal Mountain Mine. Previous data reviews have often not been completed to the level of evaluating data accuracy. Therefore, it is unknown whether historic data may be biased high or low. It is Tetra Tech's experience that all reputable laboratories occasionally report analytic results that may be biased high or low. Biased data are assigned data qualifiers in the project database that must be considered when evaluating data. Future sampling events share an equal probability that results may be biased high or low regardless of the laboratory used.
- **Representativeness** - All laboratory control method blanks for June and September samples were below detection limits. Laboratory results for 2019 are deemed representative of site conditions.
- **Completeness** - The completeness goal for the project is 90%. During June and September 2018, Tetra Tech achieved 100% completeness since all spring, surface water, and groundwater locations were sampled and analyzed for proposed constituents.

Based on a review of current and historic field methods, as well as analytic methods, the 2019 data is comparable to historic data.

7.0 RECOMMENDATIONS

Following review of 2019 data presented above, Tetra Tech makes the following recommendations:

1) Continue semi-annual surface water and groundwater monitoring similar to that completed in 2019. The 2019 locations, frequency, and constituents document conditions of greatest concern across the site.
2) Delay further sampling of LAD area springs SPR-2, SPR-D2, and SPR-18 until 2026 or 2027 since concentrations continue to remain relatively stable.
3) Continue monitoring wells OW-5 and DW-10 near the south west corner of leach pad and well SBB-88-20 near the south east corner of the leach pad. These wells are located downgradient of the leach pad and provide useful elevation and water quality data in these areas.
4) Manually measure depth to water in wells LPMW-1, LPMW-2, SBB-87-05, SBB-87-06, SBB-87-07, SI-97-2, and SI-98-2 (may also be historically known as SI-89-2) during 2020 groundwater monitoring events to develop more complete groundwater potentiometric maps of the leach pad area.
5) Survey location and elevation of SI-97-2 and SI-98-2 (may also be historically known as SI-89-2) located to the south of the leach pad embankment and west of the BCD pond. Once surveyed, measured depth to water in these locations could be used to develop more complete potentiometric maps of the leach pad area.

8.0 REFERENCES

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APPENDIX A. 1987 TO 2019 WATER QUALITY DATA

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
Barren Drain	9/17/2018	N	TV 0.004	6.55	--	--	U 5	--	--	U 0.05	--	L 0.27	0.008	U 0.2	--	--	--	0.018	--
	6/6/2019	N	TV 0.037	7.01	--	--	U 5	--	--	U 0.05	--	0.11	U 0.004	U 0.2	--	--	--	0.007	--
BCD	5/15/1989	N	0.04	5.89	277	200	--	--	--	U 0.5	46	0.01	U 0.005	U 0.02	--	0.003	U 0.01	0.02	0.02
	6/27/1989	N	0.067	6.27	--	--	--	--	--	--	12	U 0.005	--	--	--	--	--	--	--
	7/26/1989	N	0.02	3.6	A 108	111	--	--	--	U 1	8.2	U 0.005	--	--	--	--	--	--	--
	8/21/1989	N	0.016	7.73	--	--	--	--	--	--	9	U 0.005	--	--	--	--	--	--	--
	9/28/1989	N	0.01	7.11	--	--	--	--	--	--	9.1	U 0.005	--	--	--	--	--	--	--
	11/15/1989	N	0.007	6.75	96	A 63	--	--	--	--	7.55	U 0.005	--	--	--	--	--	--	--
	12/6/1989	N	0.009	--	--	--	--	--	--	--	6.3	U 0.005	--	--	--	--	--	--	--
	1/17/1990	N	0.009	--	--	--	--	--	--	--	8	U 0.005	--	--	--	--	--	--	--
	2/27/1990	N	0.006	--	--	--	--	--	--	--	16	U 0.005	--	--	--	--	--	--	--
	4/18/1990	N	0.017	6.79	116	A 82	--	--	--	U 0.5	36	0.19	0.14	U 0.2	--	--	--	--	--
	5/23/1990	N	0.033	--	--	--	--	--	--	--	17	0.12	--	--	--	--	--	--	--
	6/19/1990	N	0.045	--	--	--	--	--	--	--	19	0.05	--	--	--	--	--	--	--
	7/20/1990	N	0.019	7.25	89	108	--	--	--	U 0.5	9.61	0.11	0.12	0.11	--	--	--	--	--
	8/20/1990	N	0.009	--	--	--	--	--	--	--	12	0.13	--	--	--	--	--	--	--
	9/24/1990	N	0.009	--	--	--	--	--	--	--	9.04	0.03	--	--	--	--	--	--	--
	11/15/1990	N	0.004	8	103	A 151	--	--	--	U 0.5	6.78	0.06	0.03	0.09	--	--	--	--	--
	12/12/1990	N	0.004	--	--	--	--	--	--	--	5.37	0.01	--	--	--	--	--	--	--
	1/16/1991	N	0.003	--	--	--	--	--	--	--	4.8	0.006	--	--	--	--	--	--	--
	2/26/1991	N	0.002	--	--	--	--	--	--	--	4.3	U 0.005	--	--	--	--	--	--	--
	4/17/1991	N	0.003	7.76	84	A 209	--	--	--	U 0.5	6.1	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	0.017	--	--	--	--	--	--	--	45	0.28	0.1	--	--	--	--	--	--
	6/25/1991	N	0.028	--	--	--	--	--	--	--	20	0.09	--	--	--	--	--	--	--
	7/26/1991	N	0.008	7.51	118	133	--	--	--	0.4	13	0.03	--	--	--	--	--	--	--
	9/17/1991	N	0.004	--	--	--	--	--	--	--	11	0.01	--	--	--	--	--	--	--
	11/2/1991	N	0.003	7.16	99	156	--	--	U 1	0.2	10	0.03	0.006	0.02	--	--	--	--	--

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Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD	12/17/1991	N	0.002	--	--	--	--	--	--	--	8	U 0.005	--	--	--	--	--	--	--
	1/21/1992	N	0.002	--	--	--	--	--	--	--	5.2	U 0.005	--	--	--	--	--	--	--
	2/26/1992	N	0.001	--	--	--	--	--	--	--	A 62	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	0.001	7.06	103	130	--	--	0.5	0.1	5	U 0.005	--	--	--	--	--	--	--
	5/12/1992	N	0.0009	--	--	--	--	--	--	--	U 5	U 0.005	--	--	--	--	--	--	--
	6/18/1992	N	0.001	--	--	--	--	--	--	--	48	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/15/1992	N	0.0009	7.68	102	A 205	--	--	U 1	U 0.5	10	U 0.005	--	--	--	--	--	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/18/1992	N	0.001	--	--	--	--	--	U 1	--	U 10	U 0.005	U 0.005	--	--	--	--	--	--
	9/2/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/24/1992	N	0.002	--	105	--	--	--	U 1	--	10	U 0.005	--	--	--	--	--	--	--
	10/28/1992	N	0.0007	8.27	103	125	U 10	--	U 1	U 0.5	U 10	U 0.005	--	--	--	0.003	0.005	U 0.001	0.006
	5/19/1993	N	--	--	--	--	--	--	0.79	--	7	U 0.005	--	--	--	--	--	--	--
	6/23/1993	N	--	--	--	--	--	--	0.97	--	6	0.007	0.004	0.009	--	--	--	--	--
	7/27/1993	N	0.0002	7.01	99	105	U 4	--	0.93	J4 0.2	5	0.009	--	--	--	U 0.002	0.002	0.002	U 0.008
	8/24/1993	N	0.0002	--	--	--	--	--	J4 1.3	--	7	U 0.005	--	--	--	--	--	--	--
	9/21/1993	N	0.001	--	--	--	--	--	1	--	10	0.007	U 0.005	--	--	--	--	--	--
	10/18/1993	N	0.001	7.33	88	103	--	--	J4 0.76	U 0.1	6	J2 0.01	U 0.005	U 0.2	--	--	--	--	--
	8/1/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	10/4/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	5/24/1995	N	0.0002	8.41	375	488	--	--	3.62	U 0.1	261	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	--	8.15	153	192	--	--	2.35	--	49	U 0.02	--	--	--	--	--	--	--
	10/11/1995	N	0.0002	7.3	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/15/1997	N	0.006	6.34	970	1507	--	--	3.58	--	956	U 0.005	--	--	--	0.003	0.053	0.064	0.04
	6/25/1997	N	0.0006	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/30/1997	N	0.0006	7.83	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/16/1997	N	0.0006	8.44	--	--	--	--	--	--	--	0.75	0.57	--	--	--	--	--	--
	6/10/1999	N	0.0003	--	571	861	--	--	3.36	--	517	0.007	U 0.005	--	--	U 0.003	0.031	0.013	--

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BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD	5/3/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/24/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/1/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/12/2002	N	0.003	8	--	1470	36	--	2.84	--	910	0.01	0.006	--	--	U 0.003	0.024	0.027	--
	6/28/2005	N	TV 0.0004	7.83	--	--	U 10	--	52.1	U 0.05	--	0.03	0.008	--	--	--	0.001	0.154	U 0.01
	6/29/2006	N	pond	7.9	--	--	26	--	41.8	--	--	0.008	U 0.005	--	--	--	0.005	0.129	--
	6/12/2008	N	--	6.91	--	--	U 10	--	1.96	--	--	0.04	0.03	--	--	--	0.011	M% 0.01	--
	6/15/2009	N	TV 0.0006	9.23	--	--	32.6	--	F 20.8	--	--	0.01	0.01	U 0.002	--	--	0.0091	0.108	--
	9/3/2009	N	TV 0.001	8.55	--	--	531	--	22	U 0.02	--	UF% 0.002	M%F%J 0.005	FU 0.004	--	--	0.0828	0.103	--
	6/21/2010	N	TV 0.002	8.22	--	--	U 5	--	12.2	U 0.05	--	0.007	U 0.005	U 0.06	--	--	0.002	0.075	--
	9/17/2010	N	TV 0.0002	7.66	--	--	U 10	--	21.5	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.092	--
	7/13/2011	N	TV 0.0004	7.6	--	--	U 5	160	M% 14	U 0.1	1400	UM% 0.005	U 0.005	U 0.2	--	--	0.001	0.086	--
	9/14/2011	N	TV 0.0002	8.21	--	--	44	170	15.6	U 0.1	1400	U 0.005	U 0.005	U 0.2	--	--	0.019	0.09	--
	7/5/2012	N	TV 0.0002	7.72	--	--	92	--	dM% 14.6	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.093	--
	9/17/2012	N	TV 0.0001	8.28	--	--	U 5	--	d 14.2	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.085	--
	6/1/2015	N	TV 0.0005	7.86	--	--	U 5	--	--	Ud 1	--	U 0.005	U 0.005	U 0.2	--	--	--	0.064	--
	10/8/2015	N	TV 0.0001	8.54	--	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.059	--
	5/26/2016	N	TV 0.0003	8.38	--	--	U 5	--	--	U 0.05	--	UF% 0.005	U 0.005	U 0.2	--	--	--	0.065	--
	9/19/2016	N	TV 0.0001	8.18	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.063	--
	6/8/2017	N	TV 0.0002	7.78	--	--	U 5	--	--	U 0.05	--	0.007	U 0.004	U 0.2	--	--	--	0.05	--
	10/16/2017	N	TV 0.0002	8.83	--	--	6	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.056	--
	6/12/2018	N	TV 0.0005	8.34	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.005	U 0.2	--	--	--	0.051	--
	9/17/2018	N	TV 0.002	8.47	--	--	U 5	--	--	U 0.05	--	UH 0.004	U 0.004	U 0.2	--	--	--	0.049	--
	6/4/2019	N	TV 0.0005	7.55	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.041	--
	9/18/2019	N	TV 0.0002	8.31	--	--	U 5	--	--	U 0.1	--	U 0.004	U 0.004	U 0.2	--	--	--	0.046	--
BCD-A	9/24/1990	N	0.001	--	--	--	--	--	--	--	28	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	0.0006	8.45	129	211	--	--	--	U 0.5	20	U 0.005	--	--	--	--	--	--	--
	12/12/1990	N	0.0005	--	--	--	--	--	--	--	27	U 0.005	--	--	--	--	--	--	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD-A	11/2/1991	N	--	7.84	436	674	--	--	--	U 0.1	203	0.01	U 0.005	U 0.005	--	--	--	--	--
	3/17/1992	N	--	7.8	477	741	--	--	34	0.2	265	U 0.005	--	--	--	--	--	--	--
	5/12/1992	N	0.012	--	--	--	--	--	--	--	308	U 0.005	--	--	--	--	--	--	--
	6/18/1992	N	0.007	--	--	--	--	--	--	--	505	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/16/1992	N	0.003	7.1	652	826	--	--	36.5	U 0.5	U 10	U 0.005	--	--	--	--	--	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/18/1992	N	0.002	--	--	--	--	--	32	--	289	U 0.005	U 0.005	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/25/1992	N	0.003	--	668	--	--	--	25	--	317	U 0.005	--	--	--	--	--	--	--
	10/29/1992	N	0.001	7.94	636	786	--	--	22	U 0.5	315	U 0.005	--	--	--	--	--	--	--
	12/9/1992	N	--	--	--	--	--	--	26	--	257	U 0.005	--	--	--	--	--	--	--
	5/19/1993	N	0.027	--	--	--	--	--	31.7	--	381	U 0.005	--	--	--	--	--	--	--
	6/23/1993	N	0.033	--	--	--	--	--	24	--	342	U 0.005	--	--	--	--	--	--	--
	7/28/1993	N	0.027	7.23	578	742	U 4	--	15	JJ1,J4 0.06	316	U 0.005	--	--	--	0.003	0.005	0.082	U 0.008
	8/19/1993	N	0.027	--	--	--	--	--	J4 20	--	262	U 0.005	--	--	--	--	--	--	--
	9/21/1993	N	0.022	--	--	--	--	--	17	--	303	U 0.005	--	--	--	--	--	--	--
	10/19/1993	N	0.015	7.25	481	687	--	--	J4 12.2	U 0.1	300	U,J2 0.005	--	--	--	--	--	--	--
	12/8/1993	N	0.009	--	--	--	--	--	11	--	226	U 0.005	--	--	--	--	--	--	--
	3/8/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	4/20/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	5/18/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	6/14/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	8/1/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	10/3/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	12/12/1994	N	--	--	--	--	--	--	--	--	--	U 0.02	--	--	--	--	--	--	--
	3/1/1995	N	0.005	7.33	489	723	--	--	14.9	U 0.1	4S 324	U 0.02	--	--	--	--	--	--	--
	4/18/1995	N	0.005	7.25	663	899	--	--	21.1	U 0.1	415	U 0.005	--	--	--	--	--	--	--
	5/23/1995	N	0.035	7.1	717	975	--	--	18.6	U 0.1	490	U 0.02	--	--	--	--	--	--	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD-A	6/27/1995	N	0.022	6.97	525	732	--	--	11.6	--	312	U 0.02	--	--	--	--	--	--	--
	8/14/1995	N	0.008	6.89	487	J4S 690	--	--	11.5	U 0.1	312	U 0.005	--	--	--	--	--	--	--
	10/11/1995	N	0.004	7	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	11/30/1995	N	0.003	6.96	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	3/4/1996	N	0.002	7.26	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	4/15/1996	N	0.004	8.3	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/17/1996	N	0.006	6.92	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/6/1996	N	0.005	7.07	--	--	--	--	--	--	--	0.006	U 0.005	--	--	--	--	--	--
	9/30/1996	N	0.004	7.54	431.1	622	--	--	9.01	U 0.05	262	U 0.005	--	--	--	--	--	--	--
	12/4/1996	N	0.001	7.77	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	3/10/1997	N	0.003	7.67	158.2	559	--	--	7.53	--	235	U 0.005	--	--	--	U 0.003	--	0.025	U 0.01
	4/22/1997	N	0.017	6.77	634.4	909	--	--	7.91	--	494	0.006	U 0.005	--	--	U 0.003	0.039	0.063	0.03
	5/7/1997	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/27/1997	N	0.017	6.9	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/25/1997	N	0.017	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/29/1997	N	0.011	6.82	438.6	678	--	--	7.21	--	318	U 0.005	--	--	--	U 0.003	J4 0.005	0.034	0.02
	9/16/1997	N	0.005	7.6	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	12/8/1997	N	1.4	7.96	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	2/26/1998	N	--	8.6	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/31/1998	N	0.011	7.21	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/22/1998	N	0.005	7.66	427.3	633	--	--	5.91	--	294	U 0.005	--	--	--	U 0.003	0.001	0.021	--
	11/19/1998	N	0.003	8.04	427.9	606	--	--	5.77	--	276	U 0.005	--	--	--	U 0.003	U 0.001	0.015	--
	3/10/1999	N	0.001	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/8/1999	N	0.017	--	605.4	929	--	--	7.4	--	517	U 0.005	--	--	--	U 0.003	0.023	0.036	--
	9/27/1999	N	0.005	--	463.3	699	--	--	7.1	--	356	U 0.005	--	--	--	U 0.003	0.003	0.024	--
	11/10/1999	N	0.002	--	440.9	655	--	--	6.63	--	328	U 0.005	--	--	--	U 0.003	U 0.001	0.023	--
	3/20/2000	N	--	--	385.4	604	--	--	5.81	--	282	U 0.005	--	--	--	U 0.003	0.007	0.017	--
	6/28/2000	N	--	--	523.7	850	--	--	6.84	--	429	0.03	0.02	--	--	U 0.003	0.023	0.034	--
	9/20/2000	N	--	--	501.7	755	--	--	3.62	--	411	0.03	0.02	--	--	0.006	0.015	0.021	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD-A	6/16/2001	N	--	--	--	1448	U 10	--	6	--	815	1.55	0.31	--	--	0.009	0.033	0.027	--
	9/23/2001	N	--	--	--	1318	U 10	--	6.9	--	670	1.06	0.13	--	--	U 0.003	0.014	0.024	--
	11/28/2001	N	--	--	--	603	U 10	--	4.2	--	598	1.02	0.24	--	--	U 0.003	0.003	0.017	--
	2/28/2002	N	--	--	--	1170	U 10	--	1.76	--	603	0.93	0.36	--	--	U 0.003	0.004	0.027	--
	6/13/2002	N	--	7.4	--	1530	U 10	--	13	--	859	0.50	0.36	--	--	0.011	0.011	0.039	--
	9/23/2002	N	--	--	--	1240	U 10	--	11	--	616	0.63	0.14	--	U 0.2	U 0.003	0.002	0.022	--
	11/5/2002	N	0.013	7.9	--	1180	U 10	--	9.56	--	596	0.63	0.5	--	U 0.2	U 0.003	0.002	0.022	--
	3/12/2003	N	--	--	--	1050	U 10	--	8.4	--	d 520	d 0.61	0.13	--	U 0.2	U 0.003	0.013	0.017	--
	6/18/2003	N	0.012	7.1	--	1170	U 10	--	11.8	--	614	d 0.58	0.1	--	U 0.2	0.004	0.005	0.023	--
	9/18/2003	N	0.022	7.6	--	1120	U 10	--	10.5	U 0.05	576	d 0.61	0.18	--	U 0.2	U 0.003	0.002	0.013	--
	11/13/2003	N	--	7.3	--	1130	U 10	--	11	--	605	d 0.39	0.13	--	U 0.2	0.004	0.003	0.015	--
	3/16/2004	N	--	7.69	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.008	0.011	--
	6/10/2004	N	--	7.55	--	--	U 10	--	--	--	--	--	--	--	--	0.005	0.004	0.025	--
	9/28/2004	N	0.012	7.32	--	--	U 10	--	10.2	--	d 569	d 0.54	0.12	--	--	--	0.002	0.018	--
	12/14/2004	N	--	7.24	--	--	UJ 10	--	9	--	--	d 0.42	0.16	--	--	--	0.005	0.014	--
	3/29/2005	N	--	--	--	--	U 10	--	6.77	--	--	0.31	0.14	--	--	--	0.007	0.008	--
	6/28/2005	N	0.011	7.09	--	--	U 10	--	9.37	U 0.05	--	0.49	0.1	--	--	--	0.004	0.02	U 0.01
	9/28/2005	N	0.011	7.85	--	--	--	--	8.69	U 0.1	561	0.42	0.10	--	U 0.2	U 0.003	0.003	0.012	U 0.01
	6/29/2006	N	pond	7.05	--	--	U 10	--	5.5	--	--	0.07	0.05	--	--	--	0.005	0.017	--
	6/12/2008	N	--	6.9	--	--	U 10	--	2.75	--	--	0.08	0.07	--	--	--	0.012	M% 0.018	--
	6/15/2009	N	AV 0.065	6.86	--	--	U 5	--	F 2.2	--	--	0.08	0.07	0.08	--	--	0.0056	0.0097	--
	9/3/2009	N	AV 0.072	6.9	--	--	U 10	--	3.1	U 0.02	--	F% 0.06	M%F% 0.07	F 0.04	--	--	0.002	0.0093	--
	6/18/2010	N	TV 0.04	6.54	--	--	U 5	--	2.72	U 0.05	--	M% 0.16	0.05	U 0.06	--	--	0.011	0.015	--
	9/16/2010	N	TV 0.007	6.87	--	--	U 5	--	M%F 4.11	U 0.05	--	M% 0.13	0.05	U 0.2	--	--	0.002	0.009	--
	6/16/2011	N	TV 0.055	6.73	--	--	U 5	--	2.57	U 0.1	--	0.11	0.04	U 0.2	--	--	0.01	0.016	--
	9/14/2011	N	TV 0.02	7	--	--	U 5	120	3.47	U 0.1	470	0.17	0.03	U 0.2	--	--	0.002	0.008	--
	7/5/2012	N	TV 0.008	5.35	--	--	U 5	--	dM% 3.41	U 0.05	--	d 0.11	H 0.05	Ud 2	--	--	--	0.01	--
	9/17/2012	N	TV 0.004	7.34	--	--	U 5	--	d 3.7	U 0.05	--	0.21	0.08	U 0.2	--	--	--	0.008	--
	5/22/2013	N	AV 0.01	7.1	--	--	U 5	--	d 2.39	U 0.05	--	0.1	0.02	U 0.2	--	--	--	0.018	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD-A	10/2/2013	N	TV 0.005	7.44	--	--	U 5	--	2.77	U 0.05	--	0.15	0.06	U 0.2	--	--	--	0.016	--
	5/29/2014	N	TV 0.026	6.79	--	--	U 5	--	--	U 0.05	--	0.07	0.007	U 0.2	--	--	--	0.014	--
	9/26/2014	N	--	7.11	--	--	--	--	--	U 0.05	--	d 0.14	0.04	U 0.2	--	--	--	0.008	--
	6/1/2015	N	TV 0.033	--	--	--	U 5	--	--	Ud 1	--	0.06	0.01	U 0.2	--	--	--	0.016	--
	10/8/2015	N	TV 0.004	7.49	--	--	U 5	--	--	UM% 0.05	--	0.15	0.1	U 0.2	--	--	--	0.009	--
	5/26/2016	N	TV 0.022	7.27	--	--	U 5	--	--	U 0.05	--	F% 0.06	U 0.005	U 0.2	--	--	--	0.017	--
	9/21/2016	N	--	6.7	--	--	U 5	--	--	U 0.05	--	0.07	U 0.005	U 0.2	--	--	--	0.01	--
	6/8/2017	N	TV 0.031	7.5	--	--	U 5	--	--	U 0.05	--	0.15	U 0.004	U 0.2	--	--	--	0.012	--
	10/16/2017	N	TV 0.006	6.65	--	--	U 5	--	--	U 0.05	--	0.12	0.006	U 0.2	--	--	--	0.011	--
	6/14/2018	N	TV 0.025	7.38	--	--	U 5	--	--	U 0.05	--	0.09	0.03	U 0.2	--	--	--	0.011	--
	9/17/2018	N	TV 0.007	7.44	--	--	U 5	--	--	U 0.05	--	L 0.08	U 0.004	U 0.2	--	--	--	0.01	--
	6/6/2019	N	TV 0.03	6.84	--	--	U 5	--	--	U 0.05	--	0.06	U 0.004	U 0.2	--	--	--	0.012	--
	9/18/2019	N	TV 0.005	7.01	--	--	U 5	--	--	U 0.1	--	0.09	U 0.004	U 0.2	--	--	--	0.009	--
BCD-Barren	9/18/2003	N	--	--	--	2500	U 10	--	31.5	U 0.05	1220	2.59	0.46	--	U 0.2	0.017	0.025	0.096	--
	9/28/2005	N	0.007	9.73	--	--	--	--	15.3	U 0.1	618	1.18	0.2	--	U 0.2	0.018	0.012	0.039	U 0.01
	6/21/2010	N	TV 0.096	7	--	--	U 5	--	3.7	U 0.05	--	0.34	0.04	U 0.06	--	--	0.006	0.01	--
	9/17/2010	N	TV 0.012	7.3	--	--	U 10	--	7.49	U 0.05	--	0.30	0.08	U 0.2	--	--	0.009	0.022	--
	7/13/2011	N	TV 0.053	6.79	--	--	U 5	89	M% 2.72	U 0.1	170	M% 0.19	0.04	U 0.2	--	--	0.007	0.009	--
	9/14/2011	N	TV 0.01	7.22	--	--	U 5	110	6.38	U 0.1	200	0.33	0.06	U 0.2	--	--	0.021	0.023	--
	7/5/2012	N	TV 0.01	6.97	--	--	U 5	--	d 5.65	U 0.05	--	d 0.27	dM% 0.07	U 0.2	--	--	--	0.015	--
	9/17/2012	N	TV 0.004	7.2	--	--	U 5	--	d 7.8	U 0.05	--	d 1.4	d 0.32	U 0.2	--	--	--	0.025	--
	5/22/2013	N	TV 0.025	6.91	--	--	U 5	--	d 3.18	U 0.05	--	0.27	0.04	U 0.2	--	--	--	0.011	--
	5/29/2014	N	TV 0.044	6.7	--	--	U 5	--	--	U 0.05	--	0.19	0.01	U 0.2	--	--	--	0.007	--
	9/26/2014	N	TV 0.004	7.29	--	--	--	--	--	U 0.05	--	d 0.55	0.06	U 0.2	--	--	--	0.021	--
	6/1/2015	N	TV 0.044	7.21	--	--	U 5	--	--	Ud 1	--	0.15	0.05	U 0.2	--	--	--	0.009	--
	10/8/2015	N	TV 0.006	7.77	--	--	U 5	--	--	UM% 0.05	--	0.39	0.21	U 0.2	--	--	--	0.028	--
	5/26/2016	N	TV 0.046	7.19	--	--	U 5	--	--	U 0.05	--	F% 0.09	U 0.005	U 0.2	--	--	--	0.007	--
	6/17/2016	N	TV 0.039	--	--	--	U 5	--	--	U 0.05	--	0.12	U 0.005	U 0.2	--	--	--	0.007	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BCD-Barren	7/28/2016	N	TV 0.005	7.66	--	--	U 5	--	--	U 0.05	--	0.2	0.008	U 0.2	--	--	--	0.019	--
	9/19/2016	N	TV 0.002	7.77	--	--	U 5	--	--	U 0.05	--	d 0.37	0.02	U 0.2	--	--	--	0.02	--
	10/12/2016	N	TV 0.009	--	--	--	U 10	--	--	U 0.05	--	0.29	0.007	U 0.2	--	--	--	0.023	--
	6/8/2017	N	TV 0.061	7.6	--	--	U 5	--	--	U 0.05	--	0.11	U 0.004	U 0.2	--	--	--	0.006	--
	10/16/2017	N	TV 0.009	7.78	--	--	U 5	--	--	U 0.05	--	0.32	0.007	U 0.2	--	--	--	0.016	--
	6/14/2018	N	TV 0.042	7.01	--	--	U 5	--	--	U 0.05	--	0.1	U 0.01	U 0.2	--	--	--	0.007	--
	9/17/2018	N	TV 0.004	6.62	--	--	U 5	--	--	U 0.05	--	L 0.25	0.01	U 0.2	--	--	--	0.019	--
	6/6/2019	N	TV 0.036	6.78	--	--	U 5	--	--	U 0.05	--	0.11	U 0.004	U 0.2	--	--	--	0.008	--
	9/18/2019	N	TV 0.004	6.48	--	--	U 5	--	--	U 0.1	--	0.3	U 0.004	U 0.2	--	--	--	0.018	--
BCD-East	6/6/2019	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BS-D	10/11/1995	N	1	7.98	154	151	U 10	--	U 0.01	U 0.05	7	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	0.02
	12/1/1995	N	--	--	130	J4 124	--	--	U 0.01	--	8	U 0.005	--	--	--	U 0.003	--	U 0.001	UJ1 0.02
	4/16/1996	N	--	7.87	103	139	--	--	J4 0.041	--	8.8	--	--	--	--	U 0.003	--	U 0.001	0.018
	5/31/1996	N	--	7.67	121	129	--	--	UJ1 0.057	--	8.2	U 0.005	--	--	--	U 0.003	U 0.001	0.0016	UJ1 0.02
	6/12/1996	N	1	7.84	385.5	127	--	--	0.02	--	6.2	0.008	U 0.005	--	--	U 0.003	J,UJ4 0.001	U 0.001	0.02
	8/7/1996	N	4.1	8.63	160.4	143	--	--	U 0.01	--	6.3	U 0.005	--	--	--	U 0.003	0.003	U 0.001	UJ1 0.02
	9/23/1996	N	--	7.7	162.5	150	U 10	--	0.02	U 0.05	6	U 0.005	--	--	--	U 0.003	J4 0.001	U 0.001	0.03
	12/6/1996	N	--	8.6	149.8	167	--	--	J4 0.08	--	J4 7.2	U 0.005	--	--	--	U 0.003	--	U 0.001	0.02
	3/13/1997	N	2	0	132.3	146	--	--	0.04	--	9.2	U 0.005	--	--	--	U 0.003	--	U 0.001	U 0.01
	6/25/1997	N	15.47	8.42	112.9	J4 109	--	--	U 0.01	--	7.8	U 0.005	--	--	--	U 0.003	J4 0.001	U 0.001	U 0.01
	8/12/1997	N	5	8.78	133.8	158	--	--	U 0.01	--	7.8	U 0.005	--	--	--	U 0.003	UJ1 0.001	U 0.001	0.01
	9/17/1997	N	1.875	8.62	148.3	133	U 10	--	0.02	U 0.05	7.4	U 0.005	--	--	--	U 0.003	UJ1 0.001	U 0.001	UJ1 0.01
	12/11/1997	N	--	8.43	135.7	167	--	--	J4 0.1	--	9.9	U 0.005	--	--	--	--	--	--	--
	6/3/1998	N	20	0	108.7	125	--	--	U 0.01	--	8.3	U 0.005	--	--	--	U 0.003	0.007	U 0.001	--
	9/22/1998	N	4.2	8.38	143	157	--	--	0.02	--	8	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	11/20/1998	N	4	8.25	145.8	156	--	--	0.05	--	9	U 0.005	--	--	--	U 0.003	U 0.001	0.002	--
	3/10/1999	N	--	--	136.3	138	--	--	0.04	--	14	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BS-D	6/4/1999	N	38	--	101	122	--	--	U 0.01	--	8.5	U 0.005	--	--	--	U 0.003	0.028	U 0.001	--
	9/27/1999	N	3	--	141.3	152	--	--	0.03	--	6.1	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	11/10/1999	N	3	--	139.1	131	--	--	0.03	--	6.9	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	6/24/2000	N	--	--	127.4	150	--	--	0.01	--	6.7	U 0.005	--	--	--	U 0.003	0.012	U 0.001	--
	9/21/2000	N	--	--	138.7	146	--	--	0.01	--	6.3	U 0.005	--	--	--	U 0.003	0.012	U 0.001	--
	12/27/2000	N	--	--	135.9	124	--	--	0.09	--	8.9	U 0.005	--	--	--	U 0.003	0.003	0.005	--
	3/25/2001	N	--	--	118.1	144	--	--	0.04	--	13.1	U 0.005	--	--	--	U 0.003	0.014	U 0.001	--
	6/16/2001	N	--	--	--	144	U 10	--	0.02	--	7.3	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	7/31/2001	N	--	--	--	130	U 10	--	0.05	--	6.1	0.03	U 0.005	--	--	U 0.003	0.004	U 0.001	--
	8/29/2001	N	--	--	--	151	U 10	--	0.05	--	6	U 0.005	--	--	--	U 0.003	0.01	U 0.001	--
	9/23/2001	N	--	--	--	181	U 10	--	0.05	--	5.9	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	10/31/2001	N	--	--	--	128	U 10	--	0.08	--	9.1	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	11/28/2001	N	--	--	--	182	U 10	--	0.09	--	13.2	U 0.005	--	--	--	U 0.003	0.006	U 0.001	--
	11/29/2001	N	--	--	--	96	58	--	0.27	--	6.3	U 0.005	--	--	--	U 0.003	0.008	0.001	--
	12/14/2001	N	--	--	--	192	U 10	--	0.08	--	26.8	0.02	0.005	--	--	U 0.003	0.006	0.002	--
	1/8/2002	N	--	--	--	164	U 10	--	0.06	--	12	0.007	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--
	1/9/2002	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	2/13/2002	N	--	--	--	193	U 10	--	0.08	--	27	0.02	0.01	--	--	U 0.003	U 0.001	0.002	--
	3/25/2002	N	--	--	--	164	U 10	--	U 0.05	--	21	0.02	U 0.005	--	--	U 0.003	U 0.001	0.001	--
	4/29/2002	N	--	--	--	157	U 10	--	U 0.05	--	34	0.02	0.008	--	--	U 0.003	0.002	0.001	--
	5/28/2002	N	--	--	--	145	U 10	--	U 0.05	--	26	0.03	U 0.005	--	--	U 0.003	0.004	0.001	--
	6/12/2002	N	42.4	8	--	151	U 10	--	U 0.05	--	15	0.01	0.009	--	--	U 0.003	0.001	U 0.001	--
	7/11/2002	N	--	--	--	166	U 10	--	U 0.05	--	13	0.01	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--
	8/26/2002	N	--	--	--	158	U 10	--	U 0.05	U 0.1	8	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	9/20/2002	N	4.2	--	--	159	U 10	--	U 0.05	U 0.1	7	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	10/24/2002	N	--	--	--	155	U 10	--	U 0.05	U 0.1	7	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	11/13/2002	N	3.1	8	--	162	U 10	--	U 0.05	U 0.1	8	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	12/10/2002	N	4.9	7.82	149	185	U 10	--	0.33	UH 0.1	9	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	U 0.01
	1/15/2003	N	4.1	8.3	149	169	U 10	--	U 0.1	U 0.05	8	U 0.005	--	--	U 0.2	--	U 0.001	U 0.001	U 0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BS-D	2/12/2003	N	--	8.68	149	161	U 1	--	U 0.1	U 0.05	19	0.007	U 0.005	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	3/12/2003	N	--	8.51	174	236	U 1	--	U 0.1	U 0.05	51	0.02	0.01	--	U 0.2	--	U 0.001	0.002	U 0.01
	3/25/2003	N	--	--	--	--	--	--	--	--	--	0.08	0.02	--	--	--	--	--	--
	4/23/2003	N	30	8.3	95	117	5	--	U 0.1	U 0.05	22	0.02	0.008	--	U 0.2	--	0.003	U 0.001	U 0.01
	5/13/2003	N	14	8.4	108	136	U 10	--	0.24	U 0.05	29	0.03	0.01	--	U 0.2	--	0.001	0.001	U 0.01
	5/21/2003	N	--	--	--	--	--	--	--	--	--	0.04	0.02	--	--	--	--	--	--
	5/29/2003	N	--	--	--	--	--	--	--	--	--	0.02	U 0.005	--	--	--	--	--	--
	6/2/2003	D	--	--	--	--	--	--	--	--	--	0.03	--	--	--	--	--	--	--
	6/2/2003	N	--	--	--	--	--	--	--	--	--	0.02	0.01	--	--	--	--	--	--
	6/4/2003	N	--	--	--	--	--	--	--	--	--	0.01	--	--	--	--	--	--	--
	6/12/2003	N	--	--	--	--	--	--	--	--	--	0.03	0.01	--	--	--	--	--	--
	6/18/2003	N	22	7.6	117	158	1	--	U 0.1	U 0.05	20	0.02	0.008	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	7/11/2003	N	--	--	--	--	--	--	--	--	--	0.02	U 0.005	--	--	--	--	--	--
	7/18/2003	N	--	--	--	--	--	--	--	--	--	0.01	U 0.005	--	--	--	--	--	--
	7/25/2003	N	10.5	8.6	135	148	U 10	--	U 0.1	U 0.05	13	0.01	U 0.005	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	8/1/2003	N	--	--	--	--	--	--	--	--	--	0.009	U 0.005	--	--	--	--	--	--
	8/7/2003	N	5.5	8.5	145	164	U 4	--	U 0.1	U 0.05	10	U 0.005	--	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	8/22/2003	N	--	--	--	--	--	--	--	--	--	0.009	U 0.005	--	--	--	--	--	--
	9/23/2003	N	5.2	8.6	152	186	U 10	--	U 0.01	U 0.05	18	0.02	0.01	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	10/23/2003	N	3.5	8.4	165	168	U 10	--	U 0.1	U 0.05	13	0.02	U 0.005	--	U 0.2	--	0.001	U 0.001	U 0.01
	11/12/2003	N	3.6	8.5	169	202	U 10	--	0.1	U 0.05	23	0.02	0.008	--	U 0.2	--	0.052	0.002	0.04
	12/10/2003	N	--	8.79	158	172	U 10	--	U 0.1	U 0.05	14	0.02	U 0.005	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	1/14/2004	N	--	8.66	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	2/18/2004	N	--	8.2	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	3/16/2004	N	3.1	8.5	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	4/22/2004	N	4.4	8.35	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.002	U 0.001	--
	5/20/2004	N	11.2	8.53	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.001	U 0.001	--
	6/11/2004	N	15.3	8.5	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.001	0.002	--
	7/15/2004	N	5.25	8.69	--	--	U 10	--	--	--	19	--	--	--	--	U 0.003	0.001	U 0.001	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BS-D	7/19/2004	N	--	--	--	--	--	--	UJ 0.05	U 0.1	--	UJ 0.005	--	--	--	--	--	--	--
	8/19/2004	N	5.25	8.68	--	--	U 10	--	UJ 0.1	--	--	0.01	UJ 0.005	--	--	--	0.002	U 0.001	--
	9/28/2004	N	4.4	8.61	--	--	U 10	--	UJ 0.05	--	13	0.008	UJ 0.005	--	--	--	U 0.001	U 0.001	--
	10/29/2004	N	3.9	8.76	--	--	U 10	--	U 0.05	--	--	0.01	U 0.005	--	--	--	U 0.001	U 0.001	--
	11/30/2004	N	3.6	8.59	--	--	U 10	--	U 0.1	U 0.1	20	0.02	0.006	--	U 0.2	U 0.003	U 0.001	0.001	--
	12/14/2004	N	3.86	7.67	--	--	UJ 10	--	0.1	--	--	0.02	UJ 0.005	--	--	--	U 0.001	0.001	--
	3/29/2005	N	3.9	8.76	--	--	U 10	--	U 0.05	--	--	0.006	U 0.005	--	--	--	0.001	0.001	--
	6/29/2005	N	11.7	8.47	--	--	U 10	--	U 0.05	U 0.05	--	0.02	0.007	--	--	--	U 0.001	U 0.001	U 0.01
	7/21/2005	N	4.38	8.36	--	--	U 10	--	U 0.05	--	--	0.01	0.006	--	--	--	U 0.001	U 0.001	U 0.01
	8/16/2005	N	3.5	8.41	--	--	U 10	--	U 0.05	U 0.1	17	0.01	0.006	--	--	U 0.003	U 0.001	U 0.001	U 0.01
	9/28/2005	N	7.8	8.49	--	--	--	--	U 0.05	U 0.1	19	0.01	0.007	--	U 0.2	U 0.003	U 0.001	U 0.001	U 0.01
	12/22/2005	D	--	--	--	--	U 10	--	0.1	--	--	0.01	U 0.005	--	--	--	U 0.001	U 0.001	--
	12/22/2005	N	2.85	7.34	--	--	U 10	--	0.12	--	--	0.01	U 0.005	--	--	--	U 0.001	0.001	--
	3/29/2006	N	2.8	7.88	--	--	U 10	--	U 0.1	--	--	0.008	U 0.005	--	--	--	U 0.001	0.001	--
	6/28/2006	N	11.25	8.27	--	--	U 10	--	U 0.05	--	--	U 0.005	--	--	--	--	U 0.001	U 0.001	--
	10/4/2006	N	3.84	8.02	--	--	U 10	--	U 0.1	--	--	U 0.005	--	--	--	--	U 0.001	U 0.001	--
	4/8/2008	N	AV 1.97	7.11	--	--	U 10	--	U 0.05	--	--	U 0.005	--	--	--	--	U 0.001	U 0.001	--
	6/13/2008	D	AV 34.94	8	--	--	U 10	--	U 0.05	--	--	0.009	U 0.005	--	--	--	0.001	U 0.001	--
	6/13/2008	N	AV 34.94	8	--	--	U 10	--	U 0.05	--	--	0.008	U 0.005	--	--	--	0.001	U 0.001	--
	9/12/2008	N	AV 8.59	8.17	--	--	U 10	--	U 0.05	--	--	U 0.005	U 0.005	--	--	--	U 0.001	U 0.001	--
	6/15/2009	N	AV 39.79	8.06	--	--	U 5	--	F 0.02	--	--	J 0.006	J 0.005	J 0.004	--	--	0.0008	J 0.0037	--
	9/3/2009	N	AV 18.26	8.55	--	--	U 10	--	0.03	U 0.02	--	UF% 0.002	F% 0.006	FU 0.004	--	--	0.0007	U 0.0005	--
	6/18/2010	N	AV 83	7.8	--	--	11	--	U 0.05	U 0.05	--	U 0.005	U 0.005	U 0.06	--	--	0.002	0.001	--
	9/16/2010	N	AV 6.25	8.24	--	--	U 5	--	UF 0.05	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	U 0.001	U 0.001	--
	6/16/2011	N	AV 67.35	7.68	--	--	U 5	--	0.05	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.002	U 0.001	--
	9/12/2011	N	AV 8.56	8.25	--	--	U 5	150	U 0.05	U 0.1	6	U 0.005	U 0.005	U 0.2	--	--	U 0.001	U 0.001	--
	7/2/2012	N	AV 11.22	8.21	--	--	U 5	--	--	UM% 0.05	--	UH 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	9/13/2012	N	AV 2.7	8.57	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	5/20/2013	N	AV 13.89	7.83	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
BS-D	9/30/2013	N	AV 12.74	7.53	--	--	H 39	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	5/27/2014	N	AV 67.44	8.01	--	--	11	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	9/24/2014	N	AV 6.37	8.29	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
MINN-DN	6/15/1994	N	1.25	8.31	156	167	3	--	U 0.05	U 0.1	2	U 0.02	--	--	--	U 0.005	U 0.01	U 0.005	UJ1 0.02
	12/16/1994	N	--	7.2	244	286	2	--	0.28	--	50	U 0.005	--	--	--	U 0.005	U 0.01	0.013	0.01
	3/14/1995	N	--	8.23	231	274	U 1	--	0.67	U 0.1	4S 68	U 0.02	--	--	--	U 0.005	U 0.01	0.011	0.02
	4/21/1995	N	--	8.4	207	182	J4 5	--	0.1	U 0.1	17	U 0.005	--	--	--	U 0.005	U 0.01	J,UJ4 0.005	J4 0.01
	5/16/1995	N	15	8.51	181	188	--	--	0.14	U 0.1	16	U 0.02	--	--	--	U 0.005	U 0.01	U 0.005	0.05
	6/22/1995	N	25	8.07	149	150	--	--	U 0.01	--	6	U 0.02	--	--	--	0.018	--	0.001	UJ1 0.02
	8/16/1995	N	0.5	8.34	180	J4S 198	U 10	--	U 0.05	U 0.1	5	U 0.005	--	--	--	U 0.005	U 0.01	U 0.005	J4S 0.02
	10/11/1995	N	2	8.05	185	176	U 10	--	U 0.01	U 0.05	6	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	0.02
	6/17/1996	N	30	6.45	138.9	146	--	--	J4 0.03	--	J4 3.8	U 0.005	--	--	--	U 0.003	0.003	U 0.001	0.02
	8/6/1996	N	3.3	8.62	195.5	170	--	--	0.04	--	4.4	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	0.03
	9/12/1996	N	5	8.28	173.5	177	U 10	--	U 0.01	U 0.05	6.7	U 0.005	--	--	--	U 0.003	J,UJ4 0.001	U 0.001	0.02
	3/13/1997	N	1.35	8.63	168.9	182	--	--	0.08	--	7.5	U 0.005	--	--	--	U 0.003	--	U 0.001	U 0.01
	6/24/1997	N	6	8.29	117.5	148	--	--	U 0.01	--	5.6	U 0.005	--	--	--	U 0.003	0.009	U 0.001	0.01
	7/31/1997	N	2.4	8.39	152.1	178	--	--	U 0.01	--	5.7	U 0.005	--	--	--	U 0.003	0.001	J4 0.002	0.02
	9/17/1997	N	1.2	8.58	169.2	147	U 10	--	0.02	U 0.05	5	U 0.005	--	--	--	U 0.003	UJ1 0.002	U 0.001	UJ1 0.02
	5/31/1998	N	5.5	8.7	106.1	122	--	--	U 0.01	--	3.5	U 0.005	--	--	--	U 0.003	0.003	U 0.001	--
	9/22/1998	N	1	8.41	179.4	179	--	--	0.07	--	3.7	U 0.005	--	--	--	U 0.003	0.002	0.001	--
	6/10/1999	N	8.4	8.6	58.6	77	--	--	U 0.01	--	1.9	U 0.005	--	--	--	U 0.003	0.018	U 0.001	--
	6/22/1999	N	--	--	58.6	77	--	--	U 0.01	--	1.9	U 0.005	--	--	--	U 0.003	0.018	U 0.001	--
	8/21/1999	N	1.2	8.4	184.2	170	--	--	0.03	--	3.2	0.006	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--
	8/23/1999	N	--	--	184.3	170	--	--	0.03	--	3.2	0.006	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--
	11/11/1999	N	0.6	--	179.7	162	--	--	0.08	--	4.1	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	6/26/2000	N	--	--	138.7	156	--	--	0.03	--	3.4	U 0.005	--	--	--	U 0.003	0.003	U 0.001	--
	9/21/2000	N	--	--	178.5	175	--	--	0.04	--	4.8	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	12/28/2000	N	--	--	180.2	186	--	--	0.08	--	4.6	U 0.005	--	--	--	U 0.003	0.005	U 0.001	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
MINN-DN	6/16/2001	N	--	--	--	126	U 10	--	0.03	--	3.2	0.02	U 0.005	--	--	U 0.003	0.032	U 0.001	--
	7/17/2001	N	--	--	--	168	--	--	U 0.01	U 0.05	4.8	U 0.005	--	--	--	U 0.003	0.001	U 0.001	--
	7/31/2001	N	--	--	--	148	--	--	0.02	--	4.4	U 0.005	--	--	--	--	--	--	--
	8/29/2001	N	--	--	--	170	U 10	--	0.05	--	4	U 0.005	--	--	--	U 0.003	0.001	U 0.001	--
	9/23/2001	N	--	--	--	186	U 10	--	0.03	--	3.7	U 0.005	--	--	--	U 0.003	0.003	U 0.001	--
	10/31/2001	N	--	--	--	151	U 10	--	0.1	--	3.9	U 0.005	--	--	--	U 0.003	0.001	U 0.001	--
	11/29/2001	N	--	--	--	184	U 10	--	0.08	--	3.7	U 0.005	--	--	--	U 0.003	0.004	U 0.001	--
	1/24/2002	N	--	--	--	162	U 10	--	0.07	--	5	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	0.03
	2/18/2002	N	--	--	--	222	U 10	--	0.21	--	100	0.02	U 0.005	--	--	U 0.005	U 0.01	U 0.005	--
	3/26/2002	N	--	--	--	219	U 10	--	0.2	--	92	0.02	0.007	--	--	U 0.003	U 0.001	0.005	--
	4/25/2002	N	--	--	--	160	U 10	--	U 0.05	--	6	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	5/27/2002	N	--	--	--	143	U 10	--	U 0.05	--	2	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	6/13/2002	N	7.9	8.2	--	125	U 10	--	U 0.1	--	3	U 0.005	--	--	--	U 0.003	U 0.001	U 0.002	--
	7/11/2002	N	--	--	--	174	U 10	--	U 0.05	--	5	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	8/27/2002	N	--	--	--	298	U 10	--	0.21	U 0.1	126	0.03	0.005	--	--	U 0.003	U 0.001	0.004	--
	9/20/2002	N	2	--	--	186	U 10	--	0.06	U 0.1	3	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	10/24/2002	N	--	--	--	177	U 10	--	0.07	U 0.1	3	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	11/7/2002	N	2.1	8.2	--	190	U 10	--	0.07	--	6	U 0.005	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	12/10/2002	N	--	8.02	153	200	U 10	--	0.26	UH 0.1	12	0.005	U 0.005	--	U 0.2	U 0.003	U 0.001	0.001	U 0.01
	1/14/2003	N	2.8	8.3	174	200	UH 1	--	U 0.1	U 0.05	7	U 0.005	--	--	U 0.02	--	U 0.001	U 0.001	U 0.01
	2/12/2003	N	--	8.63	170	179	U 1	--	U 0.1	U 0.05	14	U 0.005	--	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	3/11/2003	N	--	8.68	163	194	U 1	--	U 0.1	U 0.05	15	U 0.005	--	--	U 0.2	--	U 0.001	0.001	U 0.01
	4/24/2003	N	8	8.5	204	186	U 10	--	0.1	U 0.05	31	0.02	0.01	--	U 0.2	U 0.003	0.002	0.001	U 0.01
	5/21/2003	N	6	8.5	167	228	U 10	--	U 0.1	U 0.05	28	0.03	0.02	--	U 0.2	--	0.001	0.002	U 0.01
	6/30/2003	N	9.8	8.2	155	162	2	--	0.03	U 0.05	19	0.02	U 0.005	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	7/25/2003	N	5.25	8.7	159	197	U 10	--	U 0.1	U 0.05	14	0.02	U 0.005	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	8/7/2003	N	4.4	8.4	169	189	U 4	--	U 0.1	U 0.05	9	U 0.005	--	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	9/18/2003	N	2.5	8.6	223	268	U 10	--	U 0.1	U 0.05	46	0.08	0.03	--	U 0.2	--	U 0.001	0.002	U 0.01
	10/22/2003	N	2.6	8.6	195	212	U 10	--	U 0.1	U 0.05	21	0.03	0.007	--	U 0.2	--	U 0.001	0.001	U 0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
MINN-DN	11/12/2003	N	2.8	8.7	235	263	U 10	--	0.3	U 0.05	44	0.06	0.02	--	U 0.2	--	U 0.001	0.002	U 0.01
	12/9/2003	N	--	8.68	189	222	U 10	--	0.2	U 0.05	20	0.04	0.006	--	U 0.2	--	U 0.001	U 0.001	U 0.01
	1/14/2004	N	1.75	8.68	--	--	UH 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	2/19/2004	N	1.5	8.44	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	3/11/2004	N	1.6	8.62	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	4/22/2004	N	2.2	8.41	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	0.004	--
	5/20/2004	N	6.9	8.48	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.001	U 0.001	--
	6/11/2004	N	7	8.52	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.001	U 0.001	--
	7/15/2004	N	3.5	8.57	--	--	U 10	--	--	--	17	--	--	--	--	U 0.003	0.001	U 0.001	--
	7/19/2004	N	--	--	--	--	--	--	U 0.05	U 0.1	--	0.01	UJ 0.005	--	--	--	--	--	--
	8/19/2004	N	3.5	8.68	--	--	U 10	--	UJ 0.1	--	--	0.01	UJ 0.005	--	--	--	0.002	U 0.001	--
	9/28/2004	D	--	--	--	--	U 10	--	0.06	--	13	0.02	0.008	--	--	--	U 0.001	U 0.001	--
	9/28/2004	N	3.4	8.73	--	--	U 10	--	0.05	--	13	0.01	0.008	--	--	--	U 0.001	U 0.001	--
	10/29/2004	N	2.7	8.61	--	--	U 10	--	0.06	--	--	0.01	U 0.005	--	--	--	0.002	U 0.001	--
	11/30/2004	N	2.3	8.59	--	--	U 10	--	0.24	U 0.1	42	0.05	0.01	--	U 0.2	U 0.003	U 0.001	0.001	--
	12/14/2004	N	2.5	8.49	--	--	UJ 10	--	0.2	--	--	0.04	0.009	--	--	--	0.001	0.002	--
	1/28/2005	N	2	8.66	--	--	U 10	--	0.1	--	--	0.02	U 0.005	--	--	--	U 0.001	U 0.001	--
	3/30/2005	N	2	8.58	--	--	U 10	--	0.06	--	--	0.01	U 0.005	--	--	--	0.002	0.001	--
	6/30/2005	N	9.8	8.26	--	--	U 10	--	0.06	U 0.05	--	0.03	0.01	--	--	--	0.002	U 0.001	U 0.01
	7/21/2005	N	2.2	8.47	--	--	U 10	--	0.09	--	--	0.04	0.02	--	--	--	U 0.001	U 0.001	U 0.01
	8/16/2005	N	3.38	8.52	--	--	U 10	--	U 0.05	U 0.1	21	0.03	0.01	--	--	U 0.003	0.001	U 0.001	U 0.01
	9/28/2005	N	3.85	8.48	--	--	--	--	U 0.05	U 0.1	13	0.01	0.007	--	U 0.2	U 0.003	U 0.001	U 0.001	U 0.01
	6/28/2006	N	4.69	8.14	--	--	U 10	--	U 0.05	--	--	0.008	U 0.005	--	--	--	U 0.001	0.001	--
	10/4/2006	N	1.14	8.07	--	--	U 10	--	U 0.1	--	--	U 0.005	--	--	--	--	U 0.001	U 0.001	--
	6/12/2008	N	AV 16.4	8.05	--	--	U 10	--	0.07	--	--	0.01	0.01	--	--	--	U 0.001	U 0.001	--
	9/12/2008	N	AV 2.07	8.27	--	--	U 10	--	U 0.05	--	--	U 0.005	U 0.005	--	--	--	U 0.001	U 0.001	--
	6/16/2009	N	AV 20.05	8.12	--	--	U 5	--	F 0.02	--	--	M%J 0.009	J 0.006	0.01	--	--	0.0008	J 0.0004	--
	9/3/2009	N	AV 4.65	8.57	--	--	U 10	--	0.07	U 0.02	--	UF% 0.002	M%F% 0.02	FU 0.004	--	--	U 0.0005	U 0.0005	--
	6/16/2010	N	AV 37.54	7.83	--	--	31	--	U 0.05	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.003	U 0.001	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
MINN-DN	9/15/2010	N	AV 2.53	8.08	--	--	U 5	--	M%F 0.05	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	U 0.001	U 0.001	--
	6/16/2011	N	AV 35.61	8.04	--	--	8	--	U 0.05	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.001	U 0.001	--
	9/12/2011	N	AV 2.9	8.29	--	--	U 5	190	U 0.05	U 0.1	5	U 0.005	U 0.005	U 0.2	--	--	U 0.001	U 0.001	--
	7/2/2012	N	AV 5.01	8.85	--	--	U 5	--	--	UM% 0.05	--	UH 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	9/13/2012	N	AV 1.32	8.63	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	5/20/2013	N	AV 6.94	8.26	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.002	--	U 0.001	--
	5/27/2014	N	AV 23.13	8.04	--	--	11	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	9/24/2014	N	AV 1.485	8.27	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
STA-2	9/17/1987	D	1.37	--	58	99	2	--	0.94	0.2	13	--	U 0.005	--	--	0.005	U 0.01	U 0.005	0.02
	9/17/1987	N	1.37	--	58	104	4	--	0.37	U 0.1	13	--	U 0.005	--	--	0.006	U 0.01	U 0.005	U 0.01
	10/21/1987	D	1.286	--	64	79	U 1	--	U 0.05	U 0.1	15	--	U 0.005	--	--	0.006	U 0.01	U 0.005	U 0.01
	10/21/1987	N	1.286	--	64	79	U 1	--	U 0.05	U 0.1	15	--	U 0.005	--	--	0.006	U 0.01	U 0.005	U 0.01
	11/9/1988	N	--	--	68	104	3	--	U 0.05	U 0.1	16	U 0.01	--	--	--	0.005	U 0.01	U 0.005	0.02
	1/18/1989	N	--	7.62	--	--	--	--	--	--	17	U 0.01	--	--	--	--	--	--	--
	3/2/1989	N	--	--	--	--	--	--	--	--	15	U 0.01	--	--	--	--	--	--	--
	5/15/1989	N	6.9	7.23	47	88	--	--	--	U 0.5	14	U 0.005	U 0.005	U 0.005	--	0.006	U 0.01	U 0.003	0.26
	6/28/1989	N	4.21	6.26	--	--	--	--	--	--	10	U 0.005	--	--	--	--	--	--	--
	7/25/1989	N	1.65	6.95	52	116	--	--	--	U 1	17	U 0.005	--	--	--	0.005	U 0.01	U 0.002	0.012
	8/23/1989	N	--	7.32	--	--	--	--	--	--	21	U 0.005	--	--	--	--	--	--	--
	9/27/1989	N	0.95	6.3	--	--	--	--	--	--	23	U 0.005	--	--	--	--	--	--	--
	11/16/1989	N	1.24	7.07	62	59	--	--	--	U 1	23	U 0.005	--	--	--	0.005	0.01	U 0.001	0.01
	12/6/1989	N	0.123	--	--	--	--	--	--	--	21	U 0.005	--	--	--	--	--	--	--
	1/17/1990	N	1.12	--	--	--	--	--	--	--	22	U 0.005	--	--	--	--	--	--	--
	2/28/1990	N	1.24	--	--	--	--	--	--	--	24	U 0.005	--	--	--	--	--	--	--
	4/20/1990	N	3.72	7.04	51	95	U 4	--	--	U 0.5	20	U 0.005	--	--	--	0.006	U 0.03	U 0.002	U 0.02
	5/24/1990	N	5.66	--	--	--	--	--	--	--	10.6	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	7.52	--	--	--	--	--	--	--	15	U 0.005	--	--	--	--	--	--	--
	7/20/1990	N	1.45	7.95	54	119	8	--	--	U 0.5	14	U 0.005	--	--	--	0.004	0.01	U 0.002	U 0.02

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	8/21/1990	N	1.93	--	--	--	--	--	--	--	20	U 0.005	--	--	--	--	--	--	--
	9/26/1990	N	0.77	--	--	--	--	--	--	--	17	0.006	--	--	--	--	--	--	--
	11/15/1990	N	0.95	7.52	56	86	U 4	--	--	U 0.5	21	U 0.005	--	--	--	0.004	U 0.02	U 0.001	0.01
	12/13/1990	N	2.6	--	--	--	--	--	--	--	23	U 0.005	--	--	--	--	--	--	--
	1/15/1991	N	1	--	--	--	--	--	--	--	25	U 0.005	--	--	--	--	--	--	--
	2/27/1991	N	--	--	--	--	--	--	--	--	21	U 0.005	--	--	--	--	--	--	--
	4/15/1991	N	--	8.02	64	100	U 4	--	--	U 0.5	23	0.006	--	--	--	0.005	U 0.002	0.003	0.022
	5/30/1991	N	5.5	--	--	--	--	--	--	--	33	U 0.005	--	--	--	--	--	--	--
	6/26/1991	N	10	--	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--
	7/25/1991	N	2.2	8.42	65	115	U 4	--	--	U 0.1	22	U 0.005	--	--	--	0.009	U 0.002	U 0.002	0.003
	8/28/1991	N	1.71	--	--	--	--	--	--	--	23	U 0.005	--	--	--	--	--	--	--
	9/18/1991	N	1.57	--	--	--	--	--	--	--	30	U 0.005	--	--	--	--	--	--	--
	11/2/1991	N	1.1	7.69	63	A 146	U 4	--	U 1	U 0.1	26	U 0.005	--	--	--	0.004	U 0.006	0.002	0.039
	12/18/1991	N	1.24	--	--	--	--	--	--	--	28	U 0.005	--	--	--	--	--	--	--
	1/22/1992	N	--	--	--	--	--	--	--	--	25	U 0.005	--	--	--	--	--	--	--
	1/22/1992	N	--	--	--	--	--	--	--	--	26	U 0.005	--	--	--	--	--	--	--
	2/26/1992	N	0.93	--	--	--	--	--	--	--	A 12	U 0.005	--	--	--	--	--	--	--
	3/19/1992	N	1.57	8.33	95	101	U 10	--	U 0.5	0.1	38	U 0.005	--	--	--	U 0.03	0.006	0.006	0.004
	5/13/1992	N	3.17	--	--	--	--	--	--	--	32	U 0.005	--	--	--	--	--	--	--
	6/17/1992	N	7	--	--	--	--	--	--	--	29	U 0.005	--	--	--	--	--	--	--
	7/17/1992	N	2.33	8.26	103	A 211	U 10	--	U 1	U 0.5	49	U 0.005	--	--	--	0.005	0.011	0.007	0.044
	8/19/1992	N	0.001	--	--	--	--	--	U 1	--	34	U 0.005	--	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--
	9/24/1992	N	0.66	--	102	--	--	--	U 1	--	36	U 0.005	--	--	--	--	--	--	--
	10/27/1992	N	0.77	8.01	96	160	U 10	--	U 1	U 0.5	29	U 0.005	--	--	--	0.007	0.005	0.003	0.01
	12/10/1992	N	1.11	--	--	--	--	--	U 1	--	31	U 0.005	--	--	--	--	--	--	--
	1/21/1993	N	1.24	--	--	--	--	--	U 1	--	32	U 0.005	--	--	--	--	--	--	--
	2/22/1993	N	2.01	--	--	--	--	--	0.28	--	32	U 0.005	--	--	--	--	--	--	--
	4/8/1993	N	1.44	7.97	93	170	U 10	--	0.14	0.3	43	U 0.005	--	--	--	0.008	0.001	0.006	0.019

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	5/19/1993	N	10	--	--	--	--	--	0.46	--	26	U 0.005	--	--	--	--	--	--	--
	6/24/1993	N	6.8	--	--	--	--	--	0.71	--	20	U 0.005	--	--	--	--	--	--	--
	7/29/1993	N	9.93	6.95	64.4	87	U 4	--	0.24	UJ1,J4 0.07	23	U 0.005	--	--	--	0.01	U 0.002	0.005	U 0.008
	8/25/1993	N	4.6	--	--	--	--	--	J4 0.24	--	A 7	U 0.005	--	--	--	--	--	--	--
	9/23/1993	N	3.2	--	--	--	--	--	0.25	--	30	U 0.005	--	--	--	--	--	--	--
	10/20/1993	N	2.73	7.12	75	124	U 1	--	J4 0.16	U 0.1	32	U,J2 0.005	--	--	--	0.006	U 0.01	U 0.005	U 0.01
	12/10/1993	N	1.64	--	--	--	--	--	0.19	--	28	U 0.005	--	--	--	--	--	--	--
	3/8/1994	N	--	7.31	81	116	8	--	0.3	U 0.1	J4 30	U 0.02	--	--	--	0.005	U 0.01	U 0.005	0.01
	4/20/1994	N	7.88	8.12	76	127	--	--	0.28	U 0.1	44	U 0.02	--	--	--	--	--	--	--
	10/10/1995	N	1.2	7.4	75	109	U 10	--	U 0.01	U 0.05	24	U 0.005	--	--	--	0.006	U 0.001	0.001	0.02
	11/29/1995	N	2	7.66	71	J4 106	--	--	0.07	--	24	U 0.005	--	--	--	0.005	--	0.003	UJ1 0.02
	3/6/1996	N	--	7.65	107	A 416	U 10	--	0.148	--	51.4	U 0.005	--	--	--	0.005	J,UJ2 0.001	U 0.001	0.013
	4/14/1996	N	--	7.6	157	240	46	--	J4 1.22	--	84.2	U 0.005	--	--	--	0.006	--	0.0027	0.029
	6/7/1996	N	5	7.37	J4 37	J4 62	--	--	J4 0.07	--	J4 14	U 0.005	--	--	--	0.005	--	J4 0.002	0.02
	8/2/1996	N	6	8.14	85	150	--	--	0.13	--	34.6	U 0.005	--	--	--	0.004	0.007	0.002	0.02
	9/24/1996	N	2.6	8.24	90.3	139	U 10	--	0.02	U 0.05	34.8	U 0.005	--	--	--	0.005	J4 0.001	U 0.001	0.03
	12/2/1996	N	--	7.96	92	162	--	--	0.08	--	39.7	U 0.005	--	--	--	0.005	U 0.001	U 0.001	0.02
	3/6/1997	N	1.24	8.32	42.3	124	--	--	0.14	--	30.3	U 0.005	--	--	--	0.006	--	0.002	U 0.01
	4/21/1997	N	1.33	7.91	97.1	148	--	--	0.33	--	48.1	U 0.005	--	--	--	J2 0.007	0.061	0.005	U 0.01
	5/19/1997	N	10.7	7.73	46.4	103	--	--	0.25	--	24.2	U 0.005	--	--	--	0.006	0.008	0.003	0.02
	6/24/1997	N	10.13	8.02	49.7	104.2	--	--	0.28	--	26.5	U 0.005	--	--	--	0.007	0.003	0.007	U 0.01
	7/29/1997	N	6.5	8.16	71.8	138	--	--	0.15	--	33	U 0.005	--	--	--	0.006	U,J4 0.001	J4 0.007	0.01
	9/16/1997	N	1	8.36	92	157	U 10	--	0.1	U 0.05	39.5	U 0.005	--	--	--	0.005	0.002	0.008	0.02
	12/11/1997	N	--	8.15	72.6	138	--	--	J4 0.24	--	30.8	U 0.005	--	--	--	--	--	--	--
	2/25/1998	N	--	8.65	91.4	120	--	--	0.19	--	26.8	U 0.005	--	--	--	0.004	U 0.001	0.002	U 0.01
	5/31/1998	N	5	8.42	50.4	74	--	--	0.08	--	20	U 0.005	--	--	--	0.004	0.02	0.004	--
	6/5/1998	N	--	--	48	96	--	--	0.04	--	20.4	U 0.005	--	--	--	0.005	0.013	0.005	--
	7/14/1998	N	--	--	134.8	91	--	--	0.01	--	23.6	U 0.005	--	--	--	0.004	0.005	0.002	--
	8/27/1998	N	--	--		121	U 10	--	0.08	--	30.3	U 0.005	--	--	--	0.007	0.001	0.003	0.03

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	9/22/1998	N	3	8.14	84.4	134	U 10	--	0.08	--	31.1	U 0.005	--	--	--	0.004	0.003	0.003	0.04
	10/20/1998	N	--	--	84.5	173	U 10	--	0.08	--	31.9	U 0.005	--	--	--	0.008	0.004	0.001	0.05
	11/17/1998	N	2.4	--	86.7	144	U 10	--	0.15	--	29.4	U 0.005	--	--	--	0.003	U 0.001	0.003	0.01
	1/12/1999	N	--	--	69	125	U 10	--	0.19	--	27.5	U 0.005	--	--	--	0.004	0.002	U 0.001	0.01
	2/9/1999	N	--	--	80.3	107	U 10	--	0.22	--	29.7	U 0.005	--	--	--	0.004	U 0.001	0.002	0.01
	3/10/1999	N	--	--	74.1	112	U 10	--	0.2	--	29.7	U 0.005	--	--	--	0.008	U 0.001	U 0.001	0.02
	4/15/1999	N	--	--	130.1	178	U 10	--	0.48	U 0.05	71.7	U 0.005	--	--	--	--	--	--	--
	6/4/1999	N	34	7.5	67.9	125	--	--	0.24	--	44.8	U 0.005	--	--	--	0.005	0.026	0.004	--
	6/8/1999	N	34	7.5	58	119	--	--	0.17	--	30.9	U 0.005	--	--	--	0.004	0.029	0.002	--
	7/8/1999	N	--	--	--	190	U 10	--	0.34	U 0.05	70.2	--	--	--	--	--	--	--	--
	8/5/1999	N	--	--	149	269	U 10	--	0.4	--	96.8	U 0.005	--	--	--	0.005	0.007	0.01	U 0.01
	9/27/1999	N	0.75	--	120.4	188	U 10	--	0.21	U 0.05	68	U 0.005	--	--	--	U 0.003	U 0.001	0.005	U 0.01
	10/27/1999	N	--	--	117	175	U 10	--	0.22	--	67.4	U 0.005	--	--	--	0.003	0.001	0.006	0.03
	11/10/1999	N	0.5	--	146	213	U 10	--	0.34	--	95.9	U 0.005	--	--	--	0.007	U 0.001	0.005	U 0.01
	12/20/1999	N	--	--	133.8	214	U 10	--	0.39	U 0.05	87.9	U 0.005	--	--	--	0.004	0.004	0.003	--
	1/10/2000	N	--	--	119.6	212	U 10	--	0.39	U 0.05	84	U 0.005	--	--	--	U 0.003	U 0.001	0.004	U 0.01
	2/14/2000	N	--	--	125	204	U 10	--	0.35	U 0.05	82	U 0.005	--	--	--	0.004	U 0.001	0.003	U 0.01
	3/2/2000	N	--	--	127.6	194	U 10	--	0.35	U 0.05	79.6	U 0.005	--	--	--	U 0.003	U 0.001	0.004	U 0.01
	3/20/2000	N	--	--	131.7	200	U 10	--	0.26	U 0.05	80	U 0.005	--	--	--	0.004	0.001	0.004	U 0.01
	4/17/2000	N	--	--	129.1	212	U 10	--	0.32	U 0.05	91.7	U 0.005	--	--	--	U 0.003	0.001	U 0.001	U 0.01
	5/3/2000	N	--	--	148.4	246	--	--	0.28	U 0.05	116	U 0.005	--	--	--	--	--	--	--
	6/8/2000	N	--	--	118.3	203	U 10	--	0.21	U 0.05	85.9	U 0.005	--	--	--	U 0.003	0.015	0.005	U 0.01
	6/28/2000	N	--	--	157.3	262	--	--	0.25	--	114	U 0.005	--	--	--	0.005	0.001	0.01	--
	7/29/2000	N	--	--	223	361	U 10	--	0.27	U 0.05	162	U 0.005	--	--	--	0.003	0.002	0.009	0.01
	8/15/2000	N	--	--	220.5	371	U 10	--	0.16	0.2	169	U 0.005	--	--	--	0.004	0.002	0.009	0.01
	9/20/2000	N	--	--	205	319	U 10	--	0.18	U 0.05	146	U 0.005	--	--	--	0.005	0.003	0.005	0.02
	10/23/2000	N	--	--	166.9	253	U 10	--	0.15	U 0.05	106	U 0.005	--	--	--	0.003	0.003	0.005	0.01
	11/30/2000	N	--	--	149.7	247	--	--	0.32	U 0.05	104	U 0.005	--	--	--	0.006	0.005	0.006	0.02
	12/27/2000	N	--	--	155.2	195	U 10	--	0.3	U 0.05	101	U 0.005	--	--	--	0.004	0.003	0.003	U 0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	1/31/2001	N	--	--	112.4	170	U 10	--	0.2	U 0.05	58.4	U 0.005	--	--	--	0.005	0.002	0.003	0.01
	2/22/2001	N	--	--	93.8	168	U 10	--	0.22	U 0.05	47.5	U 0.005	--	--	--	--	--	--	--
	3/25/2001	N	--	--	143.2	202	U 10	--	0.21	U 0.05	78	U 0.005	--	--	--	0.004	0.002	0.003	0.03
	4/18/2001	N	--	--	127.9	183	U 10	--	0.08	U 0.05	80.7	U 0.005	--	--	--	0.004	0.003	0.003	0.02
	5/4/2001	N	--	--	160	248	U 10	--	0.28	U 0.05	121	U 0.005	--	--	--	0.005	0.004	0.005	0.02
	6/16/2001	N	--	--	--	195	U 10	--	0.1	U 0.05	60.9	U 0.005	--	--	--	0.004	0.001	0.003	0.02
	7/31/2001	N	--	--	--	209	U 10	--	0.12	U 0.05	98.6	U 0.005	--	--	--	0.006	0.007	0.005	U 0.01
	8/29/2001	N	--	--	--	304	U 10	--	0.16	U 0.05	150	U 0.005	--	--	--	0.006	0.01	0.006	U 0.01
	9/23/2001	N	--	--	--	344	U 10	--	0.18	U 0.05	142	U 0.005	--	--	--	0.004	0.004	0.007	U 0.01
	10/30/2001	N	--	--	--	239	U 10	--	0.17	U 0.05	120	U 0.005	--	--	--	0.004	0.003	0.006	U 0.01
	11/28/2001	N	--	--	--	342	U 10	--	0.28	U 0.05	153	U 0.005	--	--	--	0.004	0.015	0.01	U 0.01
	12/14/2001	N	--	--	--	312	U 10	--	0.3	U 0.05	140	U 0.005	--	--	--	U 0.003	0.003	0.006	U 0.01
	1/8/2002	N	--	--	--	266	U 10	--	0.26	-0.1	120	U 0.005	--	--	--	0.004	0.001	0.007	0.02
	2/13/2002	N	--	--	--	252	U 10	--	0.3	-0.1	119	U 0.005	--	--	--	0.004	U 0.001	0.007	-0.01
	3/1/2002	N	--	--	--	256	U 10	--	0.26	-0.1	116	U 0.005	--	--	--	0.004	U 0.001	0.007	0.03
	4/24/2002	N	2.24	--	--	349	U 10	--	0.3	U 0.1	159	U 0.005	--	--	--	0.003	0.003	0.008	U 0.01
	5/28/2002	N	2.9	--	--	250	U 10	--	0.19	U 0.1	116	U 0.005	--	--	--	0.004	0.004	0.006	U 0.01
	6/12/2002	N	16.6	7.7	--	185	U 10	--	0.16	--	69	U 0.005	--	--	--	0.005	0.002	0.005	--
	7/11/2002	N	--	--	--	265	U 10	--	0.16	U 0.1	118	U 0.005	--	--	--	0.005	0.002	0.009	U 0.01
	8/26/2002	N	1.57	--	--	285	U 10	--	0.15	U 0.1	121	U 0.005	--	--	U 0.2	0.005	0.001	0.007	--
	9/23/2002	N	1.37	--	--	376	U 10	--	0.07	U 0.1	179	U 0.005	--	--	U 0.2	0.004	U 0.001	0.007	U 0.01
	10/24/2002	N	--	--	--	320	U 10	--	0.13	U 0.1	152	U 0.005	--	--	U 0.2	0.004	U 0.001	0.006	U 0.01
	11/13/2002	N	1.57	8.1	--	284	U 10	--	0.16	U 0.1	113	U 0.005	--	--	--	U 0.003	U 0.001	0.004	U 0.01
	12/10/2002	N	1.24	7.92	--	272	U 10	--	0.21	U 0.1	112	U 0.005	--	--	U 0.2	U 0.003	0.001	0.002	U 0.01
	1/15/2003	N	1.93	7.95	154	246	H 2	--	0.2	U 0.05	102	U 0.005	--	--	U 0.2	--	0.002	0.002	U 0.01
	2/13/2003	N	1.57	7.7	136	214	U 1	--	0.2	U 0.05	95	U 0.005	--	--	U 0.2	--	U 0.001	0.002	U 0.01
	3/13/2003	N	1.72	7.8	141	236	U 10	--	0.2	U 0.05	97	U 0.005	--	--	0.3	--	U 0.001	0.003	U 0.01
	4/23/2003	N	8	8.1	124	182	U 10	--	0.2	U 0.05	80	0.03	U 0.005	--	U 0.2	0.005	0.006	0.003	U 0.01
	5/13/2003	N	4.9	8.5	156	255	U 10	--	0.27	U 0.05	121	U 0.005	--	--	U 0.2	--	0.002	0.005	0.09

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	6/18/2003	N	7.3	8	88	173	1	--	0.1	U 0.05	70	U 0.005	--	--	U 0.2	--	0.002	0.002	U 0.01
	7/25/2003	N	2.01	8.3	162	274	U 10	--	0.1	U 0.05	116	U 0.005	--	--	U 0.2	--	0.002	0.004	U 0.01
	8/7/2003	N	1.8	8.3	178	293	U 4	--	U 0.1	U 0.05	138	U 0.005	--	--	U 0.2	--	0.001	0.004	U 0.01
	9/23/2003	N	1.24	8.4	190	316	U 10	--	0.04	U 0.05	144	U 0.005	--	--	U 0.2	--	U 0.001	0.003	U 0.01
	10/22/2003	N	1.24	8.4	208	291	U 10	--	U 0.1	U 0.05	140	0.006	U 0.005	--	U 0.2	--	0.001	0.003	U 0.01
	11/12/2003	N	1.37	8.25	188	284	U 10	--	0.1	U 0.05	126	U 0.005	--	--	U 0.2	--	0.005	0.003	U 0.01
	12/9/2003	N	1.57	8.31	141	209	U 10	--	0.1	U 0.05	82	U 0.005	--	--	U 0.2	--	U 0.001	0.003	U 0.01
	1/13/2004	N	1.37	8.21	--	--	U 10	--	--	--	--	--	--	--	--	0.005	U 0.001	0.004	--
	2/18/2004	N	1.57	8	--	--	U 10	--	--	--	--	--	--	--	--	0.004	0.001	0.003	--
	3/16/2004	N	1.72	8.22	--	--	U 10	--	--	--	--	--	--	--	--	0.004	U 0.001	0.003	--
	4/22/2004	N	2.3	8.41	--	--	U 10	--	--	--	--	--	--	--	--	0.004	0.001	0.004	--
	5/20/2004	N	7.75	8.16	--	--	U 10	--	--	--	--	--	--	--	--	0.005	0.004	0.002	--
	6/10/2004	N	7.15	8.21	--	--	U 10	--	--	--	--	--	--	--	--	0.004	0.002	0.002	--
	7/15/2004	N	1.93	8.37	--	--	U 10	--	--	--	83	--	--	--	--	0.005	0.002	0.002	--
	7/19/2004	N	--	--	--	--	--	--	UJ 0.05	U 0.1	--	UJ 0.005	--	--	--	--	--	--	--
	9/28/2004	N	1.57	8.41	--	--	U 10	--	U 0.05	--	100	U 0.005	--	--	--	--	0.002	0.002	--
	12/4/2004	N	1.72	7.79	--	--	U 10	--	0.1	--	--	U 0.005	--	--	--	--	U 0.001	0.003	--
	3/29/2005	N	1.64	8.33	--	--	U 10	--	0.08	--	--	U 0.005	--	--	--	--	0.001	0.004	--
	5/20/2005	N	9.3	8.33	--	--	U 10	--	0.15	--	--	U 0.005	--	--	--	--	0.006	0.005	--
	6/29/2005	N	15	7.99	--	--	U 10	--	U 0.05	U 0.05	--	U 0.005	--	--	--	--	0.003	0.002	U 0.01
	9/28/2005	N	1.93	8.28	--	--	--	--	U 0.05	U 0.1	110	U 0.005	--	--	U 0.2	0.004	U 0.001	0.002	U 0.01
	12/21/2005	N	0.89	7.7	--	--	U 10	--	0.21	--	--	U 0.005	--	--	--	--	U 0.001	0.004	--
	3/29/2006	N	0.66	7.38	--	--	U 10	--	0.2	--	--	U 0.005	--	--	--	--	U 0.001	0.004	--
	6/27/2006	N	5.34	7.75	--	--	U 10	--	0.05	--	--	U 0.005	--	--	--	--	0.002	0.005	--
	10/5/2006	N	1.64	7.94	--	--	U 10	--	U 0.1	--	--	U 0.005	--	--	--	--	0.001	0.005	--
	4/8/2008	N	AV 1.24	7.11	--	--	U 10	--	0.09	--	--	U 0.005	--	--	--	--	U 0.001	0.004	--
	6/13/2008	N	AV 23.9	7.39	--	--	U 10	--	0.08	--	--	U 0.005	--	--	--	--	0.003	M% 0.003	--
	9/15/2008	N	FL 2.4	7.91	--	--	U 10	--	0.08	--	--	U 0.005	U 0.005	--	--	--	U 0.001	0.004	--
	6/15/2009	N	AV 32.3	7.39	--	--	J 9.1	--	F 0.03	--	--	U 0.005	J 0.005	J 0.005	--	--	0.0026	0.0021	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-2	9/3/2009	N	AV 7.31	8.24	--	--	U 10	--	U 0.05	U 0.02	--	UF% 0.002	UF% 0.001	FU 0.004	--	--	0.0018	0.0028	--
	6/17/2010	N	AV 67.31	7.03	--	--	6	--	U 0.05	U 0.05	--	U 0.005	U 0.005	U 0.06	--	--	0.006	0.002	--
	9/16/2010	D	AV 2.36	6.99	--	--	U 5	--	M%F 0.09	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.003	--
	9/16/2010	N	AV 2.36	6.99	--	--	U 5	--	M%F 0.07	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.003	--
	6/16/2011	D	AV 37.57	7.48	--	--	U 5	--	U 0.05	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.004	0.002	--
	6/16/2011	N	AV 37.57	7.48	--	--	U 5	--	0.06	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.004	0.002	--
	9/12/2011	N	AV 3.61	7.92	--	--	U 5	63	U 0.25	U 0.1	93	U 0.005	U 0.005	U 0.2	--	--	U 0.001	U 0.003	--
	7/2/2012	N	AV 4.29	6.97	--	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	9/13/2012	N	AV 0.725	8.19	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	5/20/2013	N	AV 7.78	7.82	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	9/30/2013	N	AV 12.08	7.24	--	--	H 41	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.001	--
	5/27/2014	N	AV 44.52	7.26	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--
	9/24/2014	N	AV 2.127	7.61	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--
	5/18/2016	N	ade 14.63	7.81	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	9/19/2016	N	--	7.8	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	6/6/2017	N	--	7.93	--	--	U 5	--	--	U 0.05	--	UH 0.004	UH 0.004	U 0.2	--	--	--	0.002	--
	10/11/2017	N	--	8.52	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.002	--
	6/12/2018	N	--	8.06	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.005	U 0.2	--	--	--	0.002	--
	9/17/2018	N	--	8.4	--	--	U 5	--	--	U 0.05	--	UH 0.004	U 0.004	U 0.2	--	--	--	0.002	--
	6/4/2019	N	--	7.91	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.002	--
	9/16/2019	N	--	8.05	--	--	U 5	--	--	U 0.1	--	U 0.004	U 0.004	U 0.2	--	--	--	0.002	--
STA-3A	10/21/1987	D	0.229	--	93	123	2	--	U 0.05	U 0.1	25	--	U 0.005	--	--	0.016	U 0.01	U 0.005	U 0.01
	10/21/1987	N	0.229	--	93	123	2	--	U 0.05	U 0.1	25	--	U 0.005	--	--	0.016	U 0.01	U 0.005	U 0.01
	11/19/1987	N	0.254	--	91	144	U 1	--	U 0.05	U 0.1	25	U 0.01	--	--	--	0.012	U 0.01	U 0.005	0.01
	11/9/1988	N	--	--	102	122	U 1	--	U 0.05	U 0.1	29	U 0.01	--	--	--	0.014	U 0.01	U 0.005	0.02
	1/18/1989	N	0.67	7.73	--	--	--	--	--	--	26	U 0.01	--	--	--	--	--	--	--
	3/1/1989	N	--	4.61	--	--	--	--	--	--	26	U 0.01	--	--	--	--	--	--	--
	5/12/1989	N	2.23	6.42	A 114	119	--	--	--	U 0.5	24	U 0.005	--	--	--	0.018	U 0.01	U 0.003	0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	6/29/1989	N	1.17	6.96	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--
	7/27/1989	N	1.1	--	A 112	145	--	--	--	U 1	29	0.03	U 0.005	U 0.005	--	0.026	0.06	U 0.002	0.02
	8/22/1989	N	--	7.32	--	--	--	--	--	--	41	0.03	--	--	--	--	--	--	--
	9/27/1989	N	0.5	6.76	--	--	--	--	--	--	40	U 0.005	--	--	--	--	--	--	--
	11/16/1989	N	0.319	7.9	100	105	--	--	--	U 1	38	U 0.005	--	--	--	0.013	0.01	0.001	0.006
	12/6/1989	N	0.223	--	--	--	--	--	--	--	38	U 0.005	--	--	--	--	--	--	--
	1/17/1990	N	0.22	--	--	--	--	--	--	--	32	U 0.005	--	--	--	--	--	--	--
	2/28/1990	N	--	--	--	--	--	--	--	--	33	U 0.005	--	--	--	--	--	--	--
	4/20/1990	N	0.98	7.25	104	161	U 4	--	--	U 0.5	44	U 0.005	--	--	--	0.014	U 0.03	0.003	0.02
	5/24/1990	N	1	--	--	--	--	--	--	--	23	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	1	--	--	--	--	--	--	--	29	U 0.005	--	--	--	--	--	--	--
	7/20/1990	N	0.73	7.77	95	161	9	--	--	U 0.5	32	U 0.005	--	--	--	0.015	0.01	0.004	U 0.012
	8/21/1990	N	0.9	--	--	--	--	--	--	--	48	U 0.005	--	--	--	--	--	--	--
	9/26/1990	N	0.07	--	--	--	--	--	--	--	45	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	0.28	7.6	104	201	10	--	--	U 0.5	51	U 0.005	--	--	--	0.014	U 0.02	0.002	0.02
	12/13/1990	N	0.11	--	--	--	--	--	--	--	38	U 0.005	--	--	--	--	--	--	--
	1/15/1991	N	0.2	--	--	--	--	--	--	--	42	U 0.005	--	--	--	--	--	--	--
	2/28/1991	N	0.5	--	--	--	--	--	--	--	40	U 0.005	--	--	--	--	--	--	--
	4/15/1991	N	0.33	8.32	149	A 372	6	--	--	U 0.5	96	U 0.005	--	--	--	0.019	U 0.002	0.013	0.008
	5/29/1991	N	0.006	--	--	--	--	--	--	--	108	0.006	--	--	--	--	--	--	--
	6/26/1991	N	1.75	--	--	--	--	--	--	--	47	U 0.005	--	--	--	--	--	--	--
	7/25/1991	N	0.66	7.98	150	216	U 4	--	--	U 0.1	67	U 0.005	--	--	--	0.017	U 0.002	0.005	U 0.002
	8/28/1991	N	0.75	--	--	--	--	--	--	--	80	U 0.005	--	--	--	--	--	--	--
	9/18/1991	N	0.3	--	--	--	--	--	--	--	88	U 0.005	--	--	--	--	--	--	--
	11/2/1991	N	0.38	7.71	132	266	U 4	--	1	U 0.1	70	U 0.005	--	--	--	0.015	0.012	0.007	0.03
	12/18/1991	N	0.1	--	--	--	--	--	--	--	68	U 0.005	--	--	--	--	--	--	--
	1/22/1992	N	0.111	--	--	--	--	--	--	--	67	U 0.005	--	--	--	--	--	--	--
	2/26/1992	N	1	--	--	--	--	--	--	--	63	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	0.56	7.67	216	A 315	U 10	--	2.6	0.1	120	U 0.005	--	--	--	0.04	0.011	0.016	0.011

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1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	5/12/1992	N	0.75	--	--	--	--	--	--	--	92	U 0.005	--	--	--	--	--	--	--
	6/17/1992	N	2	--	189	252	33	--	2.3	U 0.1	110	U 0.005	--	--	--	0.024	0.014	0.02	0.015
	7/9/1992	N	--	--	--	--	--	--	4.2	--	139	U 0.005	--	--	--	--	--	--	--
	7/17/1992	N	0.81	7.95	217	A 335	U 10	--	3.8	U 0.5	124	U 0.005	--	--	--	0.009	0.009	0.027	0.057
	8/19/1992	N	0.1	--	--	--	--	--	2.3	--	121	U 0.005	--	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	1.9	--	--	--	--	--	--	--	--	--	--
	9/24/1992	N	0.2	--	182	--	--	--	1.2	--	89	U 0.005	--	--	--	--	--	--	--
	10/30/1992	N	0.0006	7.77	190	220	U 10	--	1.3	U 0.5	68	U 0.005	--	--	--	0.015	U 0.003	0.011	0.017
	12/9/1992	N	0.2	--	--	--	--	--	2.8	--	94	U 0.005	--	--	--	--	--	--	--
	1/21/1993	N	0.5	--	--	--	--	--	1.6	--	80	U 0.005	--	--	--	--	--	--	--
	2/22/1993	N	0.1	--	--	--	--	--	0.98	--	66	U 0.005	--	--	--	--	--	--	--
	4/7/1993	N	0.34	7.74	196	220	U 10	--	1.05	0.3	110	U 0.005	--	--	--	0.014	0.002	0.018	0.027
	5/19/1993	N	2.5	--	--	--	--	--	1.65	--	79	U 0.005	--	--	--	--	--	--	--
	6/24/1993	N	1.74	--	--	--	--	--	0.97	--	65	U 0.005	--	--	--	--	--	--	--
	7/29/1993	N	1.52	7.92	184	218	8	--	1.6	JJ1,J4 0.08	95	U 0.005	--	--	--	0.014	0.004	0.029	0.014
	8/25/1993	N	0.65	--	--	--	--	--	J4 1.5	--	102	U 0.005	--	--	--	--	--	--	--
	9/22/1993	N	0.5	--	--	--	--	--	1.2	--	89	U 0.005	--	--	--	--	--	0.028	--
	10/20/1993	N	0.56	7.6	164	245	U 1	--	J4 0.8	U 0.1	92	U,J2 0.005	--	--	--	0.013	U 0.01	U 0.005	0.01
	12/10/1993	N	0.3	--	--	208	--	--	1.41	--	79	U 0.005	--	--	--	0.013	U 0.01	0.017	--
	3/9/1994	N	--	--	170	222	16	--	1.28	2.1	J4 94	U 0.02	--	--	--	0.012	U 0.01	0.018	U 0.01
	4/20/1994	N	0.86	8.09	190	263	13	--	1.23	U 0.1	127	U 0.02	--	--	--	0.014	U 0.01	0.019	U 0.01
	5/18/1994	N	3.12	--	100	136	7	--	J4 0.44	U 0.1	51	U 0.02	--	--	--	0.014	U 0.01	U 0.005	0.02
	6/13/1994	N	1.14	8.42	123	200	12	--	0.48	U 0.1	60	U 0.02	--	--	--	0.012	U 0.01	0.01	0.03
	8/2/1994	N	0.45	7.7	132	172	7	--	0.53	U 0.1	55	U 0.02	--	--	--	0.016	U 0.01	0.009	0.01
	10/4/1994	N	0.39	7.31	141	188	10	--	0.7	U 0.1	52	U 0.02	--	--	--	0.013	U 0.01	0.007	0.01
	12/13/1994	N	0.15	7.73	149	196	U 1	--	0.96	U 0.1	66	U 0.02	--	--	--	0.016	U 0.01	0.011	0.02
	3/8/1995	N	--	7.63	175	211	6	--	1.21	U 0.1	4S 88	U 0.02	--	--	--	0.011	U 0.01	0.011	UJ1 0.02
	4/20/1995	N	0.67	7.21	179	234	J4 10	--	0.98	U 0.1	101	U 0.005	--	--	--	0.013	U 0.01	J4 0.013	J4 0.03
	5/23/1995	N	0.54	7.89	172	227	U 10	--	1.27	U 0.1	105	U 0.02	--	--	--	0.012	0.01	0.019	0.03

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Beal Mountain Mine

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BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	6/21/1995	N	2.7	7.82	84	124	--	--	0.38	--	35	U 0.02	--	--	--	0.009	--	0.006	0.02
	8/18/1995	N	0.44	7.86	133	J4S 154	12	--	0.52	U 0.1	52	U 0.005	--	--	--	0.014	U 0.01	U 0.005	S,UJ1 0.04
	10/10/1995	N	0.33	7.72	141	177	U 10	--	0.37	U 0.05	55	U 0.005	--	--	--	0.012	0.002	0.007	0.01
	11/29/1995	N	0.3	7.32	130	J4 168	--	--	0.68	--	59	U 0.005	--	--	--	0.019	--	0.006	J4 0.02
	3/6/1996	N	--	7.4	141	178	--	--	0.834	--	52.5	U 0.005	--	--	--	0.014	--	0.0087	0.012
	4/14/1996	N	--	7.58	J4 102	J4 168	--	--	J4 0.265	--	J4 50	U 0.005	--	--	--	0.018	--	0.0075	0.025
	5/28/1996	N	0.6	7.7	150	238	--	--	0.954	--	91.5	U 0.005	--	--	--	0.01	0.0118	0.0093	J,UJ1 0.048
	6/7/1996	N	1	7.5	J4 81	J4 94	--	--	J4 0.37	--	J4 40	U 0.005	--	--	--	0.012	--	J4 0.006	0.02
	8/2/1996	N	1.32	7.98	152	215	--	--	0.56	--	63	U 0.005	--	--	--	0.013	0.008	0.008	0.01
	9/24/1996	N	0.15	7.98	149.5	190	U 10	--	0.53	U 0.05	60.5	U 0.005	--	--	--	0.013	J4 0.002	J4 0.007	J4 0.04
	12/2/1996	N	--	7.98	144.1	218	--	--	0.74	--	61	U 0.005	--	--	--	0.014	U 0.001	0.003	0.01
	3/6/1997	N	0.375	8.17	141.7	198	--	--	1.02	--	61.6	U 0.005	--	--	--	0.013	--	0.01	U 0.01
	4/21/1997	N	0.78	7.95	197.5	280	--	--	1.27	--	131	0.008	U 0.005	--	--	J2 0.016	0.008	0.009	0.01
	4/24/1997	N	1	7.71	170.8	260	--	--	1.42	--	110	U 0.005	--	--	--	J2 0.016	UJI,J4 0.009	0.009	U 0.01
	5/1/1997	N	--	--	172.9	250	--	--	1.52	--	103	U 0.005	--	--	--	0.011	0.005	0.008	0.01
	5/19/1997	N	2	7.78	124.3	202	--	--	0.82	--	87.4	U 0.005	--	--	--	U 0.003	0.005	0.011	0.03
	6/24/1997	N	2.2	7.78	136.1	217	--	--	0.74	--	89.7	U 0.005	--	--	--	0.009	0.019	0.021	0.02
	7/29/1997	N	0.5	7.87	153.9	243	--	--	0.68	--	82	U 0.005	--	--	--	0.012	J4 0.005	0.029	0.02
	9/16/1997	N	0.6	8.01	191.7	271	U 10	--	0.75	U 0.05	109	U 0.005	--	--	--	0.012	0.019	0.032	0.04
	12/8/1997	N	0.2	5.89	161.4	224	--	--	1.08	--	87.4	U 0.005	--	--	--	0.012	J4 0.002	0.019	0.01
	2/25/1998	N	0.056	8.48	148.9	209	--	--	1.01	--	73.9	U 0.005	--	--	--	0.009	0.002	0.009	U 0.01
	5/31/1998	N	2.07	7.89	108.8	155	--	--	0.37	--	66.1	U 0.005	--	--	--	0.009	0.025	0.023	--
	6/5/1998	N	--	--	109.5	168	--	--	0.4	--	66.9	U 0.005	--	--	--	0.009	0.015	0.019	--
	7/14/1998	N	--	--	67	170	--	--	0.5	--	69.1	U 0.005	--	--	--	0.007	0.007	0.013	--
	8/27/1998	N	--	--	160	220	--	--	0.61	--	79.5	U 0.005	--	--	--	0.009	0.004	0.009	--
	9/22/1998	N	0.21	8.36	140	204	--	--	0.51	--	75.2	U 0.005	--	--	--	0.005	0.002	0.011	--
	10/20/1998	N	--	--	157.3	241	--	--	0.68	--	83.1	U 0.005	--	--	--	0.012	0.004	0.008	U 0.01
	11/17/1998	N	0.32	8	158.6	214	--	--	0.83	--	78.3	U 0.005	--	--	--	0.008	0.009	0.01	--
	1/12/1999	N	--	--	150.1	218	--	--	1.04	--	82.8	U 0.005	--	--	--	0.01	0.001	0.004	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	2/9/1999	N	--	--	143.4	184	--	--	1.05	--	74.3	U 0.005	--	--	--	0.009	U 0.001	0.009	--
	3/10/1999	N	--	--	136.8	182	--	--	1	--	73.9	U 0.005	--	--	--	0.007	U 0.001	0.002	--
	4/15/1999	N	--	--	178.9	226	--	--	1.38	U 0.05	103	U 0.005	--	--	--	0.012	0.004	0.004	--
	5/26/1999	N	--	--	257.5	385	--	--	1.23	--	199	U 0.005	--	--	--	0.008	0.023	0.01	--
	6/4/1999	N	4.7	--	117	176	--	--	0.44	--	77.4	U 0.005	--	--	--	0.007	0.027	0.004	--
	6/8/1999	N	--	--	99.5	155	--	--	0.37	--	60.9	U 0.005	--	--	--	0.006	0.022	0.003	--
	7/8/1999	N	--	--	126	200	--	--	0.62	--	75.6	U 0.005	--	--	--	0.011	0.014	0.007	0.03
	8/5/1999	N	--	--	159	242	--	--	0.61	--	91.2	U 0.005	--	--	--	0.009	0.001	0.01	--
	9/27/1999	N	0.11	--	169	253	--	--	0.79	--	97.6	U 0.005	--	--	--	0.008	0.002	0.008	--
	10/27/1999	N	--	--	159.1	225	--	--	0.83	--	89.6	U 0.005	--	--	--	0.008	0.005	0.009	--
	11/10/1999	N	0.056	--	165.1	226	--	--	1.03	--	92.1	U 0.005	--	--	--	0.009	0.002	0.008	--
	12/20/1999	N	--	--	149.8	230	--	--	1.02	--	85.9	U 0.005	--	--	--	0.009	0.004	0.007	--
	1/10/2000	N	--	--	148.1	225	--	--	1.07	--	83.7	U 0.005	--	--	--	0.008	0.01	0.008	--
	2/14/2000	N	--	--	147.8	219	--	--	1.1	--	83.8	U 0.005	--	--	--	0.01	U 0.001	0.006	--
	3/20/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	0.008	U 0.001	0.007	--
	3/20/2000	N	--	--	143.8	216	--	--	1.04	--	83	U 0.005	--	--	--	0.01	0.002	0.007	--
	4/17/2000	N	--	--	194.5	322	--	--	0.08	--	154	U 0.005	--	--	--	0.004	0.004	0.009	--
	5/3/2000	N	--	--	197.9	312	--	--	0.67	--	151	U 0.005	--	--	--	--	--	--	--
	6/8/2000	N	--	--	125.5	213	--	--	0.39	U 0.05	83.4	U 0.005	--	--	--	0.009	0.002	0.004	--
	6/28/2000	N	--	--	156.7	251	--	--	0.48	--	94.9	U 0.005	--	--	--	0.009	0.001	0.01	--
	7/29/2000	N	--	--	188	289	--	--	0.52	--	112	U 0.005	--	--	--	0.01	0.001	0.008	--
	8/15/2000	N	--	--	183.6	304	--	--	0.52	--	112	U 0.005	--	--	--	0.009	0.002	0.011	--
	9/20/2000	N	--	--	180.5	263	--	--	0.66	--	95.7	U 0.005	--	--	--	0.014	0.001	0.006	--
	10/23/2000	N	--	--	170	241	--	--	0.69	--	87.3	U 0.005	--	--	--	0.011	0.002	0.006	--
	11/30/2000	N	--	--	162.8	253	--	--	0.87	--	97.4	U 0.005	--	--	--	0.011	0.005	0.01	--
	12/27/2000	N	--	--	162.1	211	--	--	1.08	--	91	U 0.005	--	--	--	U 0.003	0.005	0.006	--
	1/31/2001	N	--	--	141.1	214	--	--	0.86	--	80.2	U 0.005	--	--	--	0.01	0.003	0.007	--
	2/22/2001	N	--	--	172.2	269	--	--	0.98	--	107	U 0.005	--	--	--	--	--	--	--
	4/18/2001	N	--	--	177	254	U 10	--	0.94	--	112	U 0.005	--	--	--	0.009	0.008	0.008	U 0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	5/4/2001	N	--	--	383.2	596	--	--	1.22	--	359	U 0.005	--	--	--	0.009	0.004	0.019	--
	6/16/2001	N	--	--	--	329	U 10	--	0.4	--	148	U 0.005	--	--	--	0.009	0.003	0.004	--
	7/31/2001	N	--	--	--	293	U 10	--	0.48	--	137	U 0.005	--	--	--	0.013	0.006	0.007	--
	8/29/2001	N	--	--	--	317	U 10	--	0.74	--	138	U 0.005	--	--	--	0.013	0.014	0.008	--
	9/23/2001	N	--	--	--	516	U 10	--	0.61	--	244	U 0.005	--	--	--	0.009	0.01	0.009	--
	10/30/2001	N	--	--	--	308	U 10	--	0.88	--	151	U 0.005	--	--	--	0.012	0.002	0.009	--
	11/28/2001	N	--	--	--	325	U 10	--	1.08	--	131	U 0.005	--	--	--	0.011	0.002	0.013	--
	12/14/2001	N	--	--	--	303	U 10	--	1.12	--	127	U 0.005	--	--	--	0.011	0.004	0.01	--
	1/8/2002	N	--	--	--	277	U 10	--	1.12	--	124	U 0.005	--	--	--	0.01	0.002	0.011	--
	2/13/2002	N	--	--	--	257	U 10	--	1.2	--	110	U 0.005	--	--	--	0.01	U 0.001	0.012	--
	3/26/2002	N	--	--	--	262	U 10	--	1.08	--	111	U 0.005	--	--	--	0.011	0.001	0.012	--
	4/23/2002	N	--	--	--	409	U 10	--	0.8	--	199	U 0.005	--	--	--	0.01	0.002	0.011	--
	5/28/2002	N	--	--	--	590	U 10	--	0.87	--	344	U 0.005	--	--	--	0.008	0.005	0.019	--
	6/12/2002	N	5.5	7.5	--	323	U 10	--	0.4	--	165	U 0.005	--	--	--	0.007	0.003	0.01	--
	7/11/2002	N	--	--	--	330	U 10	--	0.63	--	146	U 0.005	--	--	--	0.011	0.002	0.009	--
	8/26/2002	N	--	--	--	335	U 10	--	0.69	U 0.1	143	U 0.005	--	--	U 0.2	0.012	0.002	0.01	--
	9/18/2002	N	0.279	--	--	329	U 10	--	0.81	--	137	U 0.005	--	--	U 0.2	0.012	0.002	0.01	--
	10/17/2002	N	--	--	--	318	--	--	--	--	139	--	--	--	--	--	0.002	0.011	--
	10/25/2002	N	--	--	--	307	U 10	--	1.06	U 0.1	126	U 0.005	--	--	U 0.2	0.011	0.002	0.01	--
	11/6/2002	N	0.238	7.8	--	301	U 10	--	1.07	U 0.1	130	0.007	U 0.005	--	U 0.2	0.012	0.002	0.012	--
	12/10/2002	N	0.254	7.91	195	295	U 10	--	1.16	UH 0.1	116	U 0.005	--	--	U 0.2	0.006	0.002	0.006	U 0.01
	1/15/2003	N	0.32	7.9	195	294	UH 1	--	1.1	U 0.05	120	U 0.005	--	--	U 0.2	--	0.001	0.008	U 0.01
	2/13/2003	N	0.32	8.1	188	278	U 1	--	1.2	U 0.05	127	U 0.005	--	--	U 0.2	--	U 0.001	0.005	U 0.01
	3/12/2003	N	0.38	8.21	181	283	U 1	--	1.3	U 0.05	120	U 0.005	--	--	U 0.2	--	0.003	0.007	U 0.01
	4/23/2003	N	1.2	8	339	433	2	--	1	U 0.05	215	U 0.005	--	--	U 0.2	--	0.003	0.008	U 0.01
	5/13/2003	N	0.77	7.9	326	533	U 10	--	1.61	U 0.05	280	0.02	U 0.005	--	U 0.2	--	0.003	0.012	U 0.01
	6/18/2003	N	1.5	7.8	188	325	2	--	0.6	U 0.05	159	U 0.005	--	--	U 0.2	--	0.003	0.006	U 0.01
	7/25/2003	N	0.59	8	239	390	U 10	--	0.9	U 0.05	167	0.01	0.006	--	U 0.2	--	0.002	0.01	U 0.01
	8/7/2003	N	0.357	8.1	239	396	U 4	--	0.9	U 0.05	187	0.01	0.005	--	U 0.2	--	0.002	0.011	U 0.01

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	9/23/2003	N	0.16	8	209	352	U 10	--	1.02	U 0.05	149	0.009	U 0.005	--	U 0.2	--	0.001	0.011	U 0.01
	10/22/2003	N	0.19	8	239	328	U 10	--	1.1	U 0.05	148	0.01	U 0.005	--	U 0.2	--	0.003	0.01	U 0.01
	11/12/2003	N	0.21	8.1	256	371	U 10	--	1.3	U 0.05	161	0.007	U 0.005	--	U 0.2	--	0.001	0.013	U 0.01
	12/9/2003	N	--	8.15	249	356	U 10	--	1.3	U 0.05	165	0.008	U 0.005	--	U 0.2	--	U 0.001	0.011	U 0.01
	1/20/2004	N	0.26	8.1	--	415	U 4	--	1.2	--	229	0.009	U 0.005	--	0.3	0.011	0.002	0.011	--
	2/18/2004	N	0.28	7.91	--	--	U 10	--	--	--	--	--	--	--	--	0.01	0.001	0.009	--
	3/16/2004	N	0.32	8.16	--	--	U 10	--	0.9	0.1	228	U 0.005	--	--	U 0.2	0.009	U 0.001	0.009	--
	4/22/2004	N	0.58	7.98	--	--	U 10	--	--	--	--	--	--	--	--	0.014	0.004	0.009	--
	5/20/2004	N	1.08	8.12	--	--	U 10	--	--	--	--	--	--	--	--	0.01	0.003	0.007	--
	6/10/2004	N	1.56	8.09	--	--	U 10	--	--	--	--	--	--	--	--	0.008	0.003	0.004	--
	7/15/2004	N	0.35	8.11	--	--	U 10	--	--	--	232	--	--	--	--	0.012	0.003	0.01	--
	7/19/2004	N	--	--	--	--	--	--	0.58	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	9/28/2004	N	0.26	8.13	--	--	U 10	--	0.47	--	75	UJ 0.005	--	--	--	--	0.002	0.007	--
	12/14/2004	N	0.34	7.81	--	--	UJ 10	--	0.8	--	--	UJ 0.005	--	--	--	--	0.002	0.009	--
	3/29/2005	N	0.314	8.21	--	--	U 10	--	0.73	--	--	U 0.005	--	--	--	--	0.002	0.008	--
	6/29/2005	N	3.5	7.87	--	--	U 10	--	0.39	U 0.05	--	U 0.005	--	--	--	--	0.003	0.006	U 0.01
	9/28/2005	N	0.32	7.85	--	--	--	--	0.65	U 0.1	309	0.008	U 0.005	--	U 0.2	0.01	0.002	0.008	U 0.01
	12/21/2005	N	0.28	7.25	--	--	U 10	--	0.99	--	--	0.006	U 0.005	--	--	--	0.002	0.01	--
	3/29/2006	N	0.16	7.62	--	--	U 10	--	0.9	--	--	U 0.005	--	--	--	--	0.001	0.01	--
	6/27/2006	N	1.41	7.69	--	--	U 10	--	0.5	--	--	U 0.005	--	--	--	--	0.003	0.008	--
	10/4/2006	N	0.3	7.62	--	--	U 10	--	0.6	--	--	U 0.005	--	--	--	--	0.002	0.008	--
	4/7/2008	N	0.2	7.76	--	--	U 10	--	0.71	--	--	U 0.005	--	--	--	--	U 0.001	0.008	--
	6/13/2008	N	AV 6.07	7.56	--	--	U 10	--	0.56	--	--	U 0.005	--	--	--	--	0.003	M% 0.013	--
	9/15/2008	D	AV 0.78	7.77	--	--	U 10	--	0.58	--	--	0.008	U 0.005	--	--	--	0.002	0.008	--
	9/15/2008	N	AV 0.78	7.77	--	--	U 10	--	0.57	--	--	0.006	U 0.005	--	--	--	0.002	0.008	--
	6/15/2009	N	AV 6.39	7.46	--	--	J 5.8	--	F 0.24	--	--	U 0.005	U 0.005	U 0.002	--	--	0.0033	0.0075	--
	8/7/2009	N	--	--	--	--	--	--	0.363	J 0.05	--	U 0.007	--	U 0.007	--	--	--	--	--
	9/3/2009	N	AV 1.427	7.9	--	--	U 10	--	1.1	U 0.02	--	F%J 0.002	F%J 0.003	FU 0.004	--	--	0.0018	0.006	--
	9/18/2009	N	--	--	--	--	--	--	0.378	U 0.02	--	0.02	--	0.01	--	--	--	--	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	10/22/2009	N	--	--	--	--	--	--	0.687	0.08	--	0.005	--	0.004	--	--	--	--	--
	6/17/2010	N	AV 13.69	7.42	--	--	11	--	0.2	U 0.05	--	U 0.005	U 0.005	U 0.06	--	--	0.008	0.006	--
	6/25/2010	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.06	--	--	--	--	--
	6/29/2010	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	7/7/2010	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	7/29/2010	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	8/24/2010	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	9/16/2010	N	AV 0.53	7.72	--	--	U 5	--	M%F 0.54	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.006	--
	10/17/2010	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	6/15/2011	N	AV 16.32	6.95	--	--	U 5	--	0.31	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.004	0.01	--
	6/30/2011	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	7/25/2011	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	7/29/2011	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	8/10/2011	N	--	--	--	--	--	--	--	U 0.1	--	0.007	--	--	--	--	--	--	--
	8/24/2011	N	--	--	--	--	--	--	--	U 0.1	--	0.007	--	--	--	--	--	--	--
	9/9/2011	N	--	--	--	--	--	--	--	U 0.1	--	U 0.005	--	--	--	--	--	--	--
	9/12/2011	D	AV 1.15	7.61	--	--	U 5	72	1.89	U 0.1	190	U 0.005	U 0.005	U 0.2	--	--	0.002	0.005	--
	9/12/2011	N	AV 1.15	7.61	--	--	U 5	72	1.89	U 0.1	190	U 0.005	U 0.005	U 0.2	--	--	0.002	0.005	--
	9/29/2011	N	--	--	--	--	--	--	--	U 0.1	--	0.007	--	--	--	--	--	--	--
	10/19/2011	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	11/3/2011	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	7/2/2012	D	AV 1.14	6.97	--	--	U 5	--	--	UM% 0.05	--	UH 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	7/2/2012	N	AV 1.14	6.97	--	--	U 5	--	--	UM% 0.05	--	UH 0.005	U 0.005	U 0.2	--	0.01	--	0.005	--
	7/16/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	7/29/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	8/13/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	8/27/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/10/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/13/2012	D	AV 0.33	8.06	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.005	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	9/13/2012	N	AV 0.33	8.06	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.01	--	0.005	--
	9/27/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	10/11/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	10/18/2012	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	5/20/2013	D	AV 1.62	7.79	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.008	--	0.008	--
	5/20/2013	N	AV 1.62	7.79	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.009	--	0.008	--
	7/12/2013	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	7/25/2013	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	8/8/2013	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	8/26/2013	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/5/2013	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/30/2013	N	AV 3.09	7.4	--	--	H 14	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.011	--	0.005	--
	5/27/2014	D	AV 8.725	7.83	--	--	7	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.009	--	0.005	--
	5/27/2014	N	AV 8.725	7.83	--	--	8	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.008	--	0.005	--
	8/28/2014	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/4/2014	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/15/2014	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	9/24/2014	D	AV 1.168	7.18	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	9/24/2014	N	AV 1.168	7.18	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.009	--	0.003	--
	10/15/2014	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	10/31/2014	N	--	--	--	--	--	--	--	U 0.05	--	U 0.005	--	--	--	--	--	--	--
	5/29/2015	N	--	--	--	--	5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	9/9/2015	N	--	--	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	10/8/2015	D	--	8	--	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	10/8/2015	N	--	8	--	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	5/18/2016	D	ade 2.069	7.89	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	5/18/2016	N	ade 2.069	7.89	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	9/19/2016	N	--	7.26	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	6/6/2017	D	--	7.89	--	--	6	--	--	U 0.05	--	UH 0.004	UH 0.004	U 0.2	--	--	--	0.007	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-3A	6/6/2017	N	--	7.89	--	--	5	--	--	U 0.05	--	UH 0.004	UH 0.004	U 0.2	--	--	--	0.007	--
	10/11/2017	D	--	8.36	--	--	U 5	--	--	U 0.05	--	0.004	U 0.004	U 0.2	--	--	--	0.005	--
	10/11/2017	N	--	8.36	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.005	--
	6/12/2018	D	--	7.99	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.005	U 0.2	--	--	--	0.003	--
	6/12/2018	N	--	7.99	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.005	U 0.2	--	--	--	0.003	--
	9/17/2018	D	--	8.05	--	--	U 5	--	--	U 0.05	--	L 0.009	U 0.004	U 0.2	--	--	--	0.005	--
	9/17/2018	N	--	8.05	--	--	U 5	--	--	U 0.05	--	UH 0.004	U 0.004	U 0.2	--	--	--	0.005	--
	6/4/2019	D	--	7.81	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.003	--
	6/4/2019	N	--	7.81	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.003	--
	9/16/2019	D	--	7.94	--	--	U 5	--	--	U 0.1	--	U 0.004	U 0.004	U 0.2	--	--	--	0.004	--
	9/16/2019	N	--	7.94	--	--	U 5	--	--	U 0.1	--	U 0.004	U 0.004	U 0.2	--	--	--	0.004	--
STA-3B	9/17/2018	N	--	7.93	--	--	U 5	--	--	U 0.05	--	UH 0.004	U 0.004	U 0.2	--	--	--	0.007	--
	6/4/2019	N	--	7.61	--	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.009	--
	9/16/2019	N	--	7.88	--	--	U 5	--	--	U 0.1	--	0.004	U 0.004	U 0.2	--	--	--	0.006	--
STA-4	9/17/1987	D	0.085	--	45	72	2	--	0.77	U 0.1	6	--	U 0.005	--	--	U 0.005	U 0.01	U 0.005	0.01
	9/17/1987	N	0.085	--	45	72	2	--	0.77	U 0.1	6	--	U 0.005	--	--	U 0.005	U 0.01	U 0.005	0.01
	10/21/1987	D	0.069	--	47	84	U 1	--	U 0.05	U 0.1	9	--	U 0.005	--	--	U 0.005	U 0.01	U 0.005	0.01
	10/21/1987	N	0.069	--	47	84	U 1	--	U 0.05	U 0.1	9	--	U 0.005	--	--	U 0.005	U 0.01	U 0.005	0.01
	11/19/1987	N	0.047	--	46	64	U 1	--	U 0.05	U 0.1	8	U 0.01	--	--	--	U 0.005	U 0.01	U 0.005	U 0.01
	10/23/1988	N	--	--	48	A 94	4	--	--	U 0.1	9	U 0.01	--	--	--	0.007	U 0.01	U 0.005	U 0.01
	1/17/1989	N	--	6.8	--	--	--	--	--	--	8	U 0.01	--	--	--	--	--	--	--
	3/1/1989	N	--	5.42	--	--	--	--	--	--	8	U 0.01	--	--	--	--	--	--	--
	5/12/1989	N	1.08	7.43	A 62	A 71	--	--	--	U 0.5	7.8	U 0.005	--	--	--	0.003	U 0.01	U 0.003	0.01
	5/12/1989	N	1.08	7.43	A 62	A 71	--	--	--	U 0.5	7.8	U 0.005	--	--	--	0.003	U 0.01	U 0.003	U 0.01
	6/28/1989	N	0.79	7.05	--	--	--	--	--	--	9.1	U 0.005	--	--	--	--	--	--	--
	7/27/1989	N	0.45	--	44	A 81	--	--	--	U 1	11	0.02	U 0.005	U 0.005	--	0.003	U 0.01	U 0.002	U 0.002
	8/22/1989	N	--	7.43	--	--	--	--	--	--	11	U 0.005	--	--	--	--	--	--	--

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1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-4	9/28/1989	N	--	7.14	--	--	--	--	--	--	10	U 0.005	--	--	--	--	--	--	--
	11/16/1989	N	0.089	7.49	41	58	--	--	--	U 1	12	0.01	--	U 0.005	--	0.003	0.02	0.001	0.004
	12/6/1989	N	0.223	--	--	--	--	--	--	--	9.8	U 0.005	--	--	--	--	--	--	--
	1/16/1990	N	0.22	--	--	--	--	--	--	--	17	U 0.005	--	--	--	--	--	--	--
	2/26/1990	N	0.11	--	--	--	--	--	--	--	11	U 0.005	--	--	--	--	--	--	--
	4/19/1990	N	0.18	8.01	46	83	40	--	--	U 0.5	9.1	U 0.005	--	--	--	0.004	0.04	U 0.002	U 0.02
	5/24/1990	N	0.45	--	--	--	--	--	--	--	4.3	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	0.45	--	--	--	--	--	--	--	6.4	U 0.005	--	--	--	--	--	--	--
	7/19/1990	N	0.19	7.67	39	A 34	U 4	--	--	U 0.5	5.11	U 0.005	--	--	--	0.002	U 0.01	0.002	0.015
	8/22/1990	N	0.22	--	--	--	--	--	--	--	7	U 0.005	--	--	--	--	--	--	--
	9/24/1990	N	0.09	--	--	--	--	--	--	--	6.84	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	0.08	7.83	39	74	9	--	--	U 0.5	5.82	U 0.005	--	--	--	0.003	U 0.02	U 0.001	U 0.01
	12/12/1990	N	0.11	--	--	--	--	--	--	--	7.19	U 0.005	--	--	--	--	--	--	--
	1/16/1991	N	--	--	--	--	--	--	--	--	6.8	U 0.005	--	--	--	--	--	--	--
	2/27/1991	N	--	--	--	--	--	--	--	--	9.8	U 0.005	--	--	--	--	--	--	--
	4/17/1991	N	--	7.29	45	A 168	131	--	--	U 0.5	8.3	U 0.005	--	--	--	0.003	U 0.002	0.002	0.021
	5/29/1991	N	3	--	--	--	--	--	--	--	7	U 0.005	--	--	--	--	--	--	--
	6/26/1991	N	1.5	--	--	--	--	--	--	--	7.5	U 0.005	--	--	--	--	--	--	--
	7/25/1991	N	0.25	8.33	42	73	U 4	--	--	U 0.1	7.7	U 0.005	--	--	--	0.004	U 0.002	U 0.002	0.006
	8/28/1991	N	1	--	--	--	--	--	--	--	8.9	U 0.005	--	--	--	--	--	--	--
	9/18/1991	N	0.5	--	--	--	--	--	--	--	11	U 0.005	--	--	--	--	--	--	--
	11/1/1991	N	0.04	7.52	40	79	U 4	--	U 1	U 0.1	8	U 0.005	--	--	--	0.004	U 0.006	0.003	0.022
	12/17/1991	N	0.03	--	--	--	--	--	--	--	11	U 0.005	--	--	--	--	--	--	--
	1/21/1992	N	1.25	--	--	--	--	--	--	--	9	U 0.005	--	--	--	--	--	--	--
	2/27/1992	N	0.1	--	--	--	--	--	--	--	9.8	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	0.063	8.23	53	A 99	U 10	--	U 0.5	0.1	7.2	U 0.005	--	--	--	0.38	U 0.005	U 0.002	U 0.004
	5/13/1992	N	1	--	--	--	--	--	--	--	10	U 0.005	--	--	--	--	--	--	--
	6/18/1992	N	1.5	--	--	--	--	--	--	--	16	U 0.005	--	--	--	--	--	--	--
	7/17/1992	N	0.34	7.52	47	A 131	--	--	U 1	U 0.5	10	U 0.005	--	--	--	--	--	--	--

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1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-4	8/19/1992	N	0.2	--	--	--	--	--	U 1	--	U 10	U 0.005	--	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	0.2	--	--	--	--	--	--	--	--	--	--
	9/25/1992	N	0.1	--	56	--	--	--	U 1	--	12	U 0.005	--	--	--	--	--	--	--
	10/29/1992	N	0.085	7.95	66	90	U 10	--	U 1	U 0.5	13	U 0.005	--	--	--	0.005	0.005	0.004	0.008
	12/10/1992	N	--	--	--	--	--	--	U 1	--	14	U 0.005	--	--	--	--	--	--	--
	1/20/1993	N	--	--	--	--	--	--	U 1	--	14	U 0.005	--	--	--	--	--	--	--
	2/26/1993	N	0.1	--	--	--	--	--	0.25	--	15	U 0.005	--	--	--	--	--	--	--
	4/7/1993	N	0.044	7.74	79	66	U 10	--	0.35	0.2	30	U 0.005	--	--	--	0.005	0.002	0.022	U 0.006
	5/19/1993	N	1.5	--	--	--	--	--	0.4	--	27	U 0.005	--	--	--	--	--	--	--
	6/24/1993	N	1	--	--	--	--	--	0.31	--	21	U 0.005	--	--	--	--	--	--	--
	7/29/1993	N	0.96	8.2	76.3	92	U 4	--	0.19	JJ1,J4 0.1	30	U 0.005	--	--	--	0.005	0.002	0.015	0.009
	8/24/1993	N	0.5	--	--	--	--	--	J4 0.47	--	36	U 0.005	--	--	--	--	--	--	--
	9/22/1993	N	0.25	--	--	--	--	--	0.31	--	29	U 0.005	--	--	--	--	--	0.015	--
	10/19/1993	N	0.21	7.38	80	129	8	--	J4 0.34	U 0.1	36	U,J2 0.005	--	--	--	U 0.005	U 0.01	U 0.005	0.09
	12/9/1993	N	0.1	--	--	101	--	--	0.55	--	32	U 0.005	--	--	--	U 0.005	U 0.01	0.008	--
	3/8/1994	N	0.06	7.8	88	113	2	--	0.63	U 0.1	J4 33	U 0.02	--	--	--	U 0.005	U 0.01	0.008	0.02
	4/20/1994	N	0.399	7.93	152	218	29	--	1	U 0.1	104	U 0.02	--	--	--	0.015	0.01	0.02	0.02
	5/17/1994	N	2.94	8.81	54	99	14	--	J4 0.18	U 0.1	25	U 0.02	--	--	--	U 0.005	U 0.01	0.009	0.02
	6/13/1994	N	0.625	7.72	60	114	7	--	0.14	U 0.1	30	U 0.02	--	--	--	U 0.005	U 0.01	0.005	0.02
	8/2/1994	N	0.15	7.25	74	105	9	--	0.22	U 0.1	29	U 0.02	--	--	--	0.005	U 0.01	0.006	0.01
	10/4/1994	N	0.2	7.6	91	124	31	--	0.63	U 0.1	39	U 0.02	--	--	--	U 0.005	U 0.01	U 0.005	0.02
	12/13/1994	N	--	7.07	90	132	19	--	0.45	U 0.1	43	U 0.02	--	--	--	0.007	U 0.01	0.006	0.02
	3/7/1995	N	--	7.36	103	135	14	--	0.43	U 0.1	4S 54	U 0.02	--	--	--	U 0.005	0.01	0.01	0.03
	4/20/1995	N	--	7.48	180	245	1	--	1.01	U 0.1	133	U 0.005	--	--	--	U 0.005	U 0.01	J4 0.018	J4 0.02
	5/23/1995	N	16	7.83	134	190	U 10	--	0.52	U 0.1	93	U 0.02	--	--	--	0.008	0.01	0.018	0.02
	6/21/1995	N	5.25	7.9	41	78	--	--	U 0.01	--	16	U 0.02	--	--	--	0.004	--	0.003	0.03
	8/15/1995	N	0.15	7.46	69	J4S 102	U 10	--	0.08	U 0.1	31	U 0.005	--	--	--	U 0.005	U 0.01	0.012	J4S 0.03
	10/10/1995	N	0.18	7.18	79	116	U 10	--	0.11	U 0.05	37	U 0.005	--	--	--	0.005	0.002	0.003	0.02
	11/29/1995	N	--	7.42	75	J4 110	--	--	0.18	--	42	U 0.005	--	--	--	U 0.003	--	0.004	UJ1 0.02

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-4	3/5/1996	N	--	6.51	90.9	121	--	--	0.25	--	40.5	U 0.005	--	--	--	0.004	--	J4 0.0046	0.022
	4/15/1996	N	--	8.29	149	224	--	--	J4 0.362	--	104	U 0.005	--	--	--	0.013	--	0.0078	0.024
	5/28/1996	N	0.45	8.1	94.4	154	--	--	UJ1 0.159	--	59	U 0.005	--	--	--	0.005	0.0037	0.0054	UJ1 0.015
	6/7/1996	N	0.66	7.68	J4 48	J4 65	--	--	J4 0.05	--	J4 22	U 0.005	--	--	--	0.007	--	J4 0.003	0.03
	8/2/1996	N	0.05	7.91	73.7	117	--	--	0.09	--	30.8	U 0.005	--	--	--	0.004	0.008	0.002	0.03
	9/24/1996	N	0.9	7.89	88.8	115	U 10	--	0.12	U 0.05	37.7	U 0.005	--	--	--	0.004	J4 0.004	0.003	0.04
	12/2/1996	N	--	8.03	87.2	139	--	--	0.16	--	42.6	U 0.005	--	--	--	0.004	0.002	U 0.001	0.03
	3/11/1997	N	0.04	8.19	80.9	142	--	--	0.19	--	44	U 0.005	--	--	--	U 0.003	--	0.004	0.01
	4/21/1997	N	0.04	7.77	195.5	299	--	--	0.18	--	160	U 0.005	--	--	--	J2 0.003	0.003	0.011	U 0.01
	5/21/1997	N	0.9	7.7	96.4	158	--	--	0.1	--	66.8	U 0.005	--	--	--	U 0.003	0.038	0.007	0.02
	6/24/1997	N	1.23	8.13	46.7	98	--	--	0.13	--	25.1	U 0.005	--	--	--	0.004	0.012	0.017	0.02
	7/29/1997	N	0.45	8.03	78	135	--	--	0.36	--	45.6	U 0.005	--	--	--	0.004	J4 0.003	0.051	0.01
	9/16/1997	N	0.067	8.01	99.4	163	U 10	--	0.37	U 0.05	57.7	U 0.005	--	--	--	0.003	0.004	0.055	0.02
	12/9/1997	N	--	8.21	99.8	149	--	--	0.44	--	64.3	U 0.005	--	--	--	0.008	0.004	0.005	0.01
	3/3/1998	N	0.067	8.63	91.6	163	--	--	0.22	--	54	U 0.005	--	--	--	U 0.003	0.002	0.015	U 0.01
	5/31/1998	N	0.75	8.34	68.9	91	--	--	0.23	--	35.7	U 0.005	--	--	--	0.005	0.016	0.025	--
	9/22/1998	N	0.134	8.23	88	128	--	--	0.04	--	47	U 0.005	--	--	--	0.004	0.004	0.004	--
	10/20/1998	N	--	--	86.6	142	--	--	0.05	--	46.4	U 0.005	--	--	--	U 0.003	0.002	0.002	0.05
	11/17/1998	N	0.111	7.58	97	129	--	--	0.06	--	49.7	U 0.005	--	--	--	U 0.003	U 0.001	0.003	--
	1/12/1999	N	--	--	545.1	821	--	--	3.14	--	452	--	--	--	--	U 0.003	0.002	0.05	--
	2/9/1999	N	--	--	640.2	910	--	--	3.68	--	532	U 0.005	--	--	--	0.004	U 0.001	0.043	--
	3/10/1999	N	--	--	91.6	122	--	--	0.09	--	54.6	U 0.005	--	--	--	0.003	0.068	U 0.001	--
	6/3/1999	N	1.6	--	82	133	--	--	0.06	--	52.8	U 0.005	--	--	--	U 0.003	0.014	0.003	--
	9/27/1999	N	0.067	--	95.6	143	--	--	0.05	--	56.4	U 0.005	--	--	--	U 0.003	0.003	0.003	--
	11/10/1999	N	0.022	--	90.9	128	--	--	0.06	--	54.4	U 0.005	--	--	--	0.006	U 0.001	U 0.001	--
	3/20/2000	N	--	--	95.8	133	--	--	0.07	--	52.9	U 0.005	--	--	--	U 0.003	0.005	0.002	--
	6/24/2000	N	--	--	80.2	129	--	--	0.04	--	41.1	U 0.005	--	--	--	0.003	0.005	0.002	--
	9/20/2000	N	--	--	108.9	169	--	--	0.05	--	62.4	U 0.005	--	--	--	0.004	U 0.001	0.003	--
	12/27/2000	N	--	--	524	832	--	--	6.41	--	461	U 0.005	--	--	--	U 0.003	0.004	0.002	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-4	3/25/2001	N	--	--	102.2	156	--	--	0.16	--	62.6	U 0.005	--	--	--	U 0.003	0.002	0.003	--
	6/16/2001	N	--	--	--	162	U 10	--	0.02	--	45.9	U 0.005	--	--	--	U 0.003	0.001	0.001	--
	9/23/2001	N	--	--	--	209	U 10	--	0.12	--	82.5	U 0.005	--	--	--	U 0.003	0.002	0.002	--
	11/28/2001	N	--	--	--	214	U 10	--	0.08	--	83.9	U 0.005	--	--	--	0.003	0.002	0.005	--
	2/13/2002	N	--	--	--	161	U 10	--	0.06	--	71	U 0.005	--	--	--	U 0.003	U 0.001	0.004	--
	6/12/2002	N	1.75	7.2	--	153	U 10	--	U 0.05	--	58	U 0.005	--	--	--	U 0.003	0.003	0.002	--
	9/23/2002	N	0.067	--	--	183	U 10	--	U 0.05	--	71	U 0.005	--	--	U 0.2	0.003	U 0.001	0.002	--
	10/17/2002	N	--	--	--	155	--	--	--	--	73	--	--	--	--	--	0.001	0.002	--
	11/6/2002	N	0.067	7.8	--	170	U 10	--	U 0.05	--	65	U 0.005	--	--	U 0.2	0.003	0.002	0.002	--
	3/28/2003	N	0.056	7.7	--	159	U 10	--	U 0.1	--	70	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.002	--
	6/18/2003	N	0.7	7.9	--	109	U 10	--	U 0.1	--	41	U 0.005	--	--	U 0.2	0.004	0.002	0.002	--
	9/23/2003	N	0.033	7.8	--	197	U 10	--	U 0.1	--	81	U 0.005	--	--	U 0.2	0.003	U 0.001	0.002	--
	11/12/2003	N	0.067	7	--	195	U 10	--	U 0.1	--	81	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.003	--
	6/10/2004	N	1.014	8.24	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.002	0.002	--
	12/14/2004	N	0.111	8.02	--	--	U 10	--	0.1	--	--	U 0.005	--	--	--	--	0.001	0.003	--
	6/29/2005	N	2.36	7.84	--	--	U 10	--	U 0.05	U 0.05	--	U 0.005	--	--	--	--	0.003	0.001	U 0.01
	6/27/2006	N	0.29	8.1	--	--	U 10	--	U 0.05	--	--	U 0.005	--	--	--	--	0.002	0.001	--
	6/12/2008	N	AV 2.67	7.21	--	--	U 10	--	U 0.05	--	--	U 0.005	--	--	--	--	0.002	M% 0.002	--
	6/15/2009	N	AV 4.07	7.3	--	--	17.4	--	UF 0.005	--	--	U 0.005	U 0.005	J 0.002	--	--	0.0028	0.0006	--
	9/3/2009	N	AV 0.195	7.88	--	--	U 10	--	0.04	U 0.02	--	UF% 0.002	M%F% 0.008	FU 0.004	--	--	0.0029	0.0011	--
	6/16/2010	N	AV 9.86	6.87	--	--	103	--	U 0.05	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.017	0.002	--
	9/15/2010	N	AV 0.144	7.69	--	--	U 5	--	UF 0.05	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	U 0.001	0.001	--
	6/15/2011	N	AV 7.61	7.18	--	--	U 5	--	U 0.05	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.003	0.001	--
	9/14/2011	N	AV 0.1	7.33	--	--	U 5	47	U 0.05	U 0.1	41	U 0.005	U 0.005	U 0.2	--	--	U 0.001	0.001	--
	7/2/2012	N	AV 0.639	6.93	--	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	U 0.001	--
	9/13/2012	N	AV 0.046	7.92	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.001	--
	5/20/2013	N	AV 0.53	7.55	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--
	9/30/2013	N	AV 0.29	7.6	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.003	--
	5/27/2014	N	AV 5.561	7.26	--	--	5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--

TABLE A-1
1987 to 2019 SURFACE WATER QUALITY DATA SUMMARY

Beal Mountain Mine

BCD - Blanket Collection Drain for Beal Leach Pad **MINN - Minnesota Gulch**

BS - Beefstraight Creek **STA - German Gulch**

Station	Sample Date	Sample Type	Flow (cfs)	Field pH (su)	LABORATORY Hardness (mg/L)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
STA-4	9/24/2014	N	AV 0.101	7.51	--	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.001	--

Notes:

cfs - cubic feet per second
su - standard units
mg/L - milligrams per liter
NA - MDEQ water qualitystandard does not exist for given analyte.
WAD - Weak Acid Dissociable
A - Standard calculated using pH of 7.7 with salmonids present.
B - Standard calculated using pH of 7.7 with early life stage fish present at 0-14 degrees C
* - Standard calculated using a hardness of 100 mg/L.
Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)
N - Natural Sample; D - Duplicate Sample; S - Split sample
-- - Data not collected or parameter not analyzed.
AV - Area velocity flow method
TV - Time volume flow method
FL - Flume reading

U - Analyte concentration is less than laboratory reporting limit indicated.
M% - Matrix spike recoveries exceed acceptable limits.
J - Estimated value - the result is greater than method detection limit but less than the practical quantitation limit (PQL).
F - Result exceeded quality control criteria - PQL based.
F% - Result exceeded quality control criteria - RPD based.
d - RL increased due to sample matrix
H - Analysis performed past recommended holding time
- Value exceeds MDEQ Human Health standard.
- Value exceeds MDEQ acute aquatic life standard.
- Value exceeds MDEQ chronic aquatic life standard.

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
French Drain Ponds East of BCD-A																			
FD-Pond	10/25/2013	N	--	--	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.012	--
Geotech Slide/Leach Pad																			
SPR-6	4/19/1995	N	0.198	4.75	2680	2290	--	0	9.54	U 0.1	1490	--	--	--	--	--	--	--	--
LAD																			
SPR-D6	6/12/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/18/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/7/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/10/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LAD Area																			
SPR-18	4/20/1994	N	8.2	7.49	104	87	--	52	0.05	U 0.1	8	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	--	8.4	126.8	105	--	58	J4 0.08	U 0.1	7	U 0.02	--	--	--	--	--	--	--
	6/14/1994	N	1	7.85	227	141	--	87	0.3	U 0.1	13	U 0.02	--	--	--	--	--	--	--
	8/1/1994	N	0.638	8.15	218	148	--	94	U 0.05	U 0.1	14	U 0.02	--	--	--	--	--	--	--
	10/3/1994	N	0.19	8.45	259	137	--	94	0.3	U 0.1	16	U 0.02	--	--	--	--	--	--	--
	8/15/1995	N	0.5	6.94	194	J4S 139	--	91	0.06	U 0.1	12	U 0.005	--	--	--	--	--	--	--
	3/25/2001	N	--	--	--	280	--	72.1	1.09	--	118	U 0.005	--	--	--	0.011	0.003	0.009	--
	6/16/2001	N	--	--	--	141	U 10	--	0.91	--	15.6	U 0.005	--	--	--	0.005	0.005	U 0.001	--
	8/29/2001	N	--	--	--	135	U 10	--	0.46	--	15.8	U 0.005	--	--	--	0.005	0.009	0.001	--
	9/23/2001	N	--	--	--	159	U 10	83.5	0.42	--	16.6	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	10/31/2001	N	--	--	--	116	U 10	--	0.63	--	16.5	U 0.005	--	--	--	0.004	U 0.001	0.001	--
	11/28/2001	N	--	--	--	162	U 10	--	0.63	--	16.1	U 0.005	--	--	--	0.004	0.003	0.002	--
	12/14/2001	N	--	--	--	155	U 10	--	0.63	--	16.4	0.01	U 0.005	--	--	U 0.003	0.007	U 0.001	--
	5/27/2002	N	--	--	--	101	22	--	0.11	--	18	0.02	U 0.005	--	--	0.005	0.005	U 0.001	--
	6/13/2002	N	0.46	7.2	260	137	U 10	--	0.7	--	18	0.01	0.007	--	--	0.003	U 0.001	0.002	--
	7/11/2002	N	--	--	--	161	33	--	0.62	--	17	0.01	U 0.005	--	--	0.011	0.005	0.002	--
	8/25/2002	N	--	--	--	154	U 10	--	0.63	U 0.1	18	0.02	U 0.005	--	--	0.005	U 0.001	0.002	--
	9/18/2002	N	0.55	--	--	152	U 10	--	0.62	--	18	0.02	0.011	--	U 0.2	0.004	U 0.001	0.002	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-18	10/24/2002	N	--	--	--	136	U 10	--	0.73	--	15	U 0.005	--	--	U 0.2	0.004	U 0.001	0.002	--
	11/5/2002	N	0.48	7.3	230	148	U 10	--	0.8	--	19	0.04	U 0.005	--	U 0.2	0.005	U 0.001	0.002	--
	12/10/2002	N	1	7.7	129	159	U 10	--	0.79	--	18	0.02	U 0.005	--	U 0.2	0.004	U 0.001	0.002	--
	5/16/2003	N	0.67	8.3	510	165	U 10	--	0.7	--	22	0.03	0.012	--	U 0.2	0.004	0.001	0.002	--
	6/30/2003	N	0.35	7	240	139	U 10	--	0.7	--	18	0.01	U 0.005	--	U 0.2	0.006	U 0.001	0.002	--
	7/25/2003	N	0.5	7.6	230	140	U 10	--	0.7	--	18	0.03	0.006	--	U 0.2	0.005	0.001	0.002	--
	8/7/2003	N	0.36	7.4	230	165	U 10	--	0.8	--	16	0.01	U 0.005	--	U 0.2	0.005	U 0.001	0.002	--
	6/18/2008	N	TV 0.6	--	--	176	U 10	--	0.83	--	33	0.03	0.014	--	U 0.2	0.005	0.001	0.002	--
	6/16/2009	N	AV 0.43	8.14	255	--	J 7.4	--	F 0.49	--	--	M% 0.02	J 0.009	0.01	--	--	0.0012	0.0026	--
	6/16/2010	N	AV 6.73	7.31	185	--	U 10	--	0.43	U 0.05	--	0.02	0.009	U 0.2	--	--	M% 0.002	0.002	--
	9/15/2010	N	AV 0.3	7.99	995	--	U 5	--	M%F 1.77	0.1	--	M% 0.02	0.006	U 0.2	--	--	0.001	0.005	--
	6/15/2011	N	AV 11.5	6.85	80	--	U 5	--	0.59	U 0.1	--	0.02	U 0.005	U 0.2	--	--	0.002	0.002	--
	9/14/2011	N	AV 1.91	7.75	190	--	7	95	0.35	U 0.1	22	0.02	0.013	U 0.2	--	--	0.001	0.007	--
	6/4/2019	N	3.54	7.39	141	--	--	--	--	--	--	0.004	U 0.004	--	--	--	--	--	--
	9/17/2019	N	--	7.72	268	--	--	--	--	--	--	0.01	U 0.004	--	--	--	--	--	--
SPR-19	4/20/1994	N	17	7.59	334	213	--	179	0.26	U 0.1	5	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	--	7.67	442	226	--	205	J4 0.37	U 0.1	7	U 0.02	--	--	--	--	--	--	--
	6/14/1994	N	7	6.98	425	234	--	204	0.34	U 0.1	7	U 0.02	--	--	--	--	--	--	--
	12/12/1994	N	2	7.14	460	216	--	185	0.31	U 0.1	8	U 0.02	--	--	--	--	--	--	--
	3/2/1995	N	2.44	7.09	401	192	--	180	0.34	U 0.1	4S 8	U 0.02	--	--	--	--	--	--	--
	4/19/1995	N	3.33	7.02	447	199	--	195	0.31	U 0.1	8	U 0.005	--	--	--	--	--	--	--
	5/22/1995	N	16.7	7.58	423	174	--	185	0.2	U 0.1	5	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	15	7.27	468	256	--	213	0.33	--	7	U 0.02	--	--	--	--	--	--	--
	8/16/1995	N	14.8	7.31	408	J4S 223	--	207	0.31	U 0.1	9	U 0.005	--	--	--	--	--	--	--
	11/30/1995	N	4	7.03	440	J4 215	--	199	0.57	--	13	U 0.005	--	--	--	--	--	--	--
	3/6/1996	N	1.6	7.43	503	240	--	191	0.644	--	20.2	U 0.005	--	--	--	--	--	--	--
	4/22/1996	N	3	6.67	456	227	--	186.6	0.373	--	9.2	U 0.005	--	--	--	--	--	--	--
	5/15/1996	N	15	6.83	475	233	--	196	0.295	--	5.3	U 0.005	--	--	--	--	--	--	--
	6/13/1996	N	7.9	7.24	497	240	--	214.1	0.35	--	8.6	U 0.005	--	--	--	--	--	--	--
	9/25/1996	N	2.5	7.35	440	241	--	201.7	0.37	U 0.05	12.5	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-19	12/3/1996	N	1.5	7.55	465	252	--	193.8	0.95	--	14.7	U 0.005	--	--	--	--	--	--	--
	3/10/1997	N	1.2	--	0	233	--	190.6	0.49	--	15.7	U 0.005	--	--	--	U 0.003	--	0.002	U 0.01
	4/22/1997	N	10	7.07	354	194	--	164.5	0.41	--	9.6	U 0.005	--	--	--	U 0.003	0.003	0.002	U 0.01
	5/7/1997	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/28/1997	N	20	7.63	431	228	--	202.5	0.31	--	8.3	U 0.005	--	--	--	U 0.003	0.012	0.002	U 0.01
	6/24/1997	N	10	7.56	389	J4 261	--	203.6	0.28	--	12.5	U 0.005	--	--	--	U 0.003	J4 0.003	0.001	U 0.01
	7/31/1997	N	4.3	7.44	418	245	--	203.3	0.28	--	12.4	U 0.005	--	--	--	U 0.003	0.002	J4 0.004	U 0.01
	9/17/1997	N	2	7.54	411	218	U 10	200	0.25	U 0.05	13.5	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	U 0.01
	12/9/1997	N	1.8	7.62	529	231	--	193.7	0.36	--	15.5	U 0.005	--	--	--	U 0.003	U 0.001	0.003	U 0.01
	3/2/1998	N	0	7.61	389	232	--	195.5	0.39	--	15.7	U 0.005	--	--	--	U 0.003	0.004	0.002	U 0.01
	5/31/1998	N	4.3	7.76	401	229	--	197.9	0.45	--	18.3	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	8/21/1999	N	2.75	7.4	410	206	--	199	0.47	--	13.2	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	8/23/1999	N	--	--	--	206	--	199	0.47	--	13.2	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	11/11/1999	N	1.8	--	--	222	--	195	0.55	--	14.7	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	6/16/2001	N	--	--	--	220	U 10	--	0.5	--	11.3	U 0.005	--	--	--	U 0.003	0.006	U 0.001	--
	6/13/2002	N	3	7.8	360	227	U 10	--	0.9	--	11	0.006	U 0.005	--	--	U 0.003	U 0.001	0.003	--
	7/11/2002	N	--	--	--	295	U 10	--	1.47	--	35	0.09	0.015	--	--	U 0.003	U 0.001	0.004	--
	9/20/2002	N	1.5	--	--	364	U 10	--	1.53	--	64	0.21	0.049	--	U 0.2	U 0.003	U 0.001	0.006	--
	10/24/2002	N	--	--	--	492	U 10	--	1.47	--	126	0.44	0.034	--	U 0.2	U 0.003	0.001	0.008	--
	11/7/2002	N	1.8	7.8	700	641	U 10	--	1.9	--	202	0.48	0.096	--	U 0.2	U 0.003	0.002	0.012	--
	12/10/2002	N	40	7.25	490	569	U 10	--	1.93	--	156	0.32	0.058	--	U 0.2	U 0.003	0.001	0.009	--
	1/14/2003	N	15	7.7	800	592	U 10	--	1.9	--	173	d 0.44	0.121	--	U 0.2	U 0.003	0.003	0.01	--
	2/12/2003	N	5	7.64	820	534	U 10	--	1.88	--	81	d 0.41	0.115	--	U 0.2	U 0.003	0.001	0.008	--
	3/11/2003	N	--	--	--	541	U 10	--	1.9	--	155	0.41	0.116	--	U 0.2	U 0.003	0.001	0.009	--
	4/24/2003	N	5.5	7.5	640	430	U 10	--	1.7	--	103	d 0.27	0.086	--	U 0.2	U 0.003	0.001	0.006	--
	5/21/2003	N	8.6	7.1	1700	1340	16	--	U 0.1	--	d 951	d 1.04	0.26	--	U 0.2	U 0.003	0.003	0.033	--
	6/30/2003	N	6	7.3	510	1440	U 10	--	5.8	--	561	d 1.08	0.3	--	U 0.2	U 0.003	0.002	0.02	--
	7/25/2003	N	4	7.3	1410	1260	U 10	--	5.2	--	d 405	d 0.77	0.22	--	U 0.2	U 0.003	0.001	0.023	--
	8/7/2003	N	2.6	7.3	1340	1210	U 10	--	4.9	--	469	d 0.84	0.52	--	U 0.2	U 0.003	0.002	0.02	--
	6/17/2008	N	TV 17	--	--	1170	U 10	--	2.67	--	580	0.25	0.137	--	U 0.2	0.002	0.003	0.016	--
	6/15/2009	N	TV 22.66	7.26	1187	--	U 5	--	F 2.3	--	--	M% 0.26	0.023	0.009	--	--	0.0015	0.0134	--

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1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-19	9/4/2009	N	TV 3.03	7.25	1444		U 10	--	3.1	U 0.02	--	F% 0.13	M%F% 0.16	F 0.14	--	--	0.0013	0.0166	--
	6/16/2010	N	TV 21.43	7.2	48	--	U 10	--	1.93	U 0.05	--	0.23	0.055	U 0.2	--	--	M% 0.001	0.01	--
	9/15/2010	N	TV 3.2	7.09	1314	--	U 5	--	M%F 2.98	U 0.05	--	M% 0.27	0.088	U 0.2	--	--	0.001	0.014	--
	6/15/2011	N	TV 51.1	7.3	451	--	U 5	--	0.92	U 0.1	--	0.12	0.062	U 0.2	--	--	0.001	0.007	--
	9/14/2011	N	TV 2.4	7.23	720	--	U 5	190	1.84	U 0.1	430	0.22	0.033	U 0.2	--	--	0.001	0.012	--
	7/2/2012	N	TV 6.98	7.32	710	--	U 5	--	--	UM% 0.05	--	dH 0.21	dHM% 0.08	UH 0.2	--	--	--	0.01	--
	9/13/2012	N	TV 2.55	7.35	666	--	U 5	--	--	U 0.05	--	0.17	0.064	U 0.2	--	--	--	0.011	--
	5/20/2013	N	2.78	7.37	621	--	U 5	--	--	U 0.05	--	0.23	0.038	U 0.2	--	0.001	--	0.011	--
	9/30/2013	N	2.74	7.18	1099	--	U 5	--	--	U 0.05	--	0.24	0.015	U 0.2	--	--	--	0.011	--
	5/29/2014	N	10.58	7.25	480	--	U 5	--	--	U 0.05	--	0.1	0.009	U 0.2	--	--	--	0.006	--
	9/24/2014	N	2.479	6.94	637	--	--	--	--	U 0.05	--	d 0.16	0.008	U 0.2	--	--	--	0.008	--
SPR-2	11/20/1987	N	--	--	--	129	U 1	119	0.34	U 0.1	8	--	--	--	--	0.008	U 0.01	U 0.005	0.02
	4/20/1994	N	1.3	7.41	204	112	--	85	0.38	U 0.1	6	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	1.1	8.04	298	170	--	142	J4 0.45	U 0.1	5	U 0.02	--	--	--	--	--	--	--
	6/14/1994	N	0.42	6.37	297	181	--	164	0.39	U 0.1	5	U 0.02	--	--	--	--	--	--	--
	8/1/1994	N	0.49	7.66	280	177	--	137	0.42	U 0.1	5	U 0.02	--	--	--	--	--	--	--
	10/3/1994	N	0.4	7.44	290	173	--	140	0.56	U 0.1	8	U 0.02	--	--	--	--	--	--	--
	8/15/1995	N	0.5	7.22	280	J4S 173	--	140	0.5	U 0.1	6	U 0.005	--	--	--	--	--	--	--
	6/16/2001	N	--	--	--	218	U 10	--	1.79	--	42.5	U 0.005	--	--	--	0.007	U 0.001	0.004	--
	7/31/2001	N	--	--	--	219	U 10	--	1.74	--	49.7	U 0.005	--	--	--	0.005	0.007	U 0.001	--
	8/29/2001	N	--	--	--	236	U 10	--	1.82	--	55.3	U 0.005	--	--	--	0.008	0.005	0.008	--
	9/23/2001	N	--	--	--	252	U 10	127.5	1.59	--	54.3	U 0.005	--	--	--	0.005	0.002	0.009	--
	10/31/2001	N	--	--	--	231	U 10	--	2.04	--	62	U 0.005	--	--	--	0.006	U 0.001	0.012	--
	11/28/2001	N	--	--	--	281	U 10	--	2.08	--	63.4	U 0.005	--	--	--	0.007	U 0.001	0.012	--
	12/14/2001	N	--	--	--	267	U 10	--	2.07	--	64.8	0.008	U 0.005	--	--	0.005	0.031	0.01	--
	1/23/2002	N	--	--	--	249	U 10	--	1.86	--	70	U 0.005	--	--	--	0.007	U 0.001	0.016	0.02
	2/28/2002	N	--	--	--	282	U 10	--	0.98	--	72	U 0.005	--	--	--	0.007	U 0.001	0.017	--
	3/25/2002	N	--	--	--	259	U 10	--	2.07	--	73	U 0.005	--	--	--	0.007	U 0.001	0.017	--
	4/24/2002	N	--	--	--	335	U 10	--	2.14	--	73	U 0.005	--	--	--	0.006	U 0.001	0.016	--
	5/27/2002	N	--	--	--	267	U 10	--	2.07	--	70	0.005	U 0.005	--	--	0.006	0.002	0.012	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-2	6/13/2002	N	1.2	7.7	330	214	U 10	--	1.9	--	40	0.005	U 0.005	--	--	0.007	0.013	0.008	--
	7/11/2002	N	--	--	--	230	U 10	--	1.47	--	41	0.01	U 0.005	--	--	0.007	U 0.001	0.008	--
	8/25/2002	N	--	--	--	251	U 10	--	1.55	U 0.1	60	0.03	0.008	--	--	0.007	U 0.001	0.011	--
	9/20/2002	N	1.5	--	--	257	U 10	--	1.6	--	66	0.03	0.016	--	U 0.2	0.007	U 0.001	0.013	--
	9/23/2002	N	--	--	--	608	U 10	--	0.58	--	299	0.02	0.015	--	U 0.2	--	--	--	--
	9/23/2002	N	--	--	--	1930	U 10	--	3.47	--	1170	U 0.005	--	--	U 0.2	--	--	--	--
	10/17/2002	N	--	--	--	1870	--	--	--	--	1180	--	--	--	--	--	--	--	--
	10/17/2002	N	--	--	--	590	--	--	--	--	307	--	--	--	--	--	--	--	--
	10/25/2002	N	--	--	--	272	U 10	--	1.88	--	61	0.04	0.029	--	U 0.2	0.006	U 0.001	0.013	--
	11/5/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/6/2002	N	--	--	--	535	15	--	1.85	--	252	0.02	U 0.005	--	U 0.2	--	--	--	--
	11/6/2002	N	--	--	--	1890	90	--	3.13	--	1100	0.01	U 0.005	--	U 0.2	--	--	--	--
	12/11/2002	N	3	6.84	359	285	U 10	--	2	--	69	0.04	0.006	--	U 0.2	0.006	U 0.001	0.014	--
	1/15/2003	N	1	7.4	450	295	U 10	--	2	--	77	0.01	0.013	--	U 0.2	0.007	U 0.001	0.016	--
	2/12/2003	N	1	7.89	491	289	U 10	--	2.09	--	85	0.05	0.009	--	U 0.2	0.006	U 0.001	0.015	--
	3/11/2003	N	0.8	8.06	540	308	U 10	--	2.1	--	88	0.06	0.015	--	U 0.2	0.005	0.007	0.016	--
	4/23/2003	N	0.55	7.2	410	255	U 10	--	1.9	--	68	0.05	0.019	--	U 0.2	0.006	0.001	0.016	--
	5/16/2003	N	1.2	8.2	350	244	U 10	--	1.6	--	50	0.03	0.013	--	U 0.2	0.007	0.002	0.008	--
	7/25/2003	N	0.6	7.4	1010	867	U 10	--	1.2	--	d 410	0.02	0.009	--	U 0.2	U 0.003	U 0.001	0.069	--
	8/7/2003	N	0.61	7.2	990	838	U 10	--	1.1	--	469	0.03	0.015	--	U 0.2	U 0.003	U 0.001	0.059	--
	6/18/2008	N	TV 0.53	--	--	481	11	--	0.72	--	230	0.02	0.012	--	U 0.2	0.007	0.006	0.015	--
	6/16/2009	N	TV 0.114	7.11	415	--	U 5	--	F 0.24	--	--	M%J 0.01	0.011	0.01	--	--	0.0009	0.0078	--
	9/4/2009	D	TV 0.52	7.23	5546	--	U 10	--	1	U 0.02	--	F% 0.08	F% 0.042	F 0.02	--	--	U 0.0005	0.0146	--
	9/4/2009	N	TV 0.52	7.23	5546	--	U 10	--	1	U 0.02	--	F% 0.07	F% 0.01	F 0.01	--	--	U 0.0005	0.0142	--
	6/16/2010	N	0	7.05	469	--	U 10	--	0.75	U 0.05	--	0.02	0.007	U 0.2	--	--	M% 0.001	0.008	--
	9/15/2010	N	0	6.87	958	--	7	--	M%F 1.16	U 0.05	--	M% 0.03	0.012	U 0.2	--	--	U 0.001	0.02	--
	6/15/2011	N	VE 2	7.25	283	--	U 5	--	0.59	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.007	--
	9/14/2011	N	0	7	371	--	6	120	0.89	U 0.1	170	0.03	0.007	U 0.2	--	--	0.001	0.014	--
	6/4/2019	N	1.98	7.4	239	--	--	--	--	--	--	0.004	U 0.004	--	--	--	--	--	--
	9/17/2019	N	--	7.05	450	--	--	--	--	--	--	0.02	U 0.004	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-3	11/18/1987	N	--	--	--	113	32	64	0.08	U 0.1	12	--	0.03	--	--	0.009	U 0.01	U 0.005	0.02
	10/23/1988	N	--	--	--	176	183	80	--	U 0.1	16	U 0.01	--	--	--	--	--	--	--
	1/18/1989	N	10	7.76	140	--	--	71	--	--	13	U 0.01	--	--	--	--	--	--	--
	3/1/1989	N	--	5	--	--	--	71	--	--	13	U 0.01	--	--	--	--	--	--	--
	5/12/1989	N	14.8	7.34	161	137	--	64	--	U 0.5	17	U 0.005	--	--	--	0.013	U 0.01	U 0.003	0.01
	6/29/1989	N	4.5	5.97	237.9	--	--	100	--	--	17	U 0.005	--	--	--	--	--	--	--
	7/27/1989	N	6.7	--	244	173	--	80	--	U 1	28	0.05	U 0.005	U 0.005	--	--	--	--	--
	8/22/1989	N	--	7.18	--	--	--	88	--	--	26	U 0.005	--	--	--	--	--	--	--
	9/27/1989	N	1.6	7.14	144	--	--	92	--	--	25	U 0.005	--	--	--	--	--	--	--
	11/16/1989	N	5.3	8.09	--	121	--	92	--	U 1	24	U 0.005	--	--	--	--	--	--	--
	12/6/1989	N	1.5	--	--	--	--	72	--	--	25	U 0.005	--	--	--	--	--	--	--
	1/16/1990	N	1	--	--	--	--	112	--	--	26	U 0.005	--	--	--	--	--	--	--
	2/27/1990	N	2	--	--	--	--	74	--	--	23	U 0.005	--	--	--	--	--	--	--
	4/19/1990	N	17	7.6	157	136	--	61	--	U 0.5	30	U 0.005	--	--	--	--	--	0.005	--
	5/24/1990	N	7.5	--	--	--	--	82	--	--	28	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	10	--	--	--	--	89	--	--	49	U 0.005	--	--	--	--	--	--	--
	7/20/1990	N	2.8	8.2	245	124	--	88	--	U 0.5	34	U 0.005	--	--	--	--	--	--	--
	8/20/1990	N	10	--	--	--	--	107	--	--	47	U 0.005	--	--	--	--	--	--	--
	9/25/1990	N	1.5	--	--	--	--	106	--	--	36	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	4.5	7.79	184	172	--	84	--	U 0.5	36	U 0.005	--	--	--	--	--	--	--
	12/12/1990	N	2	--	--	--	--	76	--	--	31	U 0.005	--	--	--	--	--	--	--
	1/16/1991	N	3	--	--	--	--	72	--	--	34	U 0.005	--	--	--	--	--	--	--
	2/28/1991	N	3.5	--	--	--	--	67	--	--	46	U 0.005	--	--	--	--	--	--	--
	4/17/1991	N	2.5	7.28	249	a 330	--	71	--	U 0.5	89	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	200	--	--	--	--	71	--	--	203	U 0.005	--	--	--	--	--	--	--
	6/26/1991	N	10	--	--	--	--	82	--	--	154	0.005	--	--	--	--	--	--	--
	7/25/1991	N	6.84	8.43	413	332	--	90	--	U 0.1	124	U 0.005	--	--	--	--	--	--	--
	8/28/1991	N	5	--	--	--	--	92	--	--	119	U 0.005	--	--	--	--	--	--	--
	9/17/1991	N	12	--	--	--	--	a 178	--	--	113	U 0.005	--	--	--	--	--	--	--
	11/1/1991	N	0.75	7.71	329	290	--	82	1	U 0.1	82	U 0.005	--	--	--	--	--	--	--
	12/18/1991	N	3	--	--	--	--	a 76	--	--	82	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-3	1/21/1992	N	1	--	--	--	--	81	--	--	90	U 0.005	--	--	--	--	--	--	--
	2/26/1992	N	3	--	--	--	--	72	--	--	J,A 5	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	15.3	7.44	490	297	--	66	2.2	0.1	140	U 0.005	--	--	--	--	--	--	--
	5/13/1992	N	5.5	--	--	--	--	85	--	--	115	U 0.005	--	--	--	--	--	--	--
	6/17/1992	N	15	--	--	--	--	84	--	--	177	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/16/1992	N	6.82	7.9	443	406	--	100	U 1	U 0.5	135	U 0.005	--	--	--	--	--	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/19/1992	N	3	--	--	--	--	106	U 1	--	119	U 0.005	--	--	--	--	--	--	--
	9/2/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/25/1992	N	3	--	--	--	--	a 120	U 1	--	109	U 0.005	--	--	--	--	--	--	--
	10/27/1992	N	3	8.16	407	292	26	93	U 1	U 0.5	108	U 0.005	--	--	--	0.016	0.013	0.004	0.027
	12/10/1992	N	3	--	--	--	--	74	1	--	101	U 0.005	--	--	--	--	--	--	--
	1/21/1993	N	3	--	--	--	--	81	1.3	--	107	U 0.005	--	--	--	--	--	--	--
	2/23/1993	N	2	--	--	--	--	78	1.43	--	92	U 0.005	--	--	--	--	--	--	--
	4/7/1993	N	19.75	7.7	543	337	11	70	1.34	0.21	159	U 0.005	--	--	--	0.012	0.004	0.007	0.017
	5/19/1993	N	15	--	--	--	--	86	1.78	--	213	U 0.005	--	--	--	--	--	--	--
	6/24/1993	N	20	--	--	--	--	88	1.73	--	200	U 0.005	--	--	--	--	--	--	--
	7/29/1993	N	29.2	7.91	553	436	42	84	1.3	J1,J4 0.14	227	U 0.005	--	--	--	0.013	0.005	0.007	0.009
	8/24/1993	N	20.2	--	--	--	--	98	J4 1	--	189	U 0.005	--	--	--	--	--	--	--
	9/22/1993	N	7.5	--	--	--	--	94	1.1	--	188	U 0.005	--	--	--	--	--	--	--
	10/19/1993	N	8.08	7.75	517	373	--	86	J4 1.05	U 0.1	181	U,J2 0.005	--	--	--	--	--	--	--
	12/10/1993	N	3	--	--	--	--	74	1.08	--	155	U 0.005	--	--	--	--	--	--	--
	3/9/1994	N	8.2	8.08	495	288	--	68	1.14	U 0.1	J4 128	U 0.02	--	--	--	--	--	--	--
	4/20/1994	N	60	8.04	650	433	--	55	1.64	U 0.1	206	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	25	8.35	639	395	--	76	J4 1.22	U 0.1	197	U 0.02	--	--	--	--	--	--	--
	6/13/1994	N	20	7.49	573	431	--	92	0.78	U 0.1	199	U 0.02	--	--	--	--	--	--	--
	8/2/1994	N	6	6.13	608	438	--	100	0.41	U 0.1	211	U 0.02	--	--	--	--	--	--	--
	10/4/1994	N	5	7.59	666	378	--	94	0.63	U 0.1	180	U 0.02	--	--	--	--	--	--	--
	12/14/1994	N	8	7.6	706	384	--	68	1.09	U 0.1	188	U 0.02	--	--	--	--	--	--	--
	3/7/1995	N	10	7.76	671	390	--	62	1.83	U 0.1	4S 206	U 0.02	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-3	4/18/1995	N	22	7.36	858	529	--	61	2.02	U 0.1	296	U 0.005	--	--	--	--	--	--	--
	5/24/1995	N	62	8.02	888	537	--	61	3.9	U 0.1	346	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	15	8.21	720	518	--	71	1.95	--	256	U 0.02	--	--	--	--	--	--	--
	8/18/1995	N	3.96	7.92	747	J4S 522	--	93	0.87	U 0.1	247	U 0.005	--	--	--	--	--	--	--
	10/11/1995	N	9	7.66	584	408	--	92	0.67	U 0.05	208	U 0.005	--	--	--	--	--	--	--
	11/29/1995	N	6	7.29	620	J4 390	--	73	1.45	--	J4 383	U 0.005	--	--	--	--	--	--	--
	3/4/1996	N	0	6.67	775	467	--	71.2	2.622	--	216	U 0.005	--	--	--	--	--	--	--
	4/15/1996	N	20	8.3	630	452	--	61.1	J4 3.323	--	J4 233	U 0.005	--	--	--	--	--	--	--
	5/28/1996	N	10	7.1	595	445	--	69.9	3.05	--	221	0.007	U 0.005	--	--	--	--	--	--
	6/13/1996	N	10	6.49	698	490	--	82.3	2.3	--	245	U 0.005	--	--	--	--	--	--	--
	8/7/1996	N	4	8.21	733	489	--	107.8	0.58	--	241	U 0.005	--	--	--	--	--	--	--
	9/25/1996	N	4	8.21	726	461	--	106.4	0.64	U 0.05	222	U 0.005	--	--	--	--	--	--	--
	4/21/1997	N	35	7.7	465	320	--	56.7	5.16	--	140	U 0.005	--	--	--	J2 0.006	J4 0.006	J4 0.003	0.01
	5/19/1997	N	40	7.8	531	398	--	48.5	3.1	--	219	U 0.005	--	--	--	0.006	0.006	0.007	0.01
	6/24/1997	N	15	8.03	673	494	--	73.6	2.58	--	248	U 0.005	--	--	--	0.009	0.018	0.006	0.02
	7/29/1997	N	12	8.15	647	502	--	93.5	1.22	--	244	U 0.005	--	--	--	0.008	J4 0.002	J4 0.004	0.01
	9/17/1997	N	5	8.4	621	470	U 10	96.1	1.29	U 0.05	216	U 0.005	--	--	--	0.009	UJ1 0.006	0.004	UJ1 0.02
	12/9/1997	N	2.5	8.36	272	458	--	78.1	2.25	--	204	U 0.005	--	--	--	0.003	0.005	0.04	0.02
	3/3/1998	N	2	8.52	682	422	--	75.6	2.57	--	192	U 0.005	--	--	--	0.011	0.013	0.005	0.01
	5/31/1998	N	--	--	--	484	--	75.5	1.95	--	251	U 0.005	--	--	--	0.008	0.004	0.005	--
	9/22/1998	N	2	8.51	689	486	--	104.1	0.83	--	242	U 0.005	--	--	--	0.01	0.017	U 0.001	--
	11/18/1998	N	4	8.19	0	438	--	85.1	1.92	--	219	U 0.005	--	--	--	0.005	0.02	0.004	--
	3/10/1999	N	0	--	--	387	--	83	2.72	--	205	U 0.005	--	--	--	0.005	0.029	U 0.001	--
	6/3/1999	N	40	--	--	410	--	67.5	2.84	--	201	U 0.005	--	--	--	0.006	0.017	0.005	--
	9/27/1999	N	1	--	--	468	--	104	0.59	--	231	U 0.005	--	--	--	0.007	0.024	0.003	--
	11/10/1999	N	0.5	--	--	436	--	91	1.02	--	227	U 0.005	--	--	--	0.008	U 0.001	0.003	--
	12/21/1999	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	12/28/1999	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	1/10/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	1/18/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	1/27/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-3	2/14/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	3/2/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	3/20/2000	N	--	--	--	404	--	76.5	2.07	--	204	U 0.005	--	--	--	0.007	0.009	0.004	--
	4/17/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/3/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/24/2000	N	--	--	--	--	--	--	--	--	--	0.009	U 0.005	--	--	--	--	--	--
	6/1/2000	N	--	--	--	--	--	--	--	--	--	0.009	U 0.005	--	--	--	--	--	--
	6/8/2000	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	6/24/2000	N	--	--	--	485	--	96.5	0.84	--	230	0.009	0.006	--	--	0.009	0.019	0.004	--
	9/20/2000	N	--	--	--	493	--	108	0.52	--	232	U 0.005	--	--	--	0.012	0.02	0.002	--
	12/27/2000	N	--	--	--	474	--	89.5	1	--	263	U 0.005	--	--	--	0.078	0.022	U 0.001	--
	3/25/2001	N	--	--	--	408	--	73	1.9	--	203	U 0.005	--	--	--	0.006	0.019	0.004	--
	6/16/2001	N	--	--	--	585	U 10	--	1.11	--	297	U 0.005	--	--	--	0.006	0.001	0.004	--
	9/23/2001	N	--	--	--	557	29	113	0.15	--	267	0.007	U 0.005	--	--	0.014	0.023	0.002	--
	11/28/2001	N	--	--	--	539	U 10	--	1.65	--	264	U 0.005	--	--	--	0.006	0.011	0.006	--
	6/12/2002	N	10	8	700	562	U 10	--	2.06	--	288	0.03	0.022	--	--	0.006	0.002	0.009	--
	9/23/2002	N	5	--	--	608	U 10	--	0.58	--	299	0.02	0.015	--	--	0.007	0.001	0.005	--
	10/17/2002	N	--	--	--	590	--	92	--	--	307	--	--	--	--	--	--	0.007	--
	11/6/2002	N	3	7.6	660	535	15	--	1.85	--	252	0.02	U 0.005	--	--	0.007	0.004	0.007	--
	3/12/2003	N	2	8.3	665	504	14	--	1.8	--	267	0.02	0.005	--	U 0.2	0.008	0.005	0.01	--
	6/30/2003	N	1.2	7.5	330	203	U 10	--	1.2	--	38	0.02	0.009	--	U 0.2	0.007	0.001	0.006	--
	6/30/2003	N	3	7.9	790	628	U 10	--	2.2	--	326	0.03	0.011	--	U 0.2	0.006	0.002	0.011	--
	10/12/2004	N	--	--	--	573	--	88	1.23	--	306	0.02	--	--	--	--	--	--	--
	6/18/2008	N	TV 12	--	--	655	U 10	--	2.59	--	380	U 0.005	U 0.005	--	U 0.2	0.006	0.002	0.012	--
	6/15/2009	N	AV 60.6	7.89	701	--	U 5	--	F 2.2	--	--	J 0.006	J 0.006	U 0.002	--	--	0.0014	0.012	--
	7/24/2009	N	--	--	--	--	--	--	0.726	0.2	--	J 0.02	--	U 0.007	--	--	--	--	--
	8/7/2009	N	--	--	--	--	--	--	0.962	0.11	--	J 0.01	--	J 0.008	--	--	--	--	--
	9/3/2009	N	TV 1.47	8.11	697		10.7	--	0.43	U 0.02	--	F% 0.007	M%F% 0.012	UF 0.004	--	--	0.0033	0.005	--
	9/18/2009	N	--	--	--	--	--	--	0.561	U 0.02	--	0.01	--	0.01	--	--	--	--	--
	10/22/2009	N	--	--	--	--	--	--	1.55	0.1	--	0.02	--	0.02	--	--	--	--	--
	6/16/2010	N	AV 139	7.66	562	--	115	--	1.46	U 0.05	--	0.008	U 0.005	U 0.2	--	--	M% 0.021	0.009	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-3	9/16/2010	N	AV 5.8	7.72	453	--	U 5	--	F 1.88	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.001	0.006	--
	6/15/2011	N	AV 144.5	7.77	373	--	U 5	--	2.33	U 0.1	--	0.02	U 0.005	U 0.2	--	--	0.002	0.009	--
	9/12/2011	N	AV 107.7	7.56	171	--	U 5	35	4.96	U 0.1	46	U 0.005	U 0.005	U 0.2	--	--	0.002	0.002	--
	7/2/2012	N	AV 10.77	7.95	458	--	U 5	--	--	UM% 0.05	--	H 0.008	UHM% 0.005	U 0.2	--	--	--	0.008	--
	9/13/2012	N	AV 61.5	8.16	185	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.004	--
	5/20/2013	N	11.9	8.04	355	--	U 5	--	--	U 0.05	--	0.007	U 0.005	U 0.2	--	0.005	--	0.009	--
	9/30/2013	N	58.8	7.66	484	--	UH 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	5/27/2014	N	26.36	7.93	359	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.01	--
	9/24/2014	N	179.4	7.56	124	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--
	5/29/2015	D	--	--	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.008	--
	5/29/2015	N	--	--	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.008	--
	9/9/2015	N	--	--	--	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.004	--
	10/8/2015	N	--	7.57	134	--	5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.002	--
	5/18/2016	N	44.44	7.81	522	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	--	--	--	--	0.008	--
	9/19/2016	D	17.14	7.1	413	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	--	--	--	--	0.004	--
	9/19/2016	N	17.14	7.1	413	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	--	--	--	--	0.004	--
	6/6/2017	N	--	8.14	584	--	U 5	--	--	U 0.05	--	0.02	U 0.004	--	--	--	--	0.007	--
	10/11/2017	N	--	8.43	391	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	--	--	--	--	0.003	--
	6/12/2018	N	--	7.92	347	--	56	--	--	U 0.05	--	U 0.004	U 0.005	U 0.2	--	--	--	0.005	--
	9/17/2018	N	--	7.85	468	--	11	--	--	U 0.05	--	UH 0.004	U 0.004	U 0.2	--	--	--	0.001	--
	6/4/2019	N	--	7.85	468	--	U 5	--	--	U 0.05	--	0.007	U 0.004	U 0.2	--	--	--	0.007	--
	9/16/2019	N	--	7.6	110	--	U 5	--	--	U 0.1	--	U 0.004	U 0.004	U 0.2	--	--	--	0.001	--
SPR-D1	7/25/1995	N	--	7.1	112	J4S 77	--	46	U 0.01	--	8	--	--	--	--	--	--	--	--
	6/16/2001	N	--	--	--	142	U 10	--	0.03	--	11.3	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	1/23/2002	N	--	--	--	983	U 10	--	U 0.05	--	533	0.83	0.188	--	--	U 0.003	0.003	0.051	0.02
	6/13/2002	N	0.5	7.5	1020	853	U 10	--	U 0.1	--	457	0.57	0.184	--	--	U 0.003	0.006	0.028	--
	9/18/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	11/7/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/10/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/24/2003	N	6	6.7	1310	1020	U 10	--	U 0.1	--	500	d 0.9	0.2	--	U 0.2	U 0.003	0.002	0.023	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D1	5/16/2003	N	6	6.8	1470	1080	13	--	0.1	--	d 495	d 0.86	0.22	--	U 0.2	U 0.003	0.001	0.024	--
	6/18/2003	N	3	7.1	1240	1050	U 10	--	U 0.1	--	526	d 0.6	0.122	--	U 0.2	U 0.003	U 0.001	0.02	--
	7/25/2003	N	2	6.95	1365	1010	U 10	--	U 0.1	--	d 417	d 0.65	0.2	--	U 0.2	U 0.003	U 0.001	0.02	--
	8/7/2003	N	4	6.6	1160	1030	U 10	--	U 0.1	--	514	d 0.53	0.156	--	U 0.2	U 0.003	U 0.001	0.018	--
	6/18/2008	N	TV 15	--	--	322	U 10	--	U 0.05	--	140	0.12	0.035	--	U 0.2	0.002	0.002	U 0.001	--
SPR-D2	7/26/1995	N	--	7.2	85	J4S 52	--	36	0.01	--	5	--	--	--	--	--	--	--	--
	9/21/2000	N	--	--	--	72	--	38.5	0.03	--	4.8	U 0.005	--	--	--	0.003	0.018	U 0.001	--
	6/16/2001	N	--	--	--	81	U 10	--	0.06	--	4.6	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	1/23/2002	N	--	--	--	2340	U 10	--	U 0.05	--	1350	1.96	0.495	--	--	0.004	0.007	0.108	0.02
	5/27/2002	N	--	--	--	1840	11	--	0.09	--	86	1.32	0.276	--	--	U 0.003	0.004	0.05	--
	6/13/2002	N	5	6.8	1070	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/13/2002	N	--	--	--	846	U 10	--	U 0.1	--	456	0.55	0.199	--	--	U 0.003	0.003	0.024	--
	7/11/2002	N	--	--	--	748	U 10	--	0.06	--	361	0.48	0.108	--	--	U 0.003	U 0.001	0.015	--
	8/25/2002	N	--	--	--	484	U 10	--	0.12	U 0.1	233	0.35	0.107	--	--	U 0.003	0.002	0.008	--
	9/18/2002	N	--	--	--	385	U 10	--	U 0.05	--	183	0.27	0.145	--	U 0.2	U 0.003	U 0.001	0.006	--
	11/7/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/10/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/14/2003	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	2/12/2003	N	2	8.27	2850	2220	U 10	--	0.18	--	62	d 1.88	0.397	--	U 0.2	U 0.003	0.005	0.075	--
	3/12/2003	N	1	8.15	2150	1580	12	--	0.3	--	d 855	d 1.26	0.27	--	U 0.2	U 0.003	0.003	0.029	--
	4/24/2003	N	10	6.6	3050	2280	U 10	--	0.1	--	d 1320	d 2.01	0.72	--	U 0.2	U 0.003	0.005	0.035	--
	5/16/2003	N	20	6.8	1820	1320	13	--	U 0.1	--	d 697	d 0.9	0.52	--	U 0.2	U 0.003	0.002	0.023	--
	6/30/2003	N	1.25	7.5	1400	1120	U 10	--	U 0.1	--	568	d 0.85	0.36	--	U 0.2	U 0.003	0.001	0.018	--
	7/25/2003	N	2	6.6	1160	1090	U 10	--	0.4	--	d 493	d 0.57	0.18	--	U 0.2	U 0.003	0.002	0.015	--
	8/7/2003	N	3.6	6.9	1530	1270	U 10	--	0.4	--	720	d 0.74	0.31	--	U 0.2	U 0.003	0.001	0.017	--
	6/18/2008	N	AV 10	--	--	469	U 10	--	1.76	--	270	0.18	0.073	--	U 0.2	U 0.001	0.001	0.002	--
	6/16/2009	N	AV 36.8	6.31	445	--	U 5	--	F 0.63	--	--	M% 0.12	0.029	0.01	--	--	0.0007	0.0029	--
	9/4/2009	N	AV 0.13	7.88	611		U 10	--	0.72	U 0.02	--	F% 0.19	F% 0.065	F 0.05	--	--	0.0007	0.0028	--
	6/16/2010	N	AV 37.97	6.18	412	--	U 10	--	0.37	U 0.05	--	0.14	0.046	U 0.2	--	--	M% 0.001	0.002	--
	9/15/2010	N	AV 0.13	7.2	562	--	6	--	M%F 0.45	U 0.05	--	M% 0.09	0.027	U 0.2	--	--	U 0.001	0.002	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D2	6/15/2011	N	AV 179.5	6.02	114	--	U 5	--	0.06	U 0.1	--	0.08	0.035	U 0.2	--	--	0.002	0.001	--
	9/14/2011	N	AV 4.15	7.08	297	--	U 5	29	0.35	U 0.1	140	0.07	0.021	U 0.2	--	--	U 0.001	0.002	--
	6/4/2019	N	30	6.3	91	--	--	--	--	--	--	0.04	U 0.004	--	--	--	--	--	--
	9/17/2019	N	--	7.77	204	--	--	--	--	--	--	0.04	U 0.004	--	--	--	--	--	--
SPR-D3	8/8/1995	N	--	7.1	315	J4S 173	--	84	0.33	U 0.1	55	--	--	--	--	--	--	--	--
	10/11/1995	N	3	7	191	121	--	85	0.09	U 0.05	19	U 0.005	--	--	--	--	--	--	--
	4/22/1996	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/15/1996	N	3	6.31	235	147	--	61.6	0.073	--	31.7	U 0.005	--	--	--	--	--	--	--
	6/13/1996	N	1.5	--	331	192	--	46.1	UJ1 0.04	--	84	0.007	U 0.005	--	--	--	--	--	--
	8/6/1996	N	1.5	7.31	376	230	--	54.7	U 0.01	--	105	U 0.005	--	--	--	--	--	--	--
	9/25/1996	N	0.75	7.33	335	219	--	62.3	0.03	U 0.05	86.9	U 0.005	--	--	--	--	--	--	--
	4/22/1997	N	0.25	7.71	287	179	--	59.9	0.05	--	66.4	0.01	U 0.005	--	--	U 0.003	0.001	0.001	U 0.01
	5/7/1997	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/27/1997	N	2.5	7.08	232	167	--	41.5	0.06	--	62.8	U 0.005	--	--	--	U 0.003	0.001	0.004	0.01
	6/24/1997	N	1.25	7.01	325	224	--	44.5	0.01	--	99.3	U 0.005	--	--	--	U 0.003	0.004	0.004	0.02
	7/31/1997	N	0.81	6.93	377	261	--	49	0.95	--	124	U 0.005	--	--	--	U 0.003	0.002	J4 0.006	0.01
	9/17/1997	N	0.46	7.19	366	228	U 10	54.4	0.04	U 0.05	117	U 0.005	--	--	--	U 0.003	UJ1 0.001	0.002	UJ1 0.01
	2/25/1998	N	0	7.92	382	233	--	55.1	0.91	--	99.9	U 0.005	--	--	--	U 0.003	0.002	U 0.001	U 0.01
	5/31/1998	N	0.5	7.39	296	204	--	50.4	U 0.01	--	88	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	9/22/1998	N	0.17	7.52	361	226	--	63.6	0.05	--	83.2	U 0.005	--	--	--	U 0.003	0.028	0.001	--
	11/20/1998	N	0.5	7.73	0	202	--	62.4	0.05	--	81.4	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	3/10/1999	N	0.25	--	--	547	--	136	0.04	--	79	U 0.005	--	--	--	U 0.003	0.021	U 0.001	--
	6/4/1999	N	0.8	--	--	177	--	56	0.25	--	58.9	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	3/20/2000	N	--	--	--	179	--	58.5	0.07	--	70.9	U 0.005	--	--	--	U 0.003	0.001	U 0.001	--
	6/26/2000	N	--	--	--	204	--	54.5	0.07	--	73.3	U 0.005	--	--	--	U 0.003	0.003	U 0.001	--
	9/20/2000	N	--	--	--	184	--	66	0.06	--	61.3	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	3/25/2001	N	--	--	--	666	--	94.5	1.88	--	306	14.3	12.31	--	--	0.018	0.374	0.027	--
	6/16/2001	N	--	--	--	195	U 10	--	0.05	--	66.5	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	9/23/2001	N	--	--	--	198	U 10	64.5	0.09	--	57.9	U 0.005	--	--	--	U 0.003	0.004	0.001	--
	10/31/2001	N	--	--	--	160	U 10	--	0.2	--	63	U 0.005	--	--	--	U 0.003	U 0.001	0.002	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D3	11/28/2001	N	--	--	--	212	U 10	--	0.14	--	63.4	U 0.005	--	--	--	U 0.003	0.002	0.001	--
	12/14/2001	N	--	--	--	194	U 10	--	0.08	--	63.7	U 0.005	--	--	--	U 0.003	0.024	0.002	--
	1/23/2002	N	--	--	--	170	24	--	0.06	--	67	U 0.005	--	--	--	U 0.003	0.004	0.002	0.02
	2/18/2002	N	--	--	--	184	U 10	--	0.06	--	65	U 0.005	--	--	--	U 0.005	U 0.01	U 0.005	--
	3/26/2002	N	--	--	--	177	U 10	--	0.05	--	65	U 0.005	--	--	--	U 0.003	U 0.001	0.002	--
	4/24/2002	N	--	--	--	198	U 10	--	U 0.05	--	66	U 0.005	--	--	--	U 0.003	U 0.001	0.002	--
	5/27/2002	N	--	--	--	158	U 10	--	U 0.05	--	52	0.01	U 0.005	--	--	U 0.003	0.001	0.001	--
	6/13/2002	N	0.43	6.9	260	163	U 10	--	U 0.1	--	59	U 0.005	--	--	--	U 0.003	U 0.001	U 0.002	--
	7/11/2002	N	--	--	--	197	U 10	--	U 0.05	--	67	0.01	U 0.005	--	--	U 0.003	U 0.001	0.002	--
	8/26/2002	N	--	--	--	187	U 10	--	U 0.05	--	66	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.002	--
	9/18/2002	N	0.38	--	--	184	U 10	--	U 0.05	--	63	U 0.005	--	--	U 0.2	U 0.003	0.001	0.002	--
	10/24/2002	N	--	--	--	187	U 10	--	U 0.05	--	63	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.002	--
	11/7/2002	N	0.2	7.9	260	--	--	--	U 0.05	--	--	U 0.005	--	--	U 0.2	U 0.003	0.001	0.002	--
	12/10/2002	N	2	7.63	174	210	U 10	--	0.11	--	72	0.02	U 0.005	--	U 0.2	U 0.003	0.001	0.001	--
	1/14/2003	N	2	7.4	380	201	U 10	--	U 0.1	--	75	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.002	--
	2/12/2003	N	0.5	7.7	296	198	U 10	--	0.05	--	80	0.03	U 0.005	--	U 0.2	U 0.003	U 0.001	0.002	--
	3/11/2003	N	--	8.12	265	214	U 10	--	U 0.1	--	80	0.03	U 0.005	--	U 0.2	U 0.003	0.002	0.002	--
	4/23/2003	N	1.25	7.8	290	193	U 10	--	U 0.1	--	75	0.02	U 0.005	--	U 0.2	U 0.01	0.002	0.002	--
	5/16/2003	N	5	7.4	300	214	U 10	--	0.1	--	79	0.03	0.008	--	U 0.2	U 0.003	U 0.001	0.002	--
	6/30/2003	N	0.6	7.8	280	214	U 10	--	U 0.1	--	88	0.06	0.012	--	U 0.2	U 0.003	U 0.001	0.003	--
	7/25/2003	N	0.26	7.5	290	201	U 10	--	U 0.1	--	70	0.02	0.014	--	U 0.2	U 0.003	U 0.001	0.002	--
	8/7/2003	N	0.23	7.4	290	217	U 10	--	U 0.1	--	75	0.03	0.01	--	U 0.2	U 0.003	U 0.001	0.002	--
	6/17/2008	N	AV 2.4	--	--	320	19	--	0.08	--	150	0.05	0.024	--	U 0.2	0.002	0.004	U 0.001	--
SPR-D4	8/8/1995	N	--	7.1	320	J4S 107	--	69	U 0.05	U 0.1	13	--	--	--	--	--	--	--	--
	10/11/1995	N	1	6.41	200	143	--	67	U 0.01	U 0.05	44	U 0.005	--	--	--	--	--	--	--
	3/5/1996	N	1.6	6.88	286	142	--	91.8	J4 0.102	--	16.5	U 0.005	--	--	--	--	--	--	--
	4/22/1996	N	--	6.98	288	220	--	95.4	0.115	--	22.7	U 0.005	--	--	--	--	--	--	--
	5/15/1996	N	25	6.58	197	132	--	65.7	0.024	--	13.1	U 0.005	--	--	--	--	--	--	--
	6/13/1996	N	12	7.46	224	129	--	70.7	0.14	--	25.2	U 0.005	--	--	--	--	--	--	--
	9/25/1996	N	1	7.6	324	208	--	92.6	0.58	U 0.05	55.6	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D4	12/5/1996	N	0.793	7.94	306	163	--	90.8	0.29	--	30.5	U 0.005	--	--	--	--	--	--	--
	4/22/1997	N	0.5	7.11	239	127	--	65.7	0.08	--	29.1	0.02	U 0.005	--	--	U 0.003	0.003	U 0.001	U 0.01
	5/7/1997	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	5/27/1997	N	20	7.5	1073	848	--	60.6	4.75	--	497	U 0.005	--	--	--	U 0.003	0.003	0.055	0.01
	6/25/1997	N	5	7.12	202	J4 78	--	66.6	0.06	--	26.2	U 0.005	--	--	--	0.003	J4 0.006	0.001	U 0.01
	7/31/1997	N	3	7.23	208	150	--	80.3	0.07	--	23.7	U 0.005	--	--	--	U 0.003	0.002	J4 0.004	0.02
	9/17/1997	N	1.67	7.6	259	138	U 10	88.1	0.11	U 0.05	28.7	U 0.005	--	--	--	U 0.003	J,UJ1 0.002	0.002	UJ1 0.01
	12/8/1997	N	1.2	7.35	251	142	--	81.6	0.11	--	23.1	U 0.005	--	--	--	U 0.003	J4 0.001	U 0.001	0.01
	2/25/1998	N	1	8.4	95	136	--	88.1	0.07	--	17.9	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	U 0.01
	5/31/1998	N	6	7.4	183	111	--	66.5	0.07	--	17.7	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	9/22/1998	N	1.2	7.6	331	183	--	94.6	0.15	--	43.9	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	11/20/1998	N	1.1	7.99	0	145	--	92	0.08	--	27.7	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	3/10/1999	N	0.25	--	--	121	--	90.5	0.09	--	19.4	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	6/4/1999	N	20	--	--	114	--	52.8	0.02	--	17.5	U 0.005	--	--	--	U 0.003	0.004	U 0.001	--
	8/23/1999	N	--	--	--	187	--	82	0.41	--	70.8	0.007	U 0.005	--	--	U 0.003	U 0.001	0.003	--
	11/11/1999	N	0.25	--	--	212	--	79	0.44	--	81.2	U 0.005	--	--	--	U 0.003	0.015	0.003	--
	3/20/2000	N	--	--	--	160	--	91.5	0.18	--	38.2	U 0.005	--	--	--	U 0.003	U 0.001	0.001	--
	6/26/2000	N	--	--	--	205	--	80.5	0.21	--	57.6	U 0.005	--	--	--	U 0.003	0.005	U 0.001	--
	9/20/2000	N	--	--	--	268	--	79.5	0.53	--	110	U 0.005	--	--	--	U 0.003	U 0.001	0.003	--
	12/9/2000	N	--	--	--	248	--	96	0.36	--	69.9	U 0.005	--	--	--	U 0.003	0.001	0.002	--
	3/26/2001	N	--	--	--	177	--	89.1	0.24	--	49.8	U 0.005	--	--	--	U 0.003	0.003	0.013	--
	6/16/2001	N	--	--	--	168	U 10	--	0.05	--	37.2	0.007	--	--	--	U 0.003	0.001	U 0.001	--
	8/30/2001	N	--	--	--	299	U 10	--	0.23	--	123	0.03	0.009	--	--	U 0.003	0.004	0.004	--
	9/23/2001	N	--	--	--	293	U 10	85.5	0.27	--	104	0.03	0.006	--	--	U 0.003	0.007	0.002	--
	10/31/2001	N	--	--	--	246	U 10	--	0.37	--	103	0.02	U 0.005	--	--	U 0.003	0.007	0.003	--
	11/28/2001	N	--	--	--	261	U 10	--	0.36	--	83.9	0.02	0.008	--	--	U 0.003	0.002	0.002	--
	12/14/2001	N	--	--	--	222	U 10	--	0.24	--	67.1	0.01	U 0.005	--	--	U 0.003	0.004	0.002	--
	1/23/2002	N	--	--	--	167	U 10	--	0.13	--	51	0.008	U 0.005	--	--	U 0.003	U 0.001	U 0.001	0.01
	2/18/2002	N	--	--	--	176	U 10	--	0.13	--	50	0.007	U 0.005	--	--	U 0.005	U 0.01	U 0.005	--
	3/26/2002	N	--	--	--	168	U 10	--	0.09	--	45	0.007	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--
	4/24/2002	N	--	--	--	189	U 10	--	0.11	--	46	0.009	U 0.005	--	--	U 0.003	U 0.001	U 0.001	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D4	5/27/2002	N	--	--	--	148	U 10	--	U 0.05	--	37	U 0.005	--	--	--	U 0.003	0.002	U 0.001	--
	6/13/2002	N	0.55	7	300	160	U 10	--	0.4	--	50	0.01	U 0.005	--	--	U 0.003	0.02	0.002	--
	7/11/2002	N	--	--	--	212	U 10	--	0.1	--	56	0.02	U 0.005	--	--	U 0.003	U 0.001	0.001	--
	8/26/2002	N	--	--	--	235	U 10	--	0.25	--	76	0.02	U 0.005	--	U 0.2	U 0.003	U 0.001	0.001	--
	9/18/2002	N	0.7	--	--	227	U 10	--	0.21	--	70	0.01	0.009	--	U 0.2	U 0.003	U 0.001	0.001	--
	10/24/2002	N	--	--	--	162	U 10	--	0.1	--	44	0.03	U 0.005	--	U 0.2	U 0.003	0.001	0.001	--
	11/7/2002	N	0.5	7.5	220	167	U 10	--	0.08	--	40	0.008	U 0.005	--	U 0.2	U 0.003	0.001	U 0.001	--
	12/10/2002	N	10	7.57	150	169	U 10	--	0.08	--	36	0.01	U 0.005	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	1/14/2003	N	5	7.8	340	176	U 10	--	U 0.1	--	38	0.007	U 0.005	--	U 0.2	U 0.003	0.01	0.001	--
	2/12/2003	N	--	--	--	157	U 10	--	0.09	--	39	0.008	U 0.005	--	U 0.2	U 0.003	0.002	U 0.001	--
	3/11/2003	N	8	8.02	291	182	U 10	--	U 0.1	--	39	0.009	U 0.005	--	U 0.2	U 0.003	0.001	U 0.001	--
	4/23/2003	N	5	7.5	260	163	U 10	--	U 0.1	--	34	0.007	U 0.005	--	U 0.2	U 0.003	0.002	U 0.001	--
	5/16/2003	N	25	7.3	240	169	U 10	--	U 0.1	--	36	U 0.005	--	--	U 0.2	U 0.003	0.002	U 0.001	--
	6/30/2003	N	--	--	--	176	U 10	--	U 0.1	--	69	0.03	U 0.005	--	U 0.2	U 0.003	U 0.001	0.002	--
	7/25/2003	N	4	7.25	340	236	U 10	--	U 0.1	--	76	0.02	0.009	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	8/7/2003	N	1.6	7.2	370	263	U 10	--	0.1	--	95	0.02	0.007	--	U 0.2	U 0.003	U 0.001	0.001	--
	6/17/2008	N	AV 15.84	--	--	494	U 10	--	0.22	--	290	0.03	0.006	--	U 0.2	U 0.001	0.002	0.003	--
	6/16/2009	N	AV 25.85	6.49	532	--	U 5	--	F 0.14	--	--	M% 0.02	J 0.008	0.007	--	--	0.0008	0.0037	--
	9/4/2009	N	AV 10.28	6.6	501		U 10	--	0.13	U 0.02	--	F% 0.04	F% 0.009	FJ 0.005	--	--	0.001	0.0016	--
	6/16/2010	N	AV 44.88	6.37	433	--	U 10	--	0.1	U 0.05	--	0.02	U 0.005	U 0.2	--	--	M% 0.002	0.003	--
	9/15/2010	N	AV 4.04	6.99	700	--	U 5	--	M%F 0.33	U 0.05	--	M% 0.02	0.009	U 0.2	--	--	U 0.001	0.004	--
	6/15/2011	N	AV 30.3	6.55	190	--	U 5	--	0.05	U 0.1	--	0.02	0.012	U 0.2	--	--	0.001	0.001	--
	9/12/2011	N	AV 3.5	6.86	453	--	U 5	57	0.35	U 0.1	330	0.02	0.005	U 0.2	--	--	U 0.001	0.006	--
	7/2/2012	N	AV 5.07	6.88	430	--	U 5	--	--	UM% 0.05	--	H 0.02	HM% 0.012	U 0.2	--	--	--	0.005	--
	9/13/2012	N	AV 1.62	6.7	570	--	U 5	--	--	U 0.05	--	0.03	0.005	U 0.2	--	--	--	0.008	--
	5/20/2013	N	10.77	6.74	322	--	U 5	--	--	U 0.05	--	0.02	0.007	U 0.2	--	U 0.001	--	0.003	--
	9/30/2013	N	3.6	6.86	842	--	15	--	--	U 0.05	--	0.02	U 0.005	U 0.2	--	--	--	0.007	--
	5/27/2014	N	21.27	6.6	267	--	U 5	--	--	U 0.05	--	0.01	U 0.005	U 0.2	--	--	--	0.002	--
	9/24/2014	N	152.6	6.57	498	--	--	--	--	U 0.05	--	0.01	U 0.005	U 0.2	--	--	--	0.005	--
SPR-D5	7/17/2001	N	--	--	--	228	--	--	0.21	U 0.05	42.6	U 0.005	--	--	--	0.004	0.002	0.004	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D5	9/23/2001	N	--	--	--	236	U 10	118	0.04	--	44.5	U 0.005	--	--	--	U 0.003	0.009	0.002	--
	10/30/2001	N	--	--	--	184	81	--	0.12	--	45.5	U 0.005	--	--	--	0.005	0.002	0.004	--
	11/28/2001	N	--	--	--	235	22	--	0.46	--	44.1	U 0.005	--	--	--	0.004	0.054	0.005	--
	12/14/2001	N	--	--	--	211	17	--	0.49	--	42.1	U 0.005	--	--	--	U 0.003	0.015	0.005	--
	1/8/2002	N	--	--	--	207	U 10	--	0.22	--	40	U 0.005	--	--	--	0.004	U 0.001	0.004	--
	2/13/2002	N	--	--	--	194	U 10	--	0.29	--	39	U 0.005	--	--	--	0.004	U 0.001	0.004	--
	3/25/2002	N	--	--	--	178	U 10	--	0.26	--	39	U 0.005	--	--	--	0.004	U 0.001	0.004	--
	4/24/2002	N	--	--	--	389	U 10	--	4.22	--	163	U 0.005	--	--	--	0.007	0.001	0.019	--
	5/28/2002	N	--	--	--	395	247	--	3.45	--	203	0.01	U 0.005	--	--	0.021	0.022	0.017	--
	6/12/2002	N	5	7.3	290	183	U 10	--	U 0.05	--	35	U 0.005	--	--	--	0.006	U 0.001	0.003	--
	7/11/2002	N	--	--	--	539	U 10	--	3.84	--	257	0.04	0.017	--	--	0.006	0.004	0.02	--
	8/26/2002	N	--	--	--	218	15	--	0.06	U 0.1	45	0.01	0.007	--	U 0.2	0.004	0.002	0.004	--
	9/18/2002	N	4	--	--	210	U 10	--	0.08	--	43	0.01	0.006	--	U 0.2	0.007	U 0.001	0.003	--
	10/17/2002	N	--	--	--	223	--	121	--	--	46	--	--	--	--	--	--	--	--
	10/25/2002	N	--	--	--	191	95	--	0.29	--	36	U 0.005	--	--	--	0.004	0.004	0.005	--
	11/6/2002	N	3	7.9	300	209	14	--	0.3	--	39	0.02	U 0.005	--	U 0.2	0.004	0.003	0.005	--
	12/10/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/13/2003	N	1	7.8	330	182	55	--	0.3	--	36	U 0.005	--	--	U 0.2	0.007	0.006	0.003	--
	4/23/2003	N	3	7.5	290	176	U 10	--	0.5	--	36	U 0.005	--	--	U 0.2	0.005	0.001	0.003	--
	5/13/2003	N	2	7.6	300	172	U 10	--	0.4	--	38	U 0.005	--	--	U 0.2	0.005	U 0.001	0.003	--
	6/18/2003	N	4	7.4	270	181	U 10	--	U 0.1	--	38	U 0.005	--	--	U 0.2	0.007	0.001	0.004	--
	7/25/2003	N	2	7.3	310	198	U 10	--	U 0.1	--	36	0.01	0.005	--	U 0.2	0.007	U 0.001	0.003	--
	8/7/2003	N	3	7.6	330	219	12	--	U 0.1	--	38	0.02	U 0.005	--	U 0.2	0.006	0.003	0.002	--
	9/18/2003	N	4	8.2	320	211	23	--	0.2	U 0.05	39	0.02	U 0.005	--	U 0.2	0.004	0.002	0.004	--
	10/22/2003	N	1.5	7.5	315	196	U 10	--	U 0.1	U 0.05	38	0.01	U 0.005	--	U 0.2	0.004	U 0.001	0.003	--
	11/12/2003	N	2	7.7	320	206	U 10	--	U 0.1	--	41	0.02	U 0.005	--	U 0.2	0.004	0.001	0.004	--
	12/9/2003	N	--	7.88	314	208	U 10	--	0.2	--	38	0.01	U 0.005	--	U 0.2	0.004	U 0.001	0.004	--
SPR-D7	7/17/2001	N	--	--	--	187	--	--	U 0.01	U 0.05	7.9	U 0.005	--	--	--	0.013	0.046	U 0.001	--
	9/23/2001	N	--	--	--	199	15	126.5	0.03	--	6.5	U 0.005	--	--	--	0.007	0.026	U 0.001	--
	10/30/2001	N	--	--	--	134	U 10	--	0.07	--	19.8	U 0.005	--	--	--	0.007	0.003	U 0.001	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D7	11/28/2001	N	--	--	--	163	23	--	0.1	--	19.8	U 0.005	--	--	--	0.005	0.007	U 0.001	--
	12/14/2001	N	--	--	--	148	U 10	--	0.01	--	21.2	U 0.005	--	--	--	0.004	0.006	U 0.001	--
	1/8/2002	N	--	--	--	128	U 10	--	U 0.01	--	22	U 0.005	--	--	--	0.005	0.001	U 0.001	--
	2/13/2002	N	--	--	--	140	U 10	--	U 0.05	--	23	U 0.005	--	--	--	0.005	0.001	U 0.001	--
	3/25/2002	N	--	--	--	130	U 10	--	U 0.05	--	21	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	4/24/2002	N	--	--	--	139	U 10	--	U 0.05	--	19	U 0.005	--	--	--	U 0.003	0.005	U 0.001	--
	5/28/2002	N	--	--	--	129	U 10	--	U 0.05	--	20	U 0.005	--	--	--	0.004	0.003	U 0.001	--
	6/12/2002	N	3	7.9	230	145	U 10	--	U 0.05	--	16	U 0.005	--	--	--	0.005	0.002	U 0.001	--
	7/11/2002	N	--	--	--	171	U 10	--	U 0.05	--	13	U 0.005	--	--	--	0.006	0.003	U 0.002	--
	9/18/2002	N	0.25	--	--	163	U 10	--	0.06	--	12	U 0.005	--	--	U 0.2	0.006	0.001	U 0.001	--
	10/25/2002	N	--	--	--	140	U 10	--	U 0.05	--	19	U 0.005	--	--	U 0.2	0.005	0.001	U 0.001	--
	11/6/2002	N	0.5	8	250	139	34	--	U 0.05	--	21	U 0.005	--	--	U 0.2	0.007	0.003	U 0.001	--
	12/10/2002	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1/14/2003	N	1	7.5	270	141	24	--	U 0.1	--	20	U 0.005	--	--	U 0.2	0.006	0.003	U 0.001	--
	4/23/2003	N	4	8.1	220	110	U 10	--	U 0.1	--	20	0.07	U 0.005	--	U 0.2	0.005	0.003	U 0.001	--
	5/13/2003	N	0.75	8.1	180	122	U 10	--	U 0.1	--	20	U 0.005	--	--	U 0.2	0.006	0.003	U 0.001	--
SPR-D8	7/17/2001	N	--	--	--	304	--	--	0.01	U 0.05	132	0.02	U 0.005	--	--	U 0.003	0.001	0.003	--
	9/23/2001	N	--	--	--	301	U 10	74	0.05	--	118	0.02	U 0.005	--	--	U 0.003	0.002	0.003	--
	10/31/2001	N	--	--	--	247	U 10	--	0.23	--	125	U 0.005	--	--	--	U 0.003	U 0.001	0.004	--
	11/29/2001	N	--	--	--	256	U 10	--	0.21	--	86.7	0.01	U 0.005	--	--	U 0.003	0.001	0.004	--
	1/24/2002	N	--	--	--	225	U 10	--	0.26	--	104	0.02	0.005	--	--	U 0.003	0.001	0.005	0.02
	2/18/2002	N	--	--	--	184	U 10	--	0.07	--	8	U 0.005	--	--	--	U 0.005	U 0.01	U 0.005	--
	3/26/2002	N	--	--	--	171	U 10	--	0.05	--	4	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	4/25/2002	N	--	--	--	306	U 10	--	0.32	--	153	0.05	0.017	--	--	U 0.003	U 0.001	0.006	--
	5/27/2002	N	--	--	--	357	10	--	1.36	--	173	0.03	U 0.005	--	--	U 0.003	0.002	0.006	--
	6/13/2002	N	50	7.6	450	312	U 10	--	U 0.1	--	147	0.07	0.027	--	--	U 0.003	0.002	0.008	--
	7/11/2002	N	--	--	--	321	U 10	--	0.27	--	135	0.03	0.01	--	--	U 0.003	U 0.001	0.004	--
	8/27/2002	N	--	--	--	187	U 10	--	U 0.05	U 0.1	3	U 0.005	--	--	--	U 0.003	U 0.001	U 0.001	--
	9/20/2002	N	20	--	--	258	U 10	--	0.16	--	111	0.02	U 0.005	--	U 0.2	U 0.003	U 0.001	0.004	--
	10/24/2002	N	--	--	--	246	U 10	--	0.33	--	99	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.004	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D8	11/7/2002	N	15	7.9	320	234	U 10	--	0.4	--	97	0.02	U 0.005	--	U 0.2	U 0.003	0.001	0.003	--
	12/10/2002	N	30	7.74	160	237	U 10	--	0.42	--	88	0.02	U 0.005	--	U 0.2	U 0.003	U 0.001	0.003	--
	1/14/2003	N	--	7.8	330	221	U 10	--	0.3	--	79	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.003	--
	2/12/2003	N	--	8.13	770	230	U 10	--	0.22	--	100	0.05	0.011	--	U 0.2	U 0.003	0.002	U 0.001	--
	3/11/2003	N	--	8.07	373	319	U 10	--	0.2	--	141	0.13	0.035	--	U 0.2	U 0.003	U 0.001	0.005	--
	4/24/2003	N	50	8.1	600	402	U 10	--	0.6	--	187	0.1	0.045	--	U 0.2	U 0.003	0.003	0.005	--
	5/21/2003	N	50	8.2	445	317	U 10	--	0.5	--	139	0.05	0.031	--	U 0.2	U 0.003	0.002	0.004	--
	6/30/2003	N	60	7.7	450	318	U 10	--	0.2	U 0.05	150	0.05	0.022	--	U 0.2	U 0.003	U 0.001	0.004	--
	7/25/2003	N	35	8.2	430	310	26	--	0.1	--	122	0.04	0.015	--	U 0.2	U 0.003	0.006	0.003	--
	8/7/2003	N	30	8	440	330	U 10	--	U 0.1	--	137	0.05	0.018	--	U 0.2	U 0.003	0.001	0.003	--
	9/18/2003	N	30	8.3	470	305	U 10	--	0.2	U 0.05	138	0.07	0.02	--	U 0.2	U 0.003	U 0.001	0.003	--
	10/22/2003	N	20	7.7	440	272	U 10	--	U 0.1	U 0.05	118	0.04	0.008	--	U 0.2	U 0.003	0.002	0.003	--
	11/12/2003	N	25	7.8	390	294	36	--	0.2	--	121	0.06	0.02	--	U 0.2	U 0.003	0.016	0.004	--
	12/9/2003	N	--	8.3	418	287	14	--	0.2	--	125	0.06	0.022	--	U 0.2	U 0.003	0.003	0.004	--
	1/14/2004	N	--	7.92	507	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.005	0.005	--
	2/19/2004	N	10	8.26	378	--	U 10	--	0.29	U 0.1	99	0.03	U 0.005	--	U 0.2	U 0.003	0.001	0.003	--
	3/11/2004	N	10	8.36	355	--	U 10	--	0.3	U 0.1	94	0.04	--	--	U 0.2	U 0.003	U 0.001	U 0.001	--
	4/22/2004	N	35	8.16	482	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	U 0.001	--
	5/20/2004	N	60	7.89	563	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	0.005	--
	6/11/2004	N	50	8.17	568	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.002	0.006	--
	7/15/2004	N	40	8.01	619	--	U 10	--	--	--	206	--	--	--	--	U 0.003	0.002	0.005	--
	7/19/2004	N	--	--	--	--	--	--	UJ 0.05	U 0.1	--	0.09	0.02	--	--	--	--	--	--
	8/19/2004	N	30	7.83	545	--	U 10	--	UJ 0.1	--	--	0.09	0.016	--	--	--	0.003	0.004	--
	9/28/2004	N	20	8.3	544	--	U 10	--	0.1	--	157	0.13	0.023	--	--	--	0.002	0.004	--
	10/29/2004	N	35	8.32	525	--	U 10	--	--	--	--	0.07	0.014	--	--	--	0.003	0.005	--
	11/30/2004	N	25	8.14	491	--	11	--	--	U 0.1	131	0.05	0.012	--	UJ 0.2	U 0.003	0.003	0.004	--
	12/13/2004	N	25	7.92	487	--	UJ 10	--	0.2	--	--	0.05	0.005	--	--	--	0.002	0.004	--
	1/28/2005	N	25	8.07	436	--	U 10	--	0.2	--	--	0.04	0.006	--	--	--	U 0.001	0.004	--
	3/30/2005	N	5	8	407	--	U 10	--	0.18	--	--	0.04	U 0.005	--	--	--	0.001	0.003	--
	6/30/2005	N	150	7.68	489	--	U 10	--	0.07	U 0.05	--	0.06	0.013	--	--	--	U 0.001	0.003	U 0.01
	7/21/2005	N	30	8.1	533	--	U 10	--	U 0.05	--	--	0.06	0.01	--	--	--	U 0.001	0.003	U 0.01

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-D8	8/16/2005	N	30	8.01	521	--	U 10	--	U 0.05	U 0.1	148	0.06	0.017	--	--	U 0.003	0.004	0.003	U 0.01
	9/28/2005	N	40	8.06	511	--	--	--	U 0.05	U 0.1	201	0.12	0.009	--	U 0.2	U 0.003	U 0.001	0.004	U 0.01
SPR-T	4/23/2003	N	--	--	--	--	--	--	--	--	--	0.01	0.008	--	--	--	--	0.012	--
	8/22/2003	N	15	8.2	750	581	U 10	--	3.6	--	290	0.05	0.009	--	U 0.2	0.007	0.076	0.021	--
	1/13/2004	N	5	8.28	765	--	U 10	--	--	--	--	--	--	--	--	0.008	0.002	0.025	--
	2/18/2004	N	3	8.18	726	--	U 10	--	--	--	--	--	--	--	--	0.008	U 0.001	0.02	--
	3/16/2004	N	6	8.26	684	--	U 10	--	--	--	--	--	--	--	--	0.009	U 0.001	0.02	--
	4/22/2004	D	--	--	--	--	U 10	--	--	--	--	--	--	--	--	0.007	0.002	0.018	--
	4/22/2004	N	2	8.08	699	--	U 10	--	4.2	U 0.1	302	0.02	--	--	--	--	--	--	--
	4/22/2004	S	--	--	--	--	U 10	--	--	--	--	--	--	--	--	0.007	0.002	0.015	--
	5/20/2004	N	4.5	8.22	813	--	U 10	--	--	--	--	--	--	--	--	0.005	U 0.001	0.02	--
	6/10/2004	N	33	8.11	843	--	U 10	--	--	--	--	--	--	--	--	0.004	0.001	0.02	--
	7/15/2004	N	3.96	8.2	841	--	U 10	--	--	--	332	--	--	--	--	0.007	0.004	d 0.025	--
	7/19/2004	N	--	--	--	--	--	--	3.52	U 0.1	--	0.03	0.006	--	--	--	--	--	--
	9/28/2004	N	5	8.32	806	--	U 10	--	3.88	--	282	0.04	0.012	--	--	--	0.002	0.019	--
	12/13/2004	N	3	7.75	822	--	14	--	4.4	--	--	0.03	UJ 0.005	--	--	--	0.001	0.022	--
	3/29/2005	N	2	8.35	768	--	U 10	--	4.56	--	--	0.03	0.007	--	--	--	0.001	0.02	--
	6/29/2005	N	50	7.64	854	--	U 10	--	2.52	U 0.05	--	0.1	0.015	--	--	--	0.002	0.026	U 0.01
	9/28/2005	N	7	7.94	828	--	--	--	3.15	U 0.1	348	0.03	0.007	--	U 0.2	0.007	0.001	0.022	U 0.01
	12/21/2005	N	2	7.78	852	--	U 10	--	4	--	--	0.04	0.008	--	--	--	0.002	0.027	--
	3/29/2006	N	1	7.43	692	--	U 10	--	4.2	--	--	0.03	0.007	--	--	--	0.002	0.02	--
	6/27/2006	N	3.4	7.68	875	--	U 10	--	2.42	--	--	0.007	U 0.005	--	--	--	0.001	0.021	--
	10/5/2006	N	0.3	7.93	739	--	U 10	--	3.1	--	--	U 0.005	--	--	--	--	0.002	0.022	--
	6/13/2008	N	TV 115	6.91	625	--	U 10	--	1.66	--	--	0.01	0.008	--	--	--	U 0.001	M% 0.013	--
	9/15/2008	N	TV 30	--	--	--	U 10	--	0.98	--	--	0.02	0.012	--	--	--	U 0.001	0.012	--
	6/15/2009	N	AV 113.6	7.87	601	--	J 5.1	--	F 0.88	--	--	U 0.005	U 0.005	U 0.002	--	--	0.0007	0.0106	--
	9/3/2009	N	VE 10	8.12	751		U 10	--	1.6	U 0.02	--	F% 0.006	M%F% 0.015	FJ 0.004	--	--	0.0007	0.0122	--
	6/17/2010	N	AV 184	7.76	603	--	13	--	1.37	U 0.05	--	M% 0.008	U 0.005	U 0.06	--	--	0.003	0.009	--
	9/16/2010	N	AV 8.1	7.85	819	--	U 5	--	M%F 1.74	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	U 0.001	0.013	--
	6/15/2011	N	AV 329.6	6.95	301	--	U 5	--	0.64	U 0.1	--	0.01	U 0.005	U 0.2	--	--	0.001	0.007	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-T	9/12/2011	N	AV 10.1	7.98	480	--	U 5	83	1.05	U 0.1	300	0.01	U 0.005	U 0.2	--	--	U 0.001	0.011	--
	7/2/2012	N	AV 84.83	6.88	401	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.01	--
	9/13/2012	N	TV 1.58	8.19	466	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.01	--
	5/20/2013	N	AV 23.43	8.01	376	--	U 5	--	--	U 0.05	--	0.009	U 0.005	U 0.2	--	--	--	0.009	--
	9/30/2013	N	TV 13.2	7.4	665	--	H 8	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.008	--
	5/27/2014	N	147.4	7.86	280	--	6	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.005	--
	6/9/2014	N	--	--	--	--	--	--	--	--	--	0.02	U 0.005	U 0.2	--	--	--	--	--
	6/12/2014	N	--	--	--	--	325	--	--	U 0.05	--	0.005	U 0.005	U 0.2	--	--	--	0.006	--
	9/24/2014	N	1.048	7.86	543	--	--	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.008	--
Leach Pad																			
SPR-11	11/19/1987	N	--	--	--	81	1110	52	0.07	0.1	5	--	--	--	--	0.011	0.03	U 0.005	0.07
SPR-8	9/18/1987	N	--	--	--	77	6	45	U 0.05	U 0.1	6	--	0.008	--	--	U 0.005	U 0.01	U 0.005	0.03
SPR-9	10/23/1988	N	--	--	--	a 163	245	82	--	U 0.1	11	U 0.01	--	--	--	--	--	--	--
	1/17/1989	N	3	7.36	149	--	--	82	--	--	10	U 0.01	--	--	--	--	--	--	--
	3/1/1989	N	--	6.28	--	--	--	81	--	--	10	U 0.01	--	--	--	--	--	--	--
	5/12/1989	N	3	8.22	182	139	--	56	--	U 0.5	11	U 0.005	--	--	--	0.009	U 0.01	U 0.003	0.01
	6/28/1989	N	4.5	7.37	180.6	--	--	100	--	--	10	U 0.005	--	--	--	--	--	--	--
	7/27/1989	N	2.7	--	194	124	--	76	--	U 1	12	0.04	U 0.005	U 0.005	--	--	--	--	--
	8/23/1989	N	3.1	6.78	188	--	--	82	--	--	16	U 0.005	--	--	--	--	--	--	--
	9/27/1989	N	1.2	7.53	132	--	--	88	--	--	21	U 0.005	--	--	--	--	--	--	--
	11/15/1989	N	0.5	7.08	--	a 178	--	92	--	U 1	14	U 0.005	--	--	--	--	--	--	--
	12/6/1989	N	1.5	--	--	--	--	84	--	--	13	U 0.005	--	--	--	--	--	--	--
	1/17/1990	N	2.5	--	--	--	--	85	--	--	16	U 0.005	--	--	--	--	--	--	--
	2/27/1990	N	1.5	--	--	--	--	81	--	--	8.6	U 0.005	--	--	--	--	--	--	--
	4/19/1990	N	3.1	7.15	161	144	--	81	--	U 0.5	12	U 0.005	--	--	--	--	--	--	--
	5/23/1990	N	1	--	--	--	--	84	--	--	9.2	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	3	--	--	--	--	85	--	--	10	U 0.005	--	--	--	--	--	--	--
	7/20/1990	N	2.2	7.63	187	158	--	89	--	U 0.5	9.19	U 0.005	--	--	--	--	--	--	--
	8/20/1990	N	1.5	--	--	--	--	97	--	--	10	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-9	9/24/1990	N	1	--	--	--	--	88	--	--	11	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	2.2	6.98	166	165	--	88	--	U 0.5	12	U 0.005	--	--	--	--	--	--	--
	12/12/1990	N	1	--	--	--	--	84	--	--	11	U 0.005	--	--	--	--	--	--	--
	1/16/1991	N	1.5	--	--	--	--	84	--	--	12	U 0.005	--	--	--	--	--	--	--
	2/27/1991	N	1	--	--	--	--	84	--	--	9.9	U 0.005	--	--	--	--	--	--	--
	4/17/1991	N	2	7.58	159	a 229	--	82	--	U 0.5	12	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	3	--	--	--	--	82	--	--	11	0.02	--	--	--	--	--	--	--
	6/25/1991	N	2	--	--	--	--	84	--	--	12	U 0.005	--	--	--	--	--	--	--
	7/25/1991	N	2.03	8.58	199	152	--	89	--	U 0.1	12	U 0.005	--	--	--	--	--	--	--
	8/28/1991	N	2.5	--	--	--	--	102	--	--	12	U 0.005	--	--	--	--	--	--	--
	9/17/1991	N	1.5	--	--	--	--	a 32	--	--	13	U 0.005	--	--	--	--	--	--	--
	11/1/1991	N	1	7.54	184	a 235	--	82	1.5	U 0.1	11	U 0.005	--	--	--	--	--	--	--
	12/17/1991	N	1	--	--	--	--	106	--	--	13	U 0.005	--	--	--	--	--	--	--
	1/21/1992	N	0.75	--	--	--	--	90	--	--	13	U 0.005	--	--	--	--	--	--	--
	2/26/1992	N	--	--	--	--	--	84	--	--	a 79	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	1	7.31	225	a 372	--	76	2	0.1	14	U 0.005	--	--	--	--	--	--	--
	5/13/1992	N	1.5	--	--	--	--	89	--	--	17	U 0.005	--	--	--	--	--	--	--
	6/17/1992	N	1	--	--	--	--	84	--	--	14	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	7/16/1992	N	1.04	7.69	208	a 190	--	93	2	U 0.5	14	U 0.005	--	--	--	--	--	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/18/1992	N	2	--	--	--	--	96	2.1	--	14	U 0.005	--	--	--	--	--	--	--
	9/2/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/25/1992	N	1	--	--	--	--	110	2.4	--	14	U 0.005	--	--	--	--	--	--	--
	10/29/1992	N	0.8	7.73	236	150	71	91	2.3	U 0.5	13	U 0.005	--	--	--	0.012	0.006	0.001	0.01
	12/9/1992	N	3	--	--	--	--	84	2.4	--	14	U 0.005	--	--	--	--	--	--	--
	1/19/1993	N	2	--	--	--	--	88	2.6	--	16	U 0.005	--	--	--	--	--	--	--
	2/23/1993	N	3	--	--	--	--	84	2.52	--	14	U 0.005	--	--	--	--	--	--	--
	4/6/1993	N	0.94	7.41	215	150	U 10	90	2.34	0.19	16	U 0.005	--	--	--	0.011	0.003	0.003	U 0.006
	5/19/1993	N	3	--	--	--	--	96	3.2	--	25	U 0.005	--	--	--	--	--	--	--
	6/23/1993	N	1	--	--	--	--	84	3.38	--	14	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-9	7/28/1993	N	0.75	7.85	238	a 193	U 4	92	3.4	U,J4 0.05	16	U 0.005	--	--	--	0.009	U 0.001	0.002	U 0.008
	8/20/1993	N	1	--	--	--	--	101	J4 4.2	--	17	U 0.005	--	--	--	--	--	--	--
	9/22/1993	N	0.5	--	--	--	--	94	3.8	--	17	U 0.005	--	--	--	--	--	--	--
	10/19/1993	N	0.449	7.55	260	139	--	87	J4 3.29	U 0.1	17	U,J2 0.005	--	--	--	--	--	--	--
	12/9/1993	N	0.5	--	--	--	--	88	3.74	--	20	U 0.005	--	--	--	--	--	--	--
SPR-BCD	6/4/2019	N	6.84	7.85	502	--	U 5	--	--	U 0.05	--	U 0.004	U 0.004	U 0.2	--	--	--	0.01	--
Leach Pad/LAD																			
SPR-12	11/19/1987	N	--	--	--	140	1220	95	0.1	0.2	14	--	--	--	--	0.016	0.04	U 0.005	0.07
	5/10/1989	N	--	6.73	169	126	--	72	--	U 0.5	12	U 0.005	--	--	--	0.007	0.04	U 0.003	0.01
	6/28/1989	N	0.25	7.39	250	--	--	104	--	--	9.5	U 0.005	--	--	--	--	--	--	--
	5/22/1990	N	1	--	--	--	--	112	--	--	30	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	6	--	--	--	--	109	--	--	37	U 0.005	--	--	--	--	--	--	--
	8/20/1990	N	1	--	--	--	--	164	--	--	34	U 0.005	--	--	--	--	--	--	--
	12/11/1990	N	1	--	--	--	--	122	--	--	118	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	10	--	--	--	--	76	--	--	229	0.009	--	--	--	--	--	--	--
	6/25/1991	N	3	--	--	--	--	85	--	--	393	U 0.005	--	--	--	--	--	--	--
	8/28/1991	N	0.5	--	--	--	--	116	--	--	402	U 0.005	--	--	--	--	--	--	--
	9/17/1991	N	2.5	--	--	--	--	96	--	--	380	U 0.005	--	--	--	--	--	--	--
	12/17/1991	N	1	--	--	--	--	126	--	--	274	U 0.005	--	--	--	--	--	--	--
	1/20/1992	N	1	--	--	--	--	121	--	--	330	U 0.005	--	--	--	--	--	--	--
	2/27/1992	N	1	--	--	--	--	123	--	--	200	U 0.005	--	--	--	--	--	--	--
	3/17/1992	N	0.3	7.17	750	482	--	95	7.9	0.1	220	U 0.005	--	--	--	--	--	--	--
	5/12/1992	N	3	--	--	--	--	119	--	--	292	U 0.005	--	--	--	--	--	--	--
	6/18/1992	N	1	--	--	--	--	107	--	--	245	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	20.1	--	--	U 0.005	--	--	--	--	--	--	--
	6/22/1993	N	0	--	--	--	--	58	2.58	--	105	0.01	0.006	0.01	--	--	--	--	--
	4/18/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/23/1995	N	5	7.28	486	289	--	44	2.22	U 0.1	167	U 0.02	--	--	--	--	--	--	--
	6/26/1995	N	0.75	8.32	763	623	--	90	2.81	--	293	U 0.02	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-12	11/30/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/5/1996	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/15/1996	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/28/1996	N	5	7.13	568	440	--	66.2	1.26	--	212	0.008	0.007	--	--	--	--	--	--
	6/13/1996	N	1.5	7.06	593	422	--	98.5	0.69	--	198	U 0.005	--	--	--	--	--	--	--
	8/6/1996	N	0.25	8.31	650	444	--	119.3	0.88	--	207	0.006	U 0.005	--	--	--	--	--	--
	5/28/1997	N	10	7.48	552	387	--	62.8	1.01	--	193	U 0.005	--	--	--	0.003	0.021	0.011	0.04
	6/25/1997	N	15	7.66	580	J4 447	--	105.1	1.79	--	215	U 0.005	--	--	--	0.006	J4 0.005	0.007	UJ1 0.05
	7/29/1997	N	2.5	7.87	638	478	--	121.5	1.54	--	204	U 0.005	--	--	--	0.007	J4 0.006	J4 0.01	0.06
	9/16/1997	N	5	7.9	759	581	U 10	106.6	1.78	U 0.05	270	U 0.005	--	--	--	0.006	0.013	0.019	0.04
SPR-12A	11/14/1989	N	1.98	7.83	--	217	--	98	--	U 1	42	U 0.005	--	--	--	--	--	--	--
	4/17/1990	N	38	6.93	141	155	--	48	--	U 0.5	38	0.01	U 0.005	0.01	--	--	--	--	--
	5/22/1990	N	4	--	--	--	--	99	--	--	30	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	10	--	--	--	--	144	--	--	34	0.008	--	--	--	--	--	--	--
	9/24/1990	N	1	--	--	--	--	107	--	--	167	U 0.005	--	--	--	--	--	--	--
	11/13/1990	N	2.2	7.92	440	388	--	103	--	U 0.5	122	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	20	--	--	--	--	77	--	--	526	U 0.005	--	--	--	--	--	--	--
	6/25/1991	N	10	--	--	--	--	117	--	--	296	U 0.005	--	--	--	--	--	--	--
	7/25/1991	N	0.99	8.57	1236	1170	--	120	--	U 0.1	488	0.007	--	--	--	--	--	--	--
	11/1/1991	N	1.5	7.46	672	694	--	119	17	U 0.1	274	U 0.005	--	--	--	--	--	--	--
	3/17/1992	N	0.25	7.87	1140	537	--	95	11	0.1	233	U 0.005	--	--	--	--	--	--	--
	5/12/1992	N	3	--	--	--	--	64	--	--	670	U 0.005	--	--	--	--	--	--	--
	6/18/1992	N	3	--	--	--	--	75	--	--	867	U 0.005	--	--	--	--	--	--	--
	9/25/1992	N	3	--	--	--	--	82	17	--	399	U 0.005	--	--	--	--	--	--	--
	5/19/1993	N	0.2	--	--	--	--	106	36.8	--	474	U 0.005	--	--	--	--	--	--	--
	6/22/1993	N	50	--	--	--	--	110	25	--	418	0.008	0.004	0.008	--	--	--	--	--
	8/19/1993	N	2	--	--	--	--	113	J4 49	--	446	U 0.005	--	--	--	--	--	--	--
	4/20/1994	N	20	7.2	1265	878	--	75	5.25	U 0.1	528	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	1.9	7.52	1153	875	--	106	J4 12.8	U 0.1	452	0.03	0.02	U 0.2	--	--	--	--	--
	6/14/1994	N	2.5	7.49	1259	953	--	77	14.8	U 0.1	488	U 0.02	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-12A	4/18/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/23/1995	N	8	7.15	1923	1420	--	69	20.3	U 0.1	929	U 0.02	--	--	--	--	--	--	--
	6/26/1995	N	0.75	7.54	1509	1290	--	79	27.4	--	661	U 0.02	--	--	--	--	--	--	--
	11/30/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/5/1996	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/15/1996	N	0.75	8.55	1250	951	--	94.9	J4 14.581	--	479	U 0.005	--	--	--	--	--	--	--
	5/28/1996	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/13/1996	N	1	7.12	1307	1051	--	121.2	14.18	--	558	U 0.005	--	--	--	--	--	--	--
	8/6/1996	N	1	7.98	856	625	--	111.8	8	--	300	0.008	U 0.005	--	--	--	--	--	--
	5/27/1997	N	50	7.3	1433	1202	--	108.9	10.73	--	677	U 0.005	--	--	--	U 0.003	0.023	0.101	0.04
	6/25/1997	N	8	7.1	1578	J4 1538	--	86.6	13.6	--	953	U 0.005	--	--	--	U 0.003	J4 0.007	0.091	UJ1 0.03
	7/29/1997	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/16/1997	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/30/2013	N	--	--	--	--	U 5	--	0.82	U 0.05	--	0.005	U 0.005	U 0.2	--	--	--	0.022	--
Other																			
SPR-Roadfil	1/13/2004	N	50	7.63	795	--	U 10	--	--	--	--	--	--	--	--	0.014	0.003	0.01	--
	2/18/2004	N	30	7.65	848	--	U 10	--	--	--	--	--	--	--	--	0.016	0.005	0.007	--
	3/16/2004	N	50	7.72	860	--	U 10	--	--	--	--	--	--	--	--	0.013	0.003	0.008	--
	4/22/2004	N	--	7.18	958	--	U 10	--	--	--	--	--	--	--	--	0.013	0.002	0.007	--
	5/20/2004	N	200	7.48	738	--	U 10	--	--	--	--	--	--	--	--	0.012	0.003	0.007	--
	6/10/2004	N	325	7.46	635	--	U 10	--	--	--	--	--	--	--	--	0.012	0.004	0.004	--
	7/15/2004	N	250	7.58	819	--	U 10	--	--	--	312	--	--	--	--	0.014	0.003	0.009	--
	7/19/2004	N	--	--	--	--	--	--	0.3	U 0.1	--	UJ 0.005	--	--	--	--	--	--	--
	9/28/2004	N	75	7.51	895	--	U 10	--	0.3	--	346	U 0.005	--	--	--	--	0.002	0.006	--
	12/13/2004	N	99	7.37	926	--	U 10	--	0.37	--	--	U 0.005	--	--	--	--	0.002	0.008	--
	6/29/2005	N	538.6	7.43	712	--	U 10	--	0.38	U 0.05	--	U 0.005	--	--	--	--	0.005	0.009	U 0.01
	12/21/2005	N	17.95	7.5	884	--	U 10	--	0.41	--	--	U 0.005	--	--	--	--	0.002	0.009	--
	3/29/2006	N	--	6.71	809	--	U 10	--	0.4	--	--	U 0.005	--	--	--	--	0.002	0.008	--
	6/27/2006	N	175	7.39	922	--	U 10	--	0.41	--	--	U 0.005	--	--	--	--	0.004	0.011	--
	10/5/2006	N	--	7.46	890	--	U 10	--	0.5	--	--	U 0.005	--	--	--	--	0.002	0.01	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-Roadfil	6/13/2008	N	AV 484.7	6.95	928	--	U 10	--	0.59	--	--	U 0.005	--	--	--	--	0.004	M% 0.026	--
	9/15/2008	N	AV 112.2	7.22	902	--	U 10	--	0.27	--	--	U 0.005	U 0.005	--	--	--	0.002	0.009	--
	6/16/2009	N	AV 400.4	6.97	743	--	U 5	--	F 0.03	--	--	0.005	0.005	U 0.002	--	--	0.0039	0.0201	--
	9/3/2009	N	AV 238	7.27	882		U 10	--	0.25	U 0.02	--	UF% 0.002	F%J 0.005	UF 0.004	--	--	0.0021	0.0086	--
	6/17/2010	N	AV 677.7	6.86	544	--	U 5	--	0.23	U 0.05	--	U 0.005	U 0.005	U 0.06	--	--	0.006	0.012	--
	9/15/2010	N	AV 137.3	7.1	778	--	U 5	--	M%F 0.23	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	0.002	0.008	--
	6/15/2011	N	AV 783.6	6.87	468	--	8	--	0.43	U 0.1	--	U 0.005	U 0.005	U 0.2	--	--	0.004	0.018	--
	9/12/2011	N	AV 53.4	6.92	536	--	U 5	89	0.48	U 0.1	380	U 0.005	U 0.005	U 0.2	--	--	0.002	0.009	--
	7/2/2012	N	AV 112.2	7.38	413	--	U 5	--	--	UM% 0.05	--	U 0.005	U 0.005	U 0.2	--	0.012	--	0.006	--
	9/13/2012	N	AV 36.8	7.56	534	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.011	--	0.007	--
	5/20/2013	N	AV 233.4	7.16	389	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.009	--	0.012	--
	9/30/2013	D	AV 216.3	6.72	786	--	H 6	--	--	U 0.05	--	UM% 0.005	U 0.005	U 0.2	--	0.011	--	0.007	--
	9/30/2013	N	AV 216.3	6.72	786	--	UH 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.011	--	0.007	--
	5/27/2014	N	612.1	6.94	236	--	U 5	--	--	U 0.05	--	U 0.005	U 0.005	U 0.2	--	0.009	--	0.006	--
	9/24/2014	N	86.97	6.87	514	--	--	--	--	U 0.05	--	--	--	--	--	0.011	--	0.006	--
South Beal Pit																			
SPR-15	11/20/1987	N	--	--	--	108	12	61	U 0.05	U 0.1	21	--	--	--	--	U 0.005	U 0.01	U 0.005	0.02
Waste Rock																			
SPR-1	9/18/1987	N	--	--	--	82	U 1	55	0.12	U 0.1	7	--	0.008	--	--	0.07	U 0.01	U 0.005	0.01
SPR-1B	7/31/2001	N	--	--	--	119	U 10	--	0.33	--	14.9	U 0.005	--	--	--	0.008	0.003	0.007	--
Waste Rock Dump																			
SPR-10A	5/23/1995	N	6	7.28	316	125	--	83	0.42	U 0.1	38	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	15	7.53	167	109	--	63	0.07	--	9	U 0.02	--	--	--	--	--	--	--
	8/15/1995	N	30	6.97	281	J4S 141	--	118	0.72	U 0.1	23	U 0.005	--	--	--	--	--	--	--
	6/3/1998	N	7	--	0	798	--	160	7.24	--	389	U 0.005	--	--	--	0.004	0.004	0.601	--
	9/22/1998	N	2	7.41	1261	815	--	133.6	9.99	--	413	U 0.005	--	--	--	U 0.003	U 0.001	0.826	--
	11/17/1998	N	0.8	7.51	0	817	U 10	146.7	9.72	U 0.05	401	U 0.005	--	--	--	U 0.003	U 0.001	0.781	U 0.01
	6/3/1999	N	60	--	--	679	--	131.5	3.7	--	347	U 0.005	--	--	--	U 0.003	0.008	0.261	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-10A	9/27/1999	N	1.25	--	--	749	--	138.5	6.9	--	386	U 0.005	--	--	--	U 0.003	0.001	0.327	--
	11/10/1999	N	0.4	--	--	756	U 10	144.5	6.95	U 0.05	395	U 0.005	--	--	--	U 0.003	U 0.001	0.607	U 0.01
	9/20/2000	N	--	--	--	735	--	144	5.5	--	387	U 0.005	--	--	--	U 0.003	U 0.001	0.42	--
	12/27/2000	N	--	--	--	128	U 10	46.2	0.07	U 0.05	62.1	U 0.005	--	--	--	U 0.003	0.002	0.425	U 0.01
	6/16/2001	N	--	--	--	1003	U 10	--	5.13	--	551	U 0.005	--	--	--	U 0.003	0.021	0.207	--
	11/28/2001	N	--	--	--	1070	U 10	141.5	5.8	U 0.05	584	U 0.005	--	--	--	0.004	0.534	0.527	U 0.01
	6/12/2002	N	32.5	7.1	1040	801	U 10	--	2.12	--	441	U 0.005	--	--	--	U 0.003	0.009	0.186	--
	9/23/2002	N	1.9	--	--	900	U 10	--	3.41	--	481	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.354	--
	10/17/2002	N	--	--	--	905	--	144	--	--	503	--	--	--	--	--	0.002	0.346	--
	11/6/2002	N	0.8	7.3	990	922	U 10	--	3.4	--	442	0.01	U 0.005	--	U 0.2	U 0.003	0.001	0.387	--
	3/28/2003	N	0.38	7.3	670	814	U 10	--	2.9	--	416	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.319	--
	6/18/2003	N	10	7.1	980	812	U 10	--	2	--	437	U 0.005	--	--	U 0.2	U 0.003	0.002	0.173	--
	9/18/2003	N	1.06	6.9	1140	936	U 10	--	2.6	--	511	U 0.005	--	--	U 0.2	U 0.003	0.001	0.318	--
	11/12/2003	N	0.27	7.7	1150	946	U 10	--	2.6	--	d 483	U 0.005	--	--	U 0.2	U 0.003	0.001	0.301	--
	6/10/2004	D	--	--	--	--	U 10	--	--	--	--	--	--	--	--	U 0.003	0.002	0.17	--
	6/10/2004	N	9.7	7.14	1283	--	U 10	--	--	--	--	--	--	--	--	U 0.003	U 0.001	0.08	--
	6/10/2004	S	--	--	--	--	U 10	--	1.53	U 0.1	554	U 0.005	--	--	U 0.2	--	--	--	--
	9/28/2004	N	5.3	7.03	1616	--	U 10	--	2.11	--	d 686	U 0.005	--	--	--	--	0.002	0.275	--
	12/14/2004	N	0.8	7.17	1606	--	UJ 10	--	2.6	--	--	U 0.005	--	--	--	--	0.002	0.357	--
	6/29/2005	N	7	7.35	1160	--	U 10	--	1.72	U 0.05	--	U 0.005	--	--	--	--	0.004	0.179	U 0.01
	9/28/2005	N	1.5	7.14	1240	--	--	--	2.2	U 0.1	586	U 0.005	--	--	U 0.2	U 0.003	U 0.001	0.265	U 0.01
	12/22/2005	N	--	6.14	1424	--	U 10	--	2.19	--	--	U 0.005	--	--	--	--	0.001	0.243	--
	3/29/2006	N	0.19	6.84	1107	--	U 10	--	1.9	--	--	U 0.005	--	--	--	--	0.001	0.25	--
	6/27/2006	N	0.8	6.96	1126	--	U 10	--	1.02	--	--	U 0.005	--	--	--	--	0.002	0.113	--
	10/5/2006	N	0.7	7.25	1079	--	U 10	--	1.3	--	--	U 0.005	--	--	--	--	0.001	0.179	--
	10/27/2006	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/12/2008	N	TV 35	6.91	937	--	U 10	--	0.82	--	--	U 0.005	--	--	--	--	0.003	M% 0.067	--
	9/15/2008	N	VE 3	6.97	1240	--	U 10	--	1.17	--	--	U 0.005	U 0.005	--	--	--	U 0.001	0.123	--
	6/15/2009	N	TV 46	6.86	753	--	10.2	--	F 0.45	--	--	U 0.005	U 0.005	U 0.002	--	--	0.0026	0.0411	--
	9/3/2009	N	TV 3.7	7.11	1132		U 10	--	0.96	U 0.02	--	UF% 0.002	M%F% 0.009	UF 0.004	--	--	0.0015	0.096	--
	6/16/2010	N	TV 90	7.04	770	--	U 10	M% 120	0.4	U 0.05	310	U 0.005	U 0.005	U 0.2	--	--	M% 0.003	0.04	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-10A	9/15/2010	N	TV 3	6.98	1238	--	U 5	M% 140	M%F 0.88	U 0.05	520	U 0.005	U 0.005	U 0.2	--	--	U 0.001	0.096	--
	6/15/2011	N	TV 113.2	7.02	373	--	U 5	110	0.87	U 0.1	230	U 0.005	U 0.005	U 0.2	--	--	0.004	0.027	--
	9/15/2011	N	TV 1.5	6.93	677	--	U 5	140	0.81	U 0.1	390	U 0.005	U 0.005	U 0.2	--	--	0.001	0.074	--
	7/2/2012	N	TV 7.81	6.93	543	--	U 5	140	0.76	UM% 0.05	320	U 0.005	U 0.005	U 0.2	--	--	--	0.047	--
	9/13/2012	N	TV 1.25	7	612	--	U 5	150	0.8	U 0.05	380	U 0.005	U 0.005	U 0.2	--	--	--	0.064	--
	5/22/2013	N	TV 32.4	6.95	520	--	U 5	130	1.8	U 0.05	310	U 0.005	U 0.005	U 0.2	--	--	--	0.035	--
	5/27/2014	N	70.19	7.19	481	--	8	120	--	U 0.05	240	--	--	--	--	--	--	0.03	--
	9/24/2014	N	3.561	6.77	665	--	--	140	--	U 0.05	360	--	--	--	--	--	--	0.058	--
	9/19/2016	N	2.03	7.33	991	--	--	150	--	--	392	--	--	--	--	--	--	0.077	--
	6/6/2017	N	55	7.32	731	--	--	130	--	--	220	--	--	--	--	--	--	0.033	--
	10/11/2017	N	5.6	7.49	1262	--	--	150	--	--	471	--	--	--	--	--	--	0.089	--
	6/12/2018	N	46.55	7.17	761	--	--	120	--	--	215	--	--	--	--	--	--	0.038	--
	9/17/2018	N	3.55	7.27	1017	--	--	140	--	--	413	--	--	--	--	--	--	0.074	--
	6/4/2019	N	87.25	7.06	476	--	--	120	--	--	180	--	--	--	--	--	--	0.03	--
	9/17/2019	N	2.73	7.1	797	--	--	150	--	--	330	--	--	--	--	--	--	0.064	--
SPR-1A	3/7/1995	N	5	7.09	762	455	--	205	1.34	U 0.1	4S 169	U 0.02	--	--	--	--	--	--	--
	4/18/1995	N	8	6.99	897	580	--	195	1.34	U 0.1	221	U 0.005	--	--	--	--	--	--	--
	5/23/1995	N	37.5	7.02	806	390	--	188	0.89	U 0.1	166	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	25	6.88	763	457	--	236	0.97	--	127	U 0.02	--	--	--	--	--	--	--
	8/15/1995	N	3.1	7.99	663	J4S 420	--	265	0.5	U 0.1	108	U 0.005	--	--	--	--	--	--	--
	9/27/1999	N	5	--	--	514	--	245.5	0.59	--	183	U 0.005	--	--	--	0.06	0.019	0.007	--
	8/22/2003	N	5	8.1	820	598	U 10	--	0.1	--	192	U 0.005	--	--	U 0.2	0.064	0.003	0.004	--
	6/18/2008	N	TV 30	--	--	528	13	--	0.71	--	230	U 0.005	U 0.005	--	U 0.2	0.066	0.003	0.001	--
SPR-5	9/17/1987	N	--	--	--	114	14	--	U 0.05	U 0.1	11	--	0.006	--	--	0.016	U 0.01	U 0.005	0.01
	10/23/1988	N	--	--	--	113	34	72	--	U 0.1	13	U 0.01	--	--	--	--	--	--	--
	1/17/1989	N	4	7.97	123	--	--	72	--	--	13	U 0.01	--	--	--	--	--	--	--
	3/1/1989	N	--	4.53	--	--	--	73	--	--	13	U 0.01	--	--	--	--	--	--	--
	5/12/1989	N	122.5	7.53	141	141	--	54	--	U 0.5	18	U 0.005	--	--	--	0.024	0.02	U 0.003	0.01
	6/28/1989	N	112	7.28	154.3	--	--	64	--	--	11	0.02	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-5	7/27/1989	N	112	--	175	143	--	70	--	U 1	16	0.01	U 0.005	U 0.005	--	--	--	--	--
	8/22/1989	N	50	6.95	182	--	--	71	--	--	13	U 0.005	--	--	--	--	--	--	--
	9/28/1989	N	40	7.9	149	--	--	109	--	--	23	U 0.005	--	--	--	--	--	--	--
	11/16/1989	N	11.2	8.55	--	213	--	108	--	U 1	50	U 0.005	--	--	--	--	--	--	--
	12/6/1989	N	40	--	--	--	--	88	--	--	36	U 0.005	--	--	--	--	--	--	--
	1/17/1990	N	30	--	--	--	--	84	--	--	27	U 0.005	--	--	--	--	--	--	--
	2/26/1990	N	7.5	--	--	--	--	86	--	--	24	U 0.005	--	--	--	--	--	--	--
	4/19/1990	N	94	7.62	351	309	--	143	--	U 0.5	65	U 0.005	--	--	--	--	--	--	--
	5/24/1990	N	100	--	--	--	--	118	--	--	58	U 0.005	--	--	--	--	--	--	--
	6/19/1990	N	50	--	--	--	--	114	--	--	76	0.008	--	--	--	--	--	--	--
	7/19/1990	N	134.4	7.72	238	a 73	--	89	--	U 0.5	31	U 0.005	--	--	--	--	--	--	--
	8/22/1990	N	80	--	--	--	--	106	--	--	49	U 0.005	--	--	--	--	--	--	--
	9/25/1990	N	50	--	--	--	--	124	--	--	70	U 0.005	--	--	--	--	--	--	--
	11/15/1990	N	9	7.73	397	a 25	--	140	--	U 0.5	95	U 0.005	--	--	--	--	--	--	--
	12/12/1990	N	10	--	--	--	--	142	--	--	86	U 0.005	--	--	--	--	--	--	--
	1/16/1991	N	5	--	--	--	--	132	--	--	85	U 0.005	--	--	--	--	--	--	--
	2/27/1991	N	4.5	--	--	--	--	128	--	--	90	U 0.005	--	--	--	--	--	--	--
	4/16/1991	N	--	8.07	670	643	--	141	--	1	210	U 0.005	--	--	--	--	--	--	--
	5/29/1991	N	450	--	--	--	--	169	--	--	257	0.01	--	--	--	--	--	--	--
	6/26/1991	N	225	--	--	--	--	118	--	--	145	0.006	--	--	--	--	--	--	--
	7/25/1991	N	35.07	8.03	580	475	--	132	--	U 0.1	165	U 0.005	--	--	--	--	--	--	--
	8/28/1991	N	25	--	--	--	--	158	--	--	147	U 0.005	--	--	--	--	--	--	--
	9/18/1991	N	100	--	--	--	--	135	--	--	207	U 0.005	--	--	--	--	--	--	--
	11/1/1991	N	14.8	7.68	574	465	--	126	7.7	U 0.1	177	U 0.005	--	--	--	--	--	--	--
	12/17/1991	N	15	--	--	--	--	143	--	--	152	U 0.005	--	--	--	--	--	--	--
	1/21/1992	N	20	--	--	--	--	126	--	--	134	U 0.005	--	--	--	--	--	--	--
	2/27/1992	N	35	--	--	--	--	140	--	--	140	U 0.005	--	--	--	--	--	--	--
	3/18/1992	N	53.9	7.86	1052	707	--	110	18	0.1	323	U 0.005	--	--	--	--	--	--	--
	5/12/1992	N	50	--	--	--	--	130	--	--	201	U 0.005	--	--	--	--	--	--	--
	6/17/1992	N	50	--	--	--	--	123	--	--	571	U 0.005	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	126	19.9	--	395	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-5	7/16/1992	N	93.45	7.45	910	825	--	127	19.7	U 0.5	308	U 0.005	--	--	--	--	--	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	8/19/1992	N	15	--	--	--	--	122	19	--	293	U 0.005	--	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	17	--	--	--	--	--	--	--	--	--	--
	9/1/1992	N	--	--	--	--	--	--	18	--	--	--	--	--	--	--	--	--	--
	9/2/1992	N	--	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--
	9/25/1992	N	10	--	--	--	--	150	20	--	276	U 0.005	--	--	--	--	--	--	--
	10/29/1992	N	5.7	8.03	911	626	12	124	16	U 0.5	220	U 0.005	--	--	--	0.012	0.006	0.074	0.019
	12/10/1992	N	20	--	--	--	--	118	12.2	--	258	U 0.005	--	--	--	--	--	--	--
	1/20/1993	N	2.5	--	--	--	--	114	11	--	281	U 0.005	--	--	--	--	--	--	--
	2/26/1993	N	4	--	--	--	--	110	10.3	--	205	U 0.005	--	--	--	--	--	--	--
	4/6/1993	N	8.08	7.71	1065	856	U 10	104	19.5	0.19	383	U 0.005	--	--	--	0.01	U 0.001	0.107	U 0.006
	5/19/1993	N	25	--	--	--	--	94	30.8	--	506	U 0.005	--	--	--	--	--	--	--
	6/24/1993	N	10	--	--	--	--	98	25	--	431	U 0.005	--	--	--	--	--	--	--
	7/29/1993	N	13	7.88	1338	1120	U 4	112	28	J1,J4 0.26	527	U 0.005	--	--	--	0.006	U 0.002	0.125	U 0.008
	8/24/1993	N	7.18	--	--	--	--	120	J4 27	--	489	U 0.005	--	--	--	--	--	--	--
	9/22/1993	N	0.2	--	--	--	--	112	24	--	471	U 0.005	--	--	--	--	--	--	--
	10/19/1993	N	9.42	8.04	1247	1040	--	107	J4 21.1	U 0.1	515	U,J2 0.005	--	--	--	--	--	--	--
	12/9/1993	N	8	--	--	964	--	97	23.8	--	482	U 0.005	--	--	--	0.005	U 0.01	0.098	--
	3/8/1994	N	2	8	918	961	--	99	22	U 0.1	J4 487	U 0.02	--	--	--	--	--	--	--
	4/20/1994	N	9.78	7.69	1366	1110	--	74	20.1	U 0.1	633	U 0.02	--	--	--	--	--	--	--
	5/17/1994	N	9.78	8.32	1482	1070	--	95	J4 24	U 0.1	531	U 0.02	--	--	--	--	--	--	--
	6/13/1994	N	7	6.99	1447	1170	--	105	25	U 0.1	543	U 0.02	--	--	--	--	--	--	--
	8/2/1994	N	7	8.03	1609	1260	--	105	26.7	U 0.1	615	U 0.02	--	--	--	--	--	--	--
	10/4/1994	N	2.5	7.68	1686	1240	--	91	33.3	U 0.1	584	U 0.02	--	--	--	--	--	--	--
	12/15/1994	N	0	8.75	1861	1200	--	81	25	U 0.1	617	U 0.02	--	--	--	--	--	--	--
	3/7/1995	N	0	6.87	1793	1210	--	84	25.9	U 0.1	4S 637	U 0.02	--	--	--	--	--	--	--
	4/19/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/24/1995	N	8	7.33	1773	1120	--	69	20.5	U 0.1	643	U 0.02	--	--	--	--	--	--	--
	6/21/1995	N	10	7.31	1764	1380	--	73	30.8	--	720	U 0.02	--	--	--	--	--	--	--
	10/10/1995	N	0.8	7.2	1460	1360	--	96	J4 12.2	U 0.05	773	U 0.005	--	--	--	--	--	--	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-5	11/29/1995	N	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/15/1996	N	3	8.12	1484	1127	--	78.8	J4 14.88	--	635	U 0.005	--	--	--	--	--	--	--
	5/28/1996	N	20	6.8	1840	1529	--	79	13.86	--	910	0.006	U 0.005	--	--	--	--	--	--
	6/13/1996	N	4	6.42	1750	1384	--	77.8	20.48	--	780	U 0.005	--	--	--	--	--	--	--
	8/7/1996	N	6	7.74	1930	1542	--	91.8	21.94	--	921	U 0.005	--	--	--	--	--	--	--
	9/25/1996	N	2	7.89	1930	1492	--	94.8	18.52	U 0.05	841	U 0.005	--	--	--	--	--	--	--
	4/21/1997	N	10	7.23	1079	798	--	44.6	5.12	--	480	U 0.005	--	--	--	J2 0.007	0.003	0.043	0.02
	5/27/1997	N	45	6.99	1547	1296	--	63.6	9.03	--	777	U 0.005	--	--	--	0.006	U,J4 0.001	0.12	0.01
	6/24/1997	N	2	7.4	1688	1478	--	79.6	13.12	--	891	U 0.005	--	--	--	0.007	0.003	0.088	0.02
	7/29/1997	N	1	7.76	1855	1713	--	91	13.4	--	868	U 0.005	--	--	--	0.009	0.002	0.015	0.02
	9/17/1997	N	1	8.04	1956	1607	U 10	99.1	12.6	U 0.05	943	U 0.005	--	--	--	0.01	UJ1 0.004	0.103	UJ1 0.02
	3/3/1998	N	2	8.11	1879	1519	--	86.8	9.74	--	910	U 0.005	--	--	--	0.011	0.021	0.09	0.02
	5/31/1998	N	2	8.06	1535	1528	--	84.6	10.38	--	930	U 0.005	--	--	--	0.007	0.004	0.09	--
	9/22/1998	N	0	8.08	1956	1699	--	94.1	10.2	--	1051	U 0.005	--	--	--	0.007	0.026	0.162	--
	11/17/1998	N	0.5	8.04	1874	1591	U 10	90.6	8.16	U 0.05	974	U 0.005	--	--	--	0.005	0.001	0.03	0.01
	6/3/1999	N	1.3	--	--	1372	--	77.5	6.13	--	824	U 0.005	--	--	--	0.005	0.002	0.067	--
	9/27/1999	N	0.3	--	--	1783	--	96	7.26	--	1126	U 0.005	--	--	--	0.005	0.021	0.091	--
	11/10/1999	N	0.25	--	--	1689	U 10	92	6.45	U 0.05	1056	U 0.005	--	--	--	0.007	0.002	0.069	0.02
	3/20/2000	N	--	--	--	1576	--	82.5	5	--	995	U 0.005	--	--	--	0.009	0.016	0.067	--
	6/24/2000	N	--	--	--	1733	--	85	5.79	--	1075	U 0.005	--	--	--	0.014	0.033	0.089	--
	9/20/2000	N	--	--	--	1806	--	92.5	5.16	--	1149	U 0.005	--	--	--	0.007	0.006	0.06	--
	12/9/2000	N	--	--	--	1746	U 10	89.5	4.75	U 0.05	1072	U 0.005	--	--	--	0.005	0.003	0.065	0.02
	3/25/2001	N	--	--	--	1599	--	82	4.89	--	1000	U 0.005	--	--	--	0.006	0.004	0.055	--
	6/16/2001	N	--	--	--	1646	U 10	--	4.91	--	1021	U 0.005	--	--	--	0.006	U 0.001	0.034	--
	9/23/2001	N	--	--	--	1810	U 10	91.5	3.97	--	1120	U 0.005	--	--	--	0.003	0.005	0.052	--
	11/28/2001	N	--	--	--	1824	U 10	88	4.4	U 0.05	1130	U 0.005	--	--	--	0.005	0.01	0.075	U 0.01
	2/13/2002	N	--	--	--	1700	U 10	--	4.27	--	1100	U 0.005	--	--	--	U 0.003	0.002	0.094	--
	6/12/2002	N	4	7.8	1660	1440	U 10	--	3.18	--	924	U 0.005	--	--	--	0.004	0.002	0.054	--
	9/23/2002	N	0.5	--	--	1930	U 10	--	3.47	--	1170	U 0.005	--	--	--	0.005	0.001	0.085	--
	10/17/2002	N	--	--	--	1870	--	92	--	--	1180	--	--	--	--	--	0.004	0.084	--
	11/6/2002	N	0.25	7.7	2000	1890	90	--	3.13	--	1100	0.01	U 0.005	--	--	0.025	0.006	0.071	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-5	3/28/2003	N	0.5	7.8	1990	1750	12	--	3	--	1050	U 0.005	--	--	U 0.2	0.004	0.004	0.07	--
	6/18/2003	N	1.5	7.5	1870	1790	U 10	--	3.8	--	1110	U 0.005	--	--	U 0.2	0.005	0.003	0.069	--
	9/18/2003	N	1	7.9	1980	1890	U 10	--	2.6	--	d 1140	U 0.005	--	--	U 0.2	0.007	0.002	0.066	--
	11/12/2003	N	0.25	7.7	1920	1880	11	--	2.8	--	d 1140	U 0.005	--	--	U 0.2	0.007	0.003	0.069	--
	3/16/2004	N	0.5	7.93	1945	--	U 10	--	--	--	--	--	--	--	--	0.004	0.005	0.058	--
	6/10/2004	N	2	7.93	1895	--	U 10	--	--	--	--	--	--	--	--	0.006	0.004	0.044	--
	9/28/2004	N	0.5	7.76	2030	--	U 10	--	1.49	--	d 1110	UJ 0.005	--	--	--	--	0.003	0.049	--
	12/14/2004	N	0.5	7.78	2090	--	UJ 10	--	1.9	--	--	U 0.005	--	--	--	--	0.003	0.066	--
	3/29/2005	N	0.5	7.96	1970	--	U 10	--	1.86	--	--	U 0.005	--	--	--	--	0.003	0.065	--
	6/29/2005	N	1	7.59	1839	--	U 10	--	2.87	U 0.05	--	U 0.005	--	--	--	--	0.006	0.051	U 0.01
	9/28/2005	N	0.5	7.85	1665	--	--	--	2.08	U 0.1	--	U 0.005	--	--	U 0.2	U 0.003	0.002	0.137	U 0.01
	12/22/2005	N	1	7.96	1866	--	10	--	2.81	--	--	U 0.005	--	--	--	--	0.004	0.058	--
	3/29/2006	N	--	7.1	1397	--	U 10	--	2.5	--	--	U 0.005	--	--	--	--	0.002	0.052	--
	6/27/2006	N	0.4	7.38	1900	--	U 10	--	2.44	--	--	U 0.005	--	--	--	--	0.005	0.049	--
	10/5/2006	N	0.1	7.52	1835	--	U 10	--	1.7	--	--	U 0.005	--	--	--	--	0.003	0.053	--
	4/7/2008	N	--	7.08	1705	--	22	--	0.69	--	--	U 0.005	--	--	--	--	0.004	0.033	--
	6/12/2008	N	VE 3	7.5	1659	--	U 10	--	1.29	--	--	U 0.005	--	--	--	--	0.003	M% 0.048	--
	9/15/2008	N	0.5	7.75	2022	--	U 10	--	1.19	--	--	U 0.005	U 0.005	--	--	--	0.002	0.044	--
	6/16/2009	N	TV 1.1	7.24	1760	--	U 5	--	F 0.33	--	--	UM% 0.005	0.005	U 0.002	--	--	0.0012	0.0467	--
	9/4/2009	N	TV 0.63	7.59	2016		U 10	--	0.74	U 0.02	--	F% 0.007	M%F% 0.011	UF 0.004	--	--	0.0014	0.0367	--
	6/16/2010	N	AV 10.74	7.3	1400	--	U 10	M% 77	0.47	U 0.05	660	U 0.005	U 0.005	U 0.2	--	--	M% 0.003	0.022	--
	9/17/2010	N	0	7.53	1782	--	U 10	99	0.73	U 0.05	970	U 0.005	U 0.005	U 0.2	--	--	0.002	0.05	--
	6/15/2011	N	AV 178.2	7.19	1285	--	U 5	52	1.4	U 0.1	1200	U 0.005	U 0.005	U 0.2	--	--	0.002	0.074	--
	9/15/2011	N	0	7.33	1259	--	U 5	86	0.7	U 0.1	1200	U 0.005	U 0.005	U 0.2	--	--	0.002	0.044	--
	7/5/2012	N	TV 0.511	7.85	1984	--	U 5	83	M% 0.62	U 0.05	d 1100	U 0.005	U 0.005	U 0.2	--	--	--	0.04	--
	9/17/2012	N	0	7.94	1205	--	U 5	89	0.44	U 0.05	1100	U 0.005	U 0.005	U 0.2	--	--	--	0.037	--
	5/22/2013	N	1.12	7.69	1083	--	U 5	85	0.52	U 0.05	1000	U 0.005	U 0.005	U 0.2	--	--	--	0.031	--
	9/30/2013	N	4.94	7.53	1577	--	15	170	0.27	U 0.03	910	U 0.005	U 0.005	U 0.2	--	--	--	0.026	--
	5/27/2014	N	58.57	7.33	1076	--	U 5	48	--	U 0.05	1100	--	--	--	--	--	--	0.071	--
	9/24/2014	N	103.2	7.55	1323	--	--	81	--	U 0.05	1100	--	--	--	--	--	--	0.034	--
	9/19/2016	N	0.845	7.41	1025	--	--	86	--	--	1030	--	--	--	--	--	--	0.03	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***
SPR-5	6/6/2017	N	--	7.56	1592	--	--	78	--	--	1000	--	--	--	--	--	--	0.033	--
	10/11/2017	N	--	8.15	1755	--	--	79	--	--	1090	--	--	--	--	--	--	0.032	--
	6/12/2018	N	--	7.52	1645	--	--	68	--	--	979	--	--	--	--	--	--	0.045	--
	9/17/2018	N	--	7.69	1766	--	--	80	--	--	1100	--	--	--	--	--	--	0.035	--
	6/4/2019	N	--	7.46	1356	--	--	66	--	--	935	--	--	--	--	--	--	0.057	--
	9/17/2019	N	--	7.67	1545	--	--	78	--	--	954	--	--	--	--	--	--	0.033	--
TOE DRAIN	10/21/2002	N	--	--	--	1740	--	--	--	--	1080	--	--	--	--	--	U 0.01	0.096	--
	3/16/2004	N	10	8.04	1780	--	U 10	--	2.2	U 0.1	920	U 0.005	--	--	U 0.2	0.005	0.007	0.071	--
	9/28/2004	N	21	7.81	1944	--	U 10	--	2.25	--	863	U 0.005	--	--	--	--	0.005	0.095	--
	12/14/2004	D	--	--	--	--	UJ 10	--	2.2	--	--	U 0.005	--	--	--	--	0.006	0.091	--
	12/14/2004	N	8	7.86	1880	--	U 10	--	2.3	--	--	U 0.005	--	--	--	--	0.005	0.091	--
	12/14/2004	S	--	--	--	--	U 10	--	2.2	--	--	U 0.005	--	--	--	--	0.005	0.092	--
	6/29/2005	N	80	7.36	1809	--	U 10	--	3.21	U 0.05	--	U 0.005	--	--	--	--	0.009	0.109	0.01
	6/21/2010	N	TV 100	7.09	1845	--	66	M% 59	1.38	U 0.05	1100	U 0.005	U 0.005	U 0.06	--	--	0.025	0.079	--
	9/16/2010	N	TV 20.9	6.77	1924	--	U 5	M% 69	M%F 6.65	U 0.05	1200	U 0.005	U 0.005	U 0.2	--	--	0.008	0.069	--
	6/16/2011	N	TV 225	6.73	1322	--	U 5	51	1.43	U 0.1	1200	U 0.005	U 0.005	U 0.2	--	--	0.009	0.074	--
	9/15/2011	N	TV 20	7.48	1390	--	U 5	89	M% 1.36	U 0.1	1100	U 0.005	U 0.005	U 0.2	--	--	0.004	0.059	--
	7/2/2012	N	TV 53.9	7.47	1300	--	6	72	--	UM% 0.05	d 1100	U 0.005	U 0.005	U 0.2	--	--	--	0.069	--
	9/13/2012	N	TV 42.9	6.96	1229	--	U 5	75	--	U 0.05	1100	U 0.005	U 0.005	U 0.2	--	--	--	0.056	--
	5/22/2013	N	TV 122.5	7.28	1308	--	U 5	45	1.8	U 0.05	1300	U 0.005	U 0.005	U 0.2	--	--	--	0.085	--
	9/30/2013	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/27/2014	N	--	6.65	1195		U 5	44	--	U 0.05	1200	--	--	--	--	--	--	0.078	--
	9/24/2014	N	35.05	6.44	1234	--	--	81	--	U 0.05	1100	--	--	--	--	--	--	0.056	--
	9/19/2016	N	31.66	7.16	1832	--	--	82	--	--	1000	--	--	--	--	--	--	0.058	--
	6/6/2017	N	198	7.09	1826	--	--	51	--	--	1200	--	--	--	--	--	--	0.074	--
	10/11/2017	N	35.06	7.54	1990	--	--	74	--	--	1100	--	--	--	--	--	--	0.051	--
	6/12/2018	N	188.6	6.85	1600	--	--	51	--	--	1020	--	--	--	--	--	--	0.072	--
	9/17/2018	N	46.55	7	1592	--	--	79	--	--	1040	--	--	--	--	--	--	0.053	--
	6/4/2019	N	287.5	7.19	1467	--	--	51	--	--	1050	--	--	--	--	--	--	0.072	--

TABLE A-2
1987 to 2019 SPRING AND DRAIN WATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Flow (gpm)	Field pH (su)	Field Specific Conductance (µS)	LABORATORY													
						Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Total Alkalinity (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Total Recoverable Arsenic (mg/L)	Total Recoverable Copper (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Surface Water							**NA**	**NA**	**10**	**NA**	**NA**	**0.004**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**0.05**	**7.4**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**0.014***	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**0.009***	**0.005**	**0.12***

Notes:

gpm - gallons per minute
su - standard units
µS - microSiemens
mg/L - milligrams per liter
NA - MDEQ water qualitystandard does not exist for given analyte.
WAD - weak acid dissociable
A - Standard calculated using pH of 7.7 with salmonids present.
B - Standard calculated using pH of 7.7 with early life stage fish present at 0-14 degrees C
* - Standard calculated using a hardness of 100 mg/L.
Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)
N - Natural sample; D- Duplicate Sample; S - Split sample.
-- - Field data not collected or parameter not analyzed.
U - Analyte concentration is less than laboratory reporting limit indicated.
AV - Area volume flow method
TV - Time volume flow method
VE - Visual flow estimate

M% - Matrix spike recoveries exceed acceptable limits.
J - Estimated value - the result is greater than method detection limit but less than the practical quantitation limit (PQL).
a - Anomalous data. No apparent explanation for discrepancy in data (not an EPA code)
F - Result exceeded quality control criteria - PQL based.
F% - Result exceeded quality control criteria - RPD based.
d - RL increased due to sample matrix
H - Analysis performed past recommended holding time
J1 - Archive flag, definition unknown
J2 - Estimated quantity because calibration range exceeded or significant deviation from know value, possible bias
J4 - Estimated quantity because other QC outside control limits
- Value exceeds MDEQ human health standard.
- Value exceeds MDEQ acute aquatic life standard.
- Value exceeds MDEQ chronic aquatic life standard.

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-01	11/19/1987	N	--	--	--	--	188	74	92	15	U 0.005	--	U 0.001	34	--	U 0.01	U 0.01	2	U 0.001	U 0.03	U 0.005	U 0.005	0.04
	8/31/1988	N	--	--	--	--	171	76	90	16	0.006	--	U 0.001	33	--	U 0.01	U 0.01	2	U 0.001	U 0.03	U 0.005	U 0.005	0.02
	10/22/1988	N	--	--	--	--	153	69	--	14	--	--	--	28	--	--	--	2	--	--	--	--	--
	1/17/1989	N	6.83	7.4	138	2.5	187	80	--	16	--	--	--	34	--	--	--	2	--	--	--	--	--
	2/28/1989	D	6.63	7.2	70	3.4	184	79	--	15	--	--	--	31	--	--	--	2	--	--	--	--	--
	2/28/1989	N	6.63	7.2	70	3.4	184	79	--	15	--	--	--	31	--	--	--	2	--	--	--	--	--
	5/10/1989	N	4.7	6.6	120	6	154	50	a 155	a 96	0.02	--	0.0014	21.7	--	U 0.05	0.001	1.3	U 0.0002	U 0.1	U 0.003	U 0.04	0.02
	6/28/1989	N	6.46	7.5	163.5	7.3	309	74	--	16	--	--	--	28.4	--	--	--	1.9	--	--	--	--	--
	7/26/1989	N	6.58	5.5	166	8.2	176	56	88	18	0.004	--	U 0.005	29.6	--	U 0.02	U 0.001	1.7	U 0.0002	U 0.03	U 0.002	U 0.02	U 0.01
	8/23/1989	N	6.41	7.8	167	7.3	201	68	--	19	--	--	--	29.8	--	--	--	2	--	--	--	--	--
	9/28/1989	N	6.65	7.4	114	6.5	181	75	--	20	--	--	--	29.9	--	--	--	1.8	--	--	--	--	--
	11/15/1989	N	6.67	7	--	4.7	174	66	74	19	0.004	--	U 0.005	26.8	--	U 0.02	U 0.001	1.6	U 0.0002	U 0.03	U 0.001	U 0.02	U 0.01
	12/6/1989	N	6.3	--	--	--	171	72	--	19	--	--	--	25.6	--	--	--	1.6	--	--	--	--	--
	1/16/1990	N	6.3	--	--	3	171	69	--	20	--	--	--	27.8	--	--	--	1.7	--	--	--	--	--
	2/26/1990	N	6.4	--	--	4	160	71	--	19	--	--	--	25.9	--	--	--	1.66	--	--	--	--	--
	4/19/1990	N	5.45	6.7	134	6.1	150	58	70	17	0.006	--	U 0.0001	25.5	--	U 0.03	U 0.001	1.5	U 0.0002	U 0.1	0.003	U 0.02	0.03
	5/24/1990	N	6.5	--	--	4.5	160	68	--	13	--	--	--	28.5	--	--	--	2.1	--	--	--	--	--
	6/19/1990	N	6.15	--	--	4	172	70	--	19	--	--	--	25.9	--	--	--	1.82	--	--	--	--	--
	7/19/1990	N	6.83	7.2	167	6.8	181	72	69	16	0.006	--	U 0.0001	25	--	U 0.01	U 0.002	1.64	U 0.0002	U 0.04	U 0.002	U 0.01	0.012
	8/22/1990	N	6.6	--	--	7	167	72	--	14	--	--	--	27.9	--	--	--	1.7	--	--	--	--	--
	9/25/1990	N	7	--	--	7	175	74	--	16	--	--	--	27.9	--	--	--	1.6	--	--	--	--	--
	11/14/1990	N	7.21	7.7	136	5.1	179	76	83	23	0.004	--	U 0.0001	30.6	--	U 0.02	U 0.001	1.65	U 0.0002	U 0.04	U 0.001	U 0.01	U 0.01
	12/12/1990	N	7.1	--	--	4	185	72	--	21	--	--	--	34.1	--	--	--	1.9	--	--	--	--	--
	1/16/1991	N	7	--	--	4	182	71	--	21	--	--	--	28.6	--	--	--	1.79	--	--	--	--	--
	2/27/1991	N	4.9	--	--	5	196	78	--	20	--	--	--	27.2	--	--	--	1.7	--	--	--	--	--
	4/16/1991	N	7.13	6.9	157	4.9	202	76	82	22	U 0.002	--	0.0001	29.7	--	0.031	U 0.001	1.81	U 0.0002	U 0.01	0.002	U 0.005	0.013
	5/29/1991	N	5.5	--	--	2	150	68	--	24	--	--	--	22.8	--	--	--	1.59	--	--	--	--	--
	6/26/1991	N	6.6	--	--	3.5	178	65	--	21	--	--	--	26.8	--	--	--	1.71	--	--	--	--	--
	7/25/1991	N	7.09	8.1	172	6.2	193	70	89	23	0.005	--	U 0.0001	32.6	--	0.017	U 0.001	1.94	U 0.0002	a 0.04	U 0.002	U 0.003	0.008
	8/28/1991	N	7.2	--	--	--	199	70	--	22	--	--	--	33.6	--	--	--	2.11	--	--	--	--	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-01	9/18/1991	N	6.95	--	--	--	197	80	--	27	--	--	--	36.5	--	--	--	2.45	--	--	--	--	--
	11/1/1991	N	7.3	6.9	181	5.5	219	70	94	30	0.003	--	U 0.0002	34.2	--	U 0.006	U 0.001	2.04	U 0.0002	U 0.01	0.006	U 0.005	0.011
	12/17/1991	N	7.4	--	--	4.5	227	87	--	33	--	--	--	35	--	--	--	2.22	--	--	--	--	--
	1/21/1992	N	7.45	--	--	4	252	72	--	40	--	--	--	35.3	--	--	--	2.33	--	--	--	--	--
	2/27/1992	N	7.4	--	--	4.5	254	71	--	43	--	--	--	41.8	--	--	--	2.74	--	--	--	--	--
	3/18/1992	N	7.16	7.6	270	3	247	56	106	40	U 0.03	--	U 0.0002	38.5	--	0.013	0.001	2.41	U 0.0002	U 0.01	0.01	U 0.005	0.011
	5/13/1992	N	7.35	--	--	5	245	73	--	40	--	--	--	37.9	--	--	--	2.46	--	--	--	--	--
	6/17/1992	N	6	--	--	5.5	210	49	--	46	--	--	--	36.2	--	--	--	2.36	--	--	--	--	--
	7/16/1992	N	7.28	7.2	289	6.5	269	75	128	50	U 0.001	--	U 0.0001	46.5	--	0.013	U 0.001	2.89	U 0.0002	U 0.01	0.014	U 0.003	0.015
	8/19/1992	N	7.55	--	--	5.5	283	71	--	52	--	--	--	41.7	--	--	--	2.85	--	--	--	--	--
	9/25/1992	N	7.7	--	--	5	301	78	148	59	--	--	--	54	--	--	--	3.13	--	--	--	--	--
	10/29/1992	N	7.66	7.3	289	5.6	331	71	191	62	0.01	--	U 0.0001	70.6	--	0.068	0.014	3.54	U 0.0002	U 0.009	0.029	U 0.002	0.024
	12/10/1992	N	7.8	--	--	5.5	348	72	--	93	--	--	--	62.6	--	--	--	3.86	--	--	--	--	--
	1/20/1993	N	7.8	--	--	5.3	401	74	--	122	--	--	--	67.6	--	--	--	4.25	--	--	--	--	--
	2/26/1993	N	7.5	--	--	4	413	71	--	115	--	--	--	71.3	--	--	--	4.43	--	--	--	--	--
	4/7/1993	N	7	6.1	362	4.4	407	68	196	106	0.004	--	U 0.0001	71	--	0.022	0.004	4	U 0.0002	U 0.009	0.039	0.001	U 0.006
	4/7/1993	N	7	6.1	362	4.4	384	74	208	102	0.004	--	U 0.0001	76.1	--	0.022	0.004	4.4	U 0.0002	U 0.009	0.039	0.001	U 0.006
	4/7/1993	S	7	6.1	362	4.4	384	74	208	102	0.006	--	U 0.001	76.1	--	0.02	U 0.01	4.4	U 0.001	U 0.01	U 0.005	U 0.005	0.01
	5/19/1993	N	6	--	--	3.5	356	66	--	106	--	--	--	61.8	--	--	--	3.9	--	--	--	--	--
	6/24/1993	D	6.9	--	--	4.5	377	72	--	104	--	--	--	83	--	--	--	4.92	--	--	--	--	--
	6/24/1993	N	6.9	--	--	4.5	380	84	--	106	--	--	--	82.9	--	--	--	4.92	--	--	--	--	--
	7/28/1993	N	6.49	7.8	406	6.7	358	74	192	95	J1,J4 0.007	--	U 0.0001	70.5	--	0.044	0.001	3.87	U 0.0002	U 0.013	0.027	UJ1 0.003	0.018
	8/24/1993	D	7.1	--	--	5.5	438	83	--	133	--	--	--	72.4	--	--	--	4.47	--	--	--	--	--
	8/24/1993	N	7.1	--	--	5.5	424	79	--	128	--	--	--	68	--	--	--	4.3	--	--	--	--	--
	9/22/1993	N	7.4	--	--	5.2	453	70	--	141	--	--	--	83.2	--	--	--	5.04	--	--	--	--	--
	10/19/1993	N	7.33	6.9	551	5.4	535	74	241	159	U 0.005	--	0.001	88	--	0.03	U 0.01	5	U 0.001	U 0.01	J4 0.071	U 0.005	0.03
	12/9/1993	N	7.4	--	--	4.5	726	66	--	239	0.009	--	--	134	--	0.06	--	8	--	--	0.087	--	--
	3/8/1994	N	7.98	6.9	594	3.2	755	61	395	191	U 0.005	--	U 0.001	144	--	0.03	U 0.01	8.5	U 0.001	U 0.01	0.094	U 0.005	0.02
	3/8/1994	S	7.98	6.9	594	3.2	794	69	368	J4 248	U 0.005	--	U 0.001	135	--	0.033	U 0.01	8	U 0.5	U 0.01	0.095	U 0.005	0.021
	5/19/1994	D	5.9	6.2	778	3.5	676	71	332	209	U 0.005	--	U 0.001	122	--	0.03	U 0.01	7	U 0.001	U 0.01	0.06	U 0.005	0.02
	5/19/1994	N	5.9	6.2	778	3.5	675	74	342	213	U 0.005	--	U 0.001	126	--	0.03	U 0.01	7	U 0.001	U 0.01	0.09	U 0.005	0.03

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-01	8/2/1994	N	13.2	7.8	886	5.7	766	76	386	270	U 0.005	--	U 0.001	142	--	0.01	U,J4 0.01	8	U 0.001	U 0.01	0.075	U 0.005	0.04
	12/13/1994	N	12.3	7	996	4.7	824	65	433	292	U 0.005	--	U 0.001	J2 159	--	0.03	U 0.01	J2 9	U 0.001	U 0.01	0.077	U 0.005	J4S 0.03
	3/3/1995	N	7.03	6.7	868	3.4	778	69	422	4S 328	U 0.005	--	U 0.001	154	--	0.04	U 0.01	9	U 0.001	U 0.01	0.091	U 0.005	0.03
	4/25/1995	--	6.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/1995	N	4.95	7.4	505	2.7	449	68	239	150	U 0.005	--	U 0.001	87	--	0.01	U 0.01	5	U 0.001	U 0.01	0.02	U 0.005	0.04
	6/22/1995	--	6.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1995	N	7.3	7.2	717	8.3	739	61	340	267	U 0.005	--	U 0.001	124	--	U 0.01	U 0.01	7	U 0.001	U 0.01	0.023	U 0.005	0.02
	10/10/1995	N	7.1	7.1	632	5.8	674	65	356	289	U 0.003	--	U 0.0001	130	--	0.006	U 0.003	8	U 0.0006	U 0.02	0.021	U 0.003	0.03
	3/5/1996	D	0	6.5	798	3.1	755	59.5	442.4	311	0.003	--	--	165	--	--	0.008	7.9	--	--	0.031	--	UJ1 0.036
	3/5/1996	N	0	6.5	798	3.1	755	59.5	442.4	311	0.003	--	--	165	--	--	0.005	7.9	--	--	0.031	--	UJ1 0.02
	6/12/1996	N	6.18	7	876	3.6	733	60.6	365.1	302	0.003	--	--	134	--	J4 0.007	0.003	8	--	--	0.02	--	0.02
	8/6/1996	--	7.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/24/1996	N	7.45	7.1	916	5.9	813	60.1	405.6	346	U 0.003	--	U 0.0001	147	--	0.022	U 0.003	9.8	U 0.0006	U 0.02	0.02	U 0.003	0.02
	12/5/1996	N	7.67	7.3	1015	4.5	873	65.2	451.9	381	U 0.003	--	--	166	--	0.018	U 0.003	9.8	--	--	0.025	--	UJ1 0.03
	3/11/1997	D	7.98	7.2	1014	4.5	901	65.7	439.3	408	U 0.003	--	--	161	--	--	U 0.003	9.6	--	--	0.02	--	0.03
	3/11/1997	N	7.98	7.2	1014	4.5	899	66.2	439.5	407	U 0.003	--	--	161	--	--	U 0.003	9.7	--	--	0.019	--	0.03
	5/21/1997	N	5.61	6.9	575	3	485	51	242.4	181	0.003	--	--	88	--	0.022	U 0.003	5.7	--	--	0.015	--	0.02
	10/14/1997	N	7.74	7.2	1029	5.6	954	49.1	490.6	446	0.004	--	0.0001	177	--	0.005	U 0.003	12.3	U 0.0006	U 0.02	0.013	U 0.003	0.03
	12/9/1997	N	7.58	7.3	1274	0	979	53.6	500.4	464	0.004	--	--	183	--	0.003	U 0.003	11	--	--	0.018	--	0.03
	3/3/1998	N	7.72	7.5	1098	3.4	1014	56.1	513.8	490	0.004	--	--	190	--	0.009	U 0.003	9.8	--	--	0.025	--	0.01
	3/3/1998	S	7.72	7.5	1098	3.4	1014	56.1	513.8	490	U 0.003	--	--	190	--	0.002	U 0.003	9.8	--	--	0.019	--	0.01
	6/4/1998	N	7.25	7.3	1102	3.8	891	63	436.2	395	U 0.003	--	--	160	--	0.018	--	--	--	--	0.021	--	--
	11/18/1998	N	9.05	7.4	0	4	982	62.6	551.9	492	U 0.003	--	--	--	--	U 0.001	--	--	--	--	0.008	--	--
	6/8/1999	N	--	--	--	--	726	54.5	371	324	U 0.003	--	--	--	--	0.025	--	--	--	--	0.017	--	--
	11/11/1999	N	--	--	--	--	1087	64.5	575.7	558	U 0.003	--	--	--	--	0.001	--	--	--	--	0.012	--	--
	6/12/2002	N	5.83	7	590	--	--	--	--	324	U 0.003	--	--	--	--	0.009	--	--	--	--	0.01	--	--
	11/6/2002	N	7.55	7.3	1210	--	--	--	--	620	U 0.003	--	--	--	--	0.004	--	--	--	--	0.012	--	--
	6/30/2003	N	7.1	7.2	1250	5	--	--	--	598	U 0.003	--	--	--	--	0.004	--	--	--	--	0.012	--	--
	11/13/2003	N	7.91	7.2	1270	5.7	--	--	--	658	0.003	--	--	--	--	0.002	--	--	--	--	0.012	--	--
	6/10/2004	N	7.6	7.2	1374	4.6	--	--	--	--	U 0.003	--	--	--	--	0.004	--	--	--	--	0.012	--	--
	12/30/2004	N	8	7.5	1430	4.3	--	--	--	--	--	--	--	--	--	0.005	--	--	--	--	0.014	--	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-01	6/28/2005	N	7	7.1	1409	4	--	--	--	--	--	--	U 0.0001	--	--	0.006	--	--	--	--	0.023	--	0.02
SBB-87-02	11/14/1987	N	--	--	--	--	159	62	66	13	0.007	--	U 0.001	24	--	U 0.01	U 0.01	2	U 0.001	U 0.03	U 0.005	U 0.005	0.14
	8/31/1988	N	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.01
	10/22/1988	N	--	--	--	--	143	61	--	13	--	--	--	23	--	--	--	2	--	--	--	--	--
	1/17/1989	N	6.27	8	114	4.3	154	63	--	14	--	--	--	24	--	--	--	2	--	--	--	--	--
	2/28/1989	N	6	7.9	--	5	158	66	--	13	--	--	--	22	--	--	--	2	--	--	--	--	--
	5/9/1989	N	3.75	--	130	--	174	52	a 148	14	0.01	--	0.0007	22.5	--	U 0.05	0.004	1.6	U 0.0002	U 0.1	U 0.003	U 0.04	U 0.02
	6/28/1989	N	3.61	7.4	142.6	7.2	259	68	--	15	--	--	--	21.2	--	--	--	1.7	--	--	--	--	--
	7/26/1989	N	4.93	5.6	145	6	156	a 168	60	15	0.006	--	U 0.005	21.8	--	U 0.02	U 0.001	1.4	U 0.0002	U 0.03	U 0.002	U 0.02	U 0.01
	8/22/1989	N	5.49	8.6	215	6.9	166	59	--	19	--	--	--	21.9	--	--	--	1.7	--	--	--	--	--
	9/28/1989	N	5.13	7.8	118	6.5	152	62	--	18	--	--	--	21.5	--	--	--	1.5	--	--	--	--	--
	11/15/1989	N	5.04	7.5	--	5.1	155	84	57	20	0.007	--	U 0.005	20.6	--	U 0.02	0.001	1.4	U 0.0002	U 0.03	U 0.001	U 0.02	U 0.01
	12/6/1989	N	4.65	--	--	--	224	92	--	34	--	--	--	17.4	--	--	--	1.8	--	--	--	--	--
	1/16/1990	N	3.3	--	--	4	179	72	--	19	--	--	--	19.2	--	--	--	1.6	--	--	--	--	--
	2/26/1990	N	4	--	--	5	157	66	--	19	--	--	--	20.4	--	--	--	1.85	--	--	--	--	--
	4/19/1990	N	3.87	7.2	142	6.5	158	65	62	19	0.008	--	U 0.0001	21.7	--	U 0.03	U 0.001	1.7	U 0.0002	U 0.1	U 0.002	U 0.02	U 0.02
	5/24/1990	N	4.5	--	--	5.5	155	65	--	14	--	--	--	22.4	--	--	--	2	--	--	--	--	--
	6/19/1990	N	4.15	--	--	6	162	67	--	27	--	--	--	19.3	--	--	--	1.89	--	--	--	--	--
	7/19/1990	N	4.73	8	138	6.4	170	67	56	24	0.006	--	U 0.0001	19.8	--	U 0.01	U 0.002	1.64	U 0.0002	U 0.04	U 0.002	U 0.01	U 0.012
	8/22/1990	N	4.9	--	--	8	156	68	--	31	--	--	--	20.6	--	--	--	1.76	--	--	--	--	--
	9/25/1990	N	4.9	--	--	5	154	66	--	21	--	--	--	19.4	--	--	--	1.65	--	--	--	--	--
	11/14/1990	N	5.12	8.4	116	4.7	152	64	59	26	0.008	--	U 0.0001	20.9	--	U 0.02	U 0.001	1.61	U 0.0002	U 0.04	U 0.001	U 0.01	U 0.01
	12/12/1990	N	4.9	--	--	5	160	64	--	18	--	--	--	24.4	--	--	--	1.8	--	--	--	--	--
	1/16/1991	N	4.9	--	--	5	158	65	--	13	--	--	--	20.9	--	--	--	1.56	--	--	--	--	--
	2/27/1991	N	4.9	--	--	5	161	64	--	15	--	--	--	19.6	--	--	--	1.4	--	--	--	--	--
	4/16/1991	N	4.9	8.4	134	5.2	170	65	56	18	0.006	--	0.0002	19.9	--	U 0.002	0.001	1.59	U 0.0002	U 0.01	U 0.001	U 0.005	U 0.003
	5/29/1991	N	3.6	--	--	5	165	80	--	23	--	--	--	19.7	--	--	--	1.98	--	--	--	--	--
	6/26/1991	N	4.15	--	--	4.5	156	63	--	17	--	--	--	21.2	--	--	--	1.58	--	--	--	--	--
	7/25/1991	N	5.02	8.4	150	7.2	164	a 112	69	19	0.009	--	U 0.0001	24.7	--	0.005	U 0.001	1.87	U 0.0002	U 0.01	U 0.002	U 0.003	U 0.002
	8/28/1991	N	5.15	--	--	4.5	174	70	--	21	--	--	--	23.8	--	--	--	2.01	--	--	--	--	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY																	
Station	Sample Date	Type	Depth To Water (feet)	pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-02	9/18/1991	N	5.15	--	--	--	174	65	--	a 35	--	--	--	25.3	--	--	--	2.37	--	--	--	--	--
	11/1/1991	N	5.82	7.7	153	5.5	174	61	65	20	0.009	--	0.0002	23.3	--	U 0.006	U 0.001	1.67	U 0.0002	U 0.01	0.003	U 0.005	0.029
	12/17/1991	N	5.9	--	--	4.5	178	96	--	20	--	--	--	24.3	--	--	--	1.93	--	--	--	--	--
	1/21/1992	N	5.9	--	--	0.5	183	72	--	22	--	--	--	22.8	--	--	--	1.72	--	--	--	--	--
	2/27/1992	N	5.9	--	--	5	190	85	--	23	--	--	--	22.2	--	--	--	1.96	--	--	--	--	--
	3/18/1992	N	5.77	8.5	195	4.3	186	48	67	24	U 0.03	--	U 0.0002	23.6	--	U 0.005	0.001	1.85	U 0.0002	U 0.01	U 0.002	U 0.005	0.006
	5/13/1992	N	5.67	--	--	5	195	60	--	32	--	--	--	24.5	--	--	--	1.94	--	--	--	--	--
	6/17/1992	N	4.9	--	--	5.5	198	58	--	31	--	--	--	27.6	--	--	--	2.06	--	--	--	--	--
	7/16/1992	N	5.79	7.8	213	5.3	202	61	86	35	0.007	--	0.0001	30.7	--	U 0.003	0.002	2.26	U 0.0002	U 0.01	U 0.002	U 0.003	U 0.012
	8/19/1992	N	6	--	--	5	213	60	--	36	--	--	--	26.1	--	--	--	2.18	--	--	--	--	--
	9/25/1992	N	6.1	--	--	5	207	70	91	40	--	--	--	32.8	--	--	--	2.26	--	--	--	--	--
	10/29/1992	N	6.22	8.4	225	4.6	211	60	105	36	0.01	--	U 0.0001	38.2	--	U 0.003	0.003	2.23	U 0.0002	U 0.009	0.005	U 0.002	0.011
	12/10/1992	N	6.4	--	--	4.5	211	62	--	45	--	--	--	31.9	--	--	--	2.35	--	--	--	--	--
	1/20/1993	N	6.33	--	--	4.5	216	64	--	49	--	--	--	30.4	--	--	--	2.29	--	--	--	--	--
	2/26/1993	N	6	--	--	4.5	220	63	--	51	--	--	--	33.1	--	--	--	2.42	--	--	--	--	--
	4/7/1993	N	5.71	7	240	4.7	233	63	106	54	0.004	--	U 0.0001	38.1	--	U 0.001	0.004	2.62	U 0.0002	U 0.009	0.001	0.001	U 0.006
	5/19/1993	N	4.9	--	--	5	246	58	--	67	--	--	--	36.1	--	--	--	2.61	--	--	--	--	--
	6/24/1993	N	5.5	--	--	5	260	58	--	68	--	--	--	46.2	--	--	--	3.26	--	--	--	--	--
	7/28/1993	N	5.05	7.9	292	6.9	287	58	121	77	J1,J4 0.01	--	0.0001	43	--	U 0.002	U 0.001	3	U 0.0002	U 0.013	UJ1 0.003	U 0.003	U 0.008
	8/24/1993	N	6.1	--	--	5	287	61	--	87	--	--	--	40.4	--	--	--	3	--	--	--	--	--
	9/22/1993	N	6	--	--	5	294	58	--	93	--	--	--	48.8	--	--	--	3.53	--	--	--	--	--
	10/19/1993	N	5.97	7.8	319	4.6	328	54	128	99	0.008	--	U 0.001	46	--	U 0.01	U 0.01	3	U 0.001	U 0.01	J,J4 0.005	U 0.005	0.02
	12/9/1993	N	6.3	--	--	5	350	65	--	115	0.01	--	--	53	--	0.06	--	4	--	--	0.006	--	--
	3/8/1994	N	6.16	7.4	274	4.4	412	65	167	J4 132	0.007	--	U 0.001	60	--	U 0.01	U 0.01	4	U 0.001	U 0.01	U 0.005	U 0.005	U 0.01
	5/19/1994	D	4.5	7.6	461	4.5	456	48	198	152	0.009	--	U 0.001	72	--	U 0.01	U 0.01	5	U 0.001	U 0.01	U 0.005	U 0.005	0.02
	5/19/1994	N	4.5	7.6	461	4.5	449	49	199	154	0.008	--	U 0.001	72	--	U 0.01	U 0.01	5	U 0.001	U 0.01	U 0.005	U 0.005	0.01
	8/2/1994	N	0	8.1	518	7.4	483	59	217	165	0.007	--	U 0.001	79	--	U 0.01	U,J40.01	5	U 0.001	U 0.01	0.011	U 0.005	0.02
	12/13/1994	N	5.93	7.4	541	4.7	512	43	230	201	0.009	--	U 0.001	J2 83	--	U 0.01	U 0.01	J2 6	U 0.001	U 0.01	U 0.005	U 0.005	J4S 0.03
	3/3/1995	N	5.64	7.5	625	4.7	485	34	218	4S 194	0.009	--	U 0.001	79	--	U 0.01	U 0.01	5	U 0.001	U 0.01	U 0.005	U 0.005	0.02
	4/25/1995	--	4.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/1995	N	3.79	7.8	628	5	493	43	259	216	0.01	--	U 0.001	94	--	U 0.01	U 0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.02

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-02	6/22/1995	--	4.79	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1995	N	5.6	7.4	541	5.5	655	44	284	246	0.009	--	U 0.001	103	--	U 0.01	0.02	7	U 0.001	U 0.01	U 0.005	U 0.005	0.02
	10/10/1995	N	5.85	7.2	551	5.5	606	44	307	268	0.008	--	U 0.0001	111	--	U 0.001	0.003	7	U 0.0006	U 0.02	U 0.001	U 0.003	0.02
	3/5/1996	N	0	7.3	813	4.5	655	31.8	346.2	274	0.01	--	--	127	--	--	0.004	7.3	--	--	U 0.001	--	UJ1 0.022
	6/12/1996	D	5	7.1	858	5.4	711	39.9	339.5	319	0.01	--	--	123	--	U,UJ 0.001	U 0.003	8.3	--	--	0.001	--	0.02
	6/12/1996	N	5	7.1	858	5.4	712	39.4	340.9	318	0.01	--	--	123	--	U,UJ 0.001	U 0.003	8.4	--	--	0.002	--	0.02
	8/6/1996	--	5.99	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/24/1996	N	6.53	7.7	862	5.1	787	39	374.8	358	0.01	--	U 0.0001	134	--	U 0.001	U 0.003	10	U 0.0006	U 0.02	U 0.001	U 0.003	0.01
	12/5/1996	N	6.72	8.2	1000	4.6	816	40.9	402.2	382	0.01	--	--	145	--	U 0.001	U 0.003	9.9	--	--	U 0.001	--	UJ1 0.01
	3/11/1997	N	6.95	7.9	1011	5	871	38.9	406.9	431	0.006	--	--	147	--	--	U 0.003	10.4	--	--	0.001	--	0.03
	5/21/1997	N	3.65	8.2	937	4.9	909	38	452.6	446	0.009	--	--	163	--	0.002	U 0.003	11.3	--	--	0.002	--	0.01
	10/14/1997	N	6.88	7.7	1048	4.9	965	39	484.5	473	0.01	--	U 0.0001	173	--	0.002	U 0.003	13	U 0.0006	U 0.02	0.002	U 0.003	0.03
	12/9/1997	N	6.81	8.2	1255	0	997	37	508.8	501	0.01	--	--	185	--	0.002	U 0.003	12.2	--	--	0.002	--	0.02
	3/3/1998	--	6.92	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/4/1998	N	6.02	8.1	1329	5	1044	38	507.2	523	0.01	--	--	183	--	0.001	--	--	--	--	U 0.001	--	--
	11/18/1998	N	8.05	8.0	0	3.8	1025	38.5	563.9	542	0.006	--	--	--	--	U 0.001	--	--	--	--	U 0.001	--	--
	6/8/1999	N	--	--	--	--	1095	42	564	572	0.007	--	--	--	--	U 0.001	--	--	--	--	U 0.001	--	--
	11/11/1999	N	--	--	--	--	1135	41.5	588	609	0.009	--	--	--	--	U 0.001	--	--	--	--	U 0.001	--	--
	6/12/2002	N	5.3	7.9	1350	--	--	--	--	709	0.008	--	--	--	--	U 0.001	--	--	--	--	0.002	--	--
	11/6/2002	N	7.1	7.7	1320	--	--	--	--	705	0.008	--	--	--	--	0.001	--	--	--	--	0.002	--	--
	6/30/2003	N	6.6	7.4	1160	6.2	--	--	--	691	0.008	--	--	--	--	U 0.001	--	--	--	--	0.002	--	--
	11/13/2003	N	7	7.7	1400	4.8	--	--	--	783	0.007	--	--	--	--	U 0.001	--	--	--	--	U 0.001	--	--
	6/10/2004	N	6.7	7.5	1482	5.2	--	--	--	--	0.008	--	--	--	--	U 0.001	--	--	--	--	U 0.001	--	--
	12/30/2004	N	7	7.8	1541	4.2	--	--	--	--	--	--	--	--	--	0.004	--	--	--	--	U 0.001	--	--
	6/28/2005	N	6.25	7.6	1308	4.8	--	--	--	--	--	--	U 0.0001	--	--	U 0.001	--	--	--	--	U 0.001	--	0.02
	7/22/2010	N	6.55	7.7	1599	5.18	1520	54	820	920	0.008	U 0.1	U 0.001	295	U 0.01	--	U 0.01	20	U 0.001	--	U 0.005	U 0.005	--
	9/17/2010	N	6.81	7.6	1553	5	1530	M% 63	856	810	0.006	U 0.1	U 0.001	309	U 0.01	--	U 0.01	20	U 0.001	--	U 0.005	U 0.005	--
	6/16/2011	N	3.24	7.4	974	4.8	1550	56	816	840	U 0.005	U 0.1	U 0.001	290	U 0.01	--	U 0.01	22	U 0.001	--	0.008	U 0.005	--
	9/15/2011	N	6.81	7.6	948	5.9	1340	65	909	870	0.006	U 0.1	U 0.001	331	U 0.01	--	U 0.01	20	U 0.001	--	U 0.005	U 0.005	--
	7/5/2012	N	6.61	7.5	1716	6.19	1550	65	1010	d 910	0.005	U 0.05	U 0.001	367	U 0.005	--	U 0.001	24	U 0.0001	--	0.001	U 0.001	--
	9/17/2012	D	6.88	7.9	998	6.2	1560	69	854	870	0.004	U 0.05	U 0.001	308	U 0.005	--	U 0.001	20	U 0.0001	--	U 0.001	U 0.001	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY																	
Station	Sample Date	Type	Depth To Water (feet)	pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-02	9/17/2012	N	6.88	7.9	998	6.2	1560	69	869	860	0.006	U 0.05	U 0.001	314	U 0.005	--	U 0.001	21	U 0.0001	--	U 0.001	U 0.001	--
	5/22/2013	D	6.05	7.5	988	6	1600	67	849	870	0.006	U 0.1	U 0.001	307	U 0.01	--	U 0.01	20	U 0.001	--	U 0.005	U 0.005	--
	5/22/2013	N	6.05	7.5	988	6	1600	67	894	940	0.006	U 0.1	U 0.001	324	U 0.01	--	U 0.01	21	U 0.001	--	U 0.005	U 0.005	--
	10/2/2013	N	5.76	7.8	1576	4.78	1660	67	925	900	0.006	U 0.1	U 0.001	332	U 0.01	--	U 0.01	23	U 0.001	--	U 0.005	U 0.005	--
	5/28/2014	D	3.85	7.1	953	5.2	1570	57	886	890	0.005	U 0.05	U 0.001	319	U 0.005	--	U 0.001	22	U 0.0001	--	0.006	U 0.001	--
	5/28/2014	N	3.85	7.1	953	5.2	1570	58	909	890	0.005	U 0.05	U 0.001	328	U 0.005	--	U 0.001	22	U 0.0001	--	0.006	U 0.001	--
	9/25/2014	D	6.7	7.6	1019	5.9	1550	67	907	870	0.005	U 0.05	U 0.0001	326	U 0.005	--	U 0.001	22	U 0.0001	--	U 0.001	U 0.001	--
	9/25/2014	N	6.7	7.6	1019	5.9	1560	66	877	870	0.005	U 0.05	U 0.0001	316	U 0.005	--	U 0.001	21	U 0.0001	--	U 0.001	U 0.001	--
SBB-87-03	4/26/1989	N	8.81	--	261	4.3	284	144	120	a 718	U 0.002	--	0.0004	45.7	--	U 0.02	U 0.001	1.8	U 0.0002	U 0.03	U 0.003	U 0.02	0.018
	6/26/1989	N	7.92	7.7	303	5	315	124	--	12	--	--	--	46.8	--	--	--	1.8	--	--	--	--	--
	7/15/1989	--	16.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1989	--	20.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/23/1990	N	10.6	--	--	4	289	142	--	a 64	--	--	--	47.4	--	--	--	2.1	--	--	--	--	--
	6/19/1990	N	8.9	--	--	5	260	132	--	4.4	--	--	--	49.1	--	--	--	1.37	--	--	--	--	--
	5/29/1991	N	7.2	--	--	3	258	131	--	7	--	--	--	41.1	--	--	--	1.39	--	--	--	--	--
	6/26/1991	N	11.2	--	--	3.5	303	146	--	8	--	--	--	41	--	--	--	1.73	--	--	--	--	--
	3/17/1992	--	21.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/12/1992	N	16.2	--	--	4.5	300	123	--	16	--	--	--	41.6	--	--	--	2.36	--	--	--	--	--
	6/19/1992	N	7.33	--	--	6	184	72	--	10	--	--	--	37.3	--	--	--	0.99	--	--	--	--	--
	7/16/1992	N	12.6	7.3	279	6.6	271	133	121	U 10	U 0.001	--	0.0004	45.8	--	0.01	0.004	1.55	0.0003	U 0.01	U 0.002	U 0.003	0.064
	4/8/1993	N	13.1	8.0	160	2.5	244	118	82	13	0.005	--	0.0006	30.1	--	0.006	0.002	1.67	U 0.0002	U 0.009	0.001	0.001	0.009
	5/19/1993	N	4.9	--	--	3.5	154	83	--	17	--	--	--	12.8	--	--	--	0.99	--	--	--	--	--
	6/23/1993	N	6.8	--	--	5	211	114	--	7	--	--	--	20.4	--	--	--	1.47	--	--	--	--	--
	7/28/1993	N	5.05	7.5	201	8.5	199	102	89.3	U 5	U,J4 0.002	--	0.0001	33.5	--	0.008	0.001	1.35	U 0.0002	U 0.013	UJ1 0.001	U 0.003	0.009
	8/23/1993	N	10.6	--	--	7	279	154	--	5	--	--	--	35.1	--	--	--	2.17	--	--	--	--	--
	10/20/1993	--	18.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/17/1994	N	10.3	7.4	356	2.6	324	158	140	5	U 0.005	--	U 0.001	53	--	U 0.01	U 0.01	2	U 0.001	U 0.01	U 0.005	U 0.005	0.02
	8/2/1994	--	16.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	12/12/1994	--	17.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3/2/1995	--	11.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-03	4/25/1995	--	13.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/17/1995	N	3.7	7.6	114	1.8	118	65	44	1	U 0.005	--	U 0.001	16	--	U 0.01	U 0.01	1	U 0.001	U 0.01	U 0.005	U 0.005	0.02
	6/26/1995	--	9.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/15/1995	--	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/1996	N	8.26	5.8	315	3.5	303	156	144.2	3.2	U 0.003	--	--	55	--	J4 0.005	U 0.003	1.8	--	--	U 0.001	--	0.02
	8/6/1996	--	18.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/19/1997	N	4.66	7	71	4.5	60	30	27.7	U 1	U 0.003	--	--	9.9	--	0.012	U 0.003	0.8	--	--	U 0.001	--	0.03
	10/16/1997	--	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SBB-87-04	9/1/1988	N	--	--	--	--	335	169	185	15	U 0.005	--	U 0.001	64	--	U 0.01	U 0.01	6	U 0.001	U 0.03	U 0.005	U 0.005	0.07
	10/21/1988	N	--	--	--	--	329	168	--	13	--	--	--	60	--	--	--	6	--	--	--	--	--
	4/26/1989	N	52.8	7.5	298	6.3	379	152	165	28	0.002	--	0.0006	58.4	--	U 0.02	U 0.001	5.4	U 0.0002	U 0.03	U 0.003	U 0.02	0.114
	6/26/1989	N	45.3	7.4	342.6	6.4	364	160	--	24	--	--	--	56.9	--	--	--	5.5	--	--	--	--	--
	7/26/1989	N	45.8	7.2	347	7.1	364	a 112	165	24	U 0.002	--	U 0.005	60.8	--	U 0.02	0.002	5.6	U 0.0002	U 0.03	U 0.002	U 0.02	0.26
	8/22/1989	N	47.3	7	329	6	377	152	--	18	--	--	--	60.2	--	--	--	5.7	--	--	--	--	--
	9/29/1989	N	50.5	7.8	299	6	350	168	--	18	--	--	--	59.2	--	--	--	5.9	--	--	--	--	--
	11/15/1989	N	51.3	7.4	--	4	344	166	178	14	0.002	--	U 0.005	61.8	--	U 0.02	0.001	5.8	U 0.0002	U 0.03	U 0.001	U 0.02	0.27
	12/6/1989	N	51.8	--	--	--	357	176	--	14	--	--	--	56	--	--	--	5.6	--	--	--	--	--
	1/16/1990	N	53.2	--	--	4	347	172	--	17	--	--	--	61.8	--	--	--	6.1	--	--	--	--	--
	2/26/1990	N	53.7	--	--	4	332	170	--	12	--	--	--	61.9	--	--	--	6	--	--	--	--	--
	4/18/1990	N	53.2	6.7	273	4.5	341	165	172	12	U 0.001	--	U 0.0001	59.2	--	U 0.03	U 0.001	5.8	U 0.0002	U 0.1	0.003	U 0.02	0.3
	5/23/1990	N	45.4	--	--	5.5	345	167	--	12	--	--	--	69.7	--	--	--	6.8	--	--	--	--	--
	6/19/1990	N	49.7	--	--	5	357	170	--	16	--	--	--	58.8	--	--	--	6.09	--	--	--	--	--
	7/19/1990	N	45.3	8.1	316	5.9	373	168	140	15	0.002	--	U 0.0001	49.4	--	U 0.01	U 0.002	4.12	U 0.0002	0.09	U 0.002	U 0.01	0.259
	8/23/1990	N	48	--	--	5.5	341	172	--	13	--	--	--	62.1	--	--	--	5.72	--	--	--	--	--
	9/25/1990	N	49.7	--	--	5	347	a 112	--	16	--	--	--	60.3	--	--	--	5.63	--	--	--	--	--
	11/14/1990	N	51.1	7.3	268	5.1	315	176	191	17	U 0.001	--	0.0002	67.7	--	U 0.02	U 0.001	5.36	U 0.0002	U 0.04	U 0.001	U 0.01	0.27
	12/11/1990	N	52.7	--	--	--	333	168	--	18	--	--	--	65.4	--	--	--	5.9	--	--	--	--	--
	1/17/1991	N	52.2	--	--	4.5	346	171	--	15	--	--	--	57.7	--	--	--	5.72	--	--	--	--	--
	2/26/1991	N	52.4	--	--	4.5	372	170	--	14	--	--	--	51.2	--	--	--	5	--	--	--	--	--
	4/18/1991	D	51.7	7.7	290	5.1	355	171	163	17	U 0.002	--	U 0.0001	56.4	--	U 0.002	U 0.001	5.43	U 0.0002	U 0.01	U 0.001	U 0.005	0.299

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY																	
Station	Sample Date	Type	Depth To Water (feet)	pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-04	4/18/1991	N	51.7	7.7	290	5.1	355	171	163	17	U 0.002	--	U 0.0001	56.4	--	U 0.002	U 0.001	5.43	U 0.0002	U 0.01	U 0.001	U 0.005	0.307
	5/29/1991	N	38.2	--	--	4.5	359	182	--	18	--	--	--	55.9	--	--	--	5.67	--	--	--	--	--
	6/26/1991	N	39.3	--	--	4	333	168	--	17	--	--	--	55.8	--	--	--	5.58	--	--	--	--	--
	7/25/1991	N	44.2	7.6	308	7.3	335	166	181	16	0.002	--	U 0.0001	62.6	--	0.004	U 0.001	6.01	U 0.0002	U 0.01	U 0.002	U 0.003	0.254
	8/27/1991	N	47	--	--	4.5	358	177	--	17	--	--	--	64.5	--	--	--	5.91	--	--	--	--	--
	9/18/1991	N	47	--	--	--	354	167	--	19	--	--	--	70	--	--	--	6.67	--	--	--	--	--
	11/1/1991	N	48.5	7.6	313	3.7	306	155	168	14	0.002	--	0.0002	58.1	--	U 0.006	U 0.001	5.65	U 0.0002	U 0.01	0.003	U 0.005	0.267
	12/17/1991	N	49.6	--	--	4.5	356	182	--	16	--	--	--	62	--	--	--	5.99	--	--	--	--	--
	1/21/1992	N	50.6	--	--	5	352	173	--	14	--	--	--	57.6	--	--	--	6.02	--	--	--	--	--
	2/27/1992	N	51	--	--	6	353	172	--	12	--	--	--	64.2	--	--	--	6.61	--	--	--	--	--
	3/18/1992	N	51.8	7.9	354	4.1	344	155	158	14	U 0.03	--	U 0.0002	53.9	--	0.007	U 0.001	5.67	U 0.0002	U 0.01	U 0.002	U 0.005	0.271
	5/13/1992	N	50	--	--	4.5	349	171	--	14	--	--	--	57.8	--	--	--	5.79	--	--	--	--	--
	6/18/1992	N	47.5	--	--	5.5	363	167	--	19	--	--	--	64.2	--	--	--	6.11	--	--	--	--	--
	7/16/1992	N	44	7.6	370	5.1	355	180	194	38	U 0.001	--	0.0001	66.7	--	U 0.003	0.001	6.63	0.0002	U 0.01	U 0.002	U 0.003	0.196
	8/19/1992	N	45.7	--	--	5.5	360	174	--	12	--	--	--	56.7	--	--	--	6.04	--	--	--	--	--
	9/25/1992	N	49.1	--	--	5.5	340	163	192	13	--	--	--	67	--	--	--	6.07	--	--	--	--	--
	10/29/1992	N	50.1	7.8	330	4.4	333	172	206	12	U 0.001	--	U 0.0001	73.1	--	U 0.003	0.002	5.82	U 0.0002	U 0.009	0.004	U 0.002	0.283
	4/7/1993	N	51.7	7.5	324	4.7	329	172	176	14	U 0.002	--	0.0002	60.4	--	0.002	0.001	6.08	U 0.0002	0.01	0.001	U 0.001	0.168
	5/19/1993	N	40	--	--	5	329	171	--	17	--	--	--	55.5	--	--	--	5.33	--	--	--	--	--
	6/22/1993	N	34	--	--	5	332	166	--	12	--	--	--	68.2	--	--	--	6.49	--	--	--	--	--
	7/28/1993	N	42.1	7.5	370	6.5	335	168	184	14	U,J4 0.002	--	0.0001	63.9	--	0.006	0.001	5.94	U 0.0002	U 0.013	UJ1 0.002	U 0.003	0.159
	8/23/1993	N	43.5	--	--	5	332	182	--	15	--	--	--	52.8	--	--	--	5.28	--	--	--	--	--
	9/21/1993	N	45.8	--	--	5.3	333	172	--	15	--	--	--	61.1	--	--	--	5.89	--	--	--	--	--
	10/19/1993	N	47.2	7.6	316	4.5	363	173	168	14	U 0.005	--	U 0.001	59	--	U 0.01	U 0.01	5	U 0.001	U 0.01	J,J4 0.005	U 0.005	0.14
	12/8/1993	N	49	--	--	4.5	351	170	--	16	--	--	--	60	--	--	--	6	--	--	--	--	--
	3/8/1994	N	51.4	7.8	260	4.3	376	176	177	J4 15	U 0.005	--	U 0.001	62	--	U 0.01	U 0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.13
	5/16/1994	N	45.2	7.8	322	4.9	351	180	178	15	U 0.005	--	U 0.001	62	--	U 0.01	U 0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.16
	8/2/1994	N	46.3	6.4	375	5.5	346	171	168	13	U 0.005	--	U 0.001	59	--	U 0.01	U,J40.01	5	U 0.001	U 0.01	U 0.005	U 0.005	0.25
	12/12/1994	N	51.6	7.2	428	4.5	350	171	172	13	U 0.005	--	U 0.001	J2 60	--	U 0.01	U 0.01	J2 6	U 0.001	U 0.01	U 0.005	U 0.005	J4S 0.01
	3/2/1995	N	46.5	6.9	310	4.4	334	171	166	4S 14	U 0.005	--	U 0.001	57	--	U 0.01	U 0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.12
	4/25/1995	--	51.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***
SBB-87-04	5/18/1995	N	46.7	7.5	351	4.7	349	175	179	16	U 0.005	--	U 0.001	62	--	U 0.01	0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.15
	6/26/1995	--	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/14/1995	N	44.5	7.3	346	5	393	175	175	14	U 0.005	--	U 0.001	60	--	U 0.01	U 0.01	6	U 0.001	U 0.01	U 0.005	U 0.005	0.2
	10/8/1995	N	49	7.2	320	5	342	175	175	13	U 0.003	--	0.0002	61	--	0.003	U 0.003	6	U 0.0006	U 0.02	U 0.001	U 0.003	0.16
	6/10/1996	N	36.7	6.1	439	4.8	347	169	166.5	13.6	U 0.003	--	--	58	--	J4 0.005	U 0.003	5.5	--	--	U 0.001	--	0.09
	8/6/1996	--	47.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/24/1996	N	49.7	7.8	360	5	340	167	177.1	12.4	U 0.003	--	U 0.0001	61.3	--	0.002	U 0.003	6	U 0.0006	U 0.02	U 0.001	U 0.003	0.15
	12/4/1996	N	51.6	7.9	396	4.2	345	169	166.5	12.7	U 0.003	--	--	58.2	--	0.003	U 0.003	5.3	--	--	U 0.001	--	0.15
	3/10/1997	N	53.1	7.8	390	4.3	342	168	157.4	13.2	U 0.003	--	--	54.6	--	--	U 0.003	5.3	--	--	U 0.001	--	0.13
	5/19/1997	N	41.8	7.6	362	5.9	355	173	165	15.8	U 0.003	--	--	56.7	--	0.007	0.004	5.9	--	--	U 0.001	--	0.07
	10/16/1997	N	49.1	7.7	364	5	348	166	198.8	12.7	U 0.003	--	U 0.0001	68.4	--	0.004	U 0.003	7	U 0.0006	U 0.02	U 0.001	U 0.003	0.19
	12/4/1997	N	50.1	7.8	351	3.8	348	163	167.8	12.4	U 0.003	--	U 0.0001	58.4	--	0.009	U 0.003	5.5	--	--	UJ4 0.001	--	0.09
	2/26/1998	N	51.7	8.3	398	2.4	348	163	165.5	12.9	U 0.003	--	--	61.3	--	U 0.001	U 0.003	3.2	--	--	U 0.001	--	0.08
WRMW-1	10/18/2004	D	--	--	--	--	1780	90	1150	1090	0.008	--	0.0004	414	--	U 0.002	U 0.003	0.078	--	U 0.02	0.1	--	U 0.01
	10/18/2004	N	123	--	--	--	1810	92	1130	1120	0.007	--	0.0004	405	--	U 0.002	U 0.003	0.076	--	0.02	0.1	--	U 0.01
	7/1/2010	--	121	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/22/2010	N	122	6.4	1792	9.64	1730	82	1060	1100	U 0.005	U 0.1	U 0.001	387	U 0.01	--	U 0.01	24	U 0.001	--	0.058	U 0.005	--
	9/17/2010	N	125	6.5	1773	9.1	1760	M%78	1050	970	U 0.005	U 0.1	U 0.001	376	U 0.01	--	U 0.01	27	U 0.001	--	0.059	U 0.005	--
	6/16/2011	N	120	6.5	1312	4.4	1700	91	951	950	U 0.005	U 0.1	U 0.001	351	U 0.01	--	U 0.01	25	U 0.001	--	0.055	U 0.005	--
	9/14/2011	N	125	6.4	1186	9.7	1490	77	1060	990	U 0.005	U 0.1	U 0.001	383	U 0.01	--	U 0.01	24	U 0.001	--	0.052	U 0.005	--
	7/5/2012	N	123	6.4	1847	9.28	1680	79	1150	d 1000	0.003	U 0.05	U 0.001	416	U 0.005	--	U 0.001	28	U 0.0001	--	0.048	U 0.001	--
	9/17/2012	N	126	6.4	1177	10.5	1730	73	959	960	0.002	U 0.05	U 0.001	343	U 0.005	--	U 0.001	25	U 0.0001	--	0.052	U 0.001	--
	5/22/2013	N	123	6.5	1156	9.3	1700	75	1040	1000	0.005	U 0.1	U 0.001	374	U 0.01	--	U 0.01	25	U 0.001	--	0.051	U 0.005	--
	10/2/2013	N	126	6.5	1748	7.89	1840	74	1090	1000	U 0.005	U 0.1	U 0.001	390	U 0.01	--	U 0.01	28	U 0.001	--	0.053	U 0.005	--
	5/28/2014	N	121	6.4	1215	10.9	1740	73	1050	1000	0.002	U 0.05	U 0.001	378	U 0.005	--	U 0.001	26	U 0.0001	--	0.052	U 0.001	--
	9/25/2014	N	126	6.5	1281	10.9	1740	66	1050	1000	0.002	U 0.05	0.0005	376	U 0.005	--	U 0.001	28	U 0.0001	--	0.046	U 0.001	--

TABLE A-3
1987 to 2019 WASTE ROCK GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Type	Depth To Water (feet)	FIELD INSTRUMENT pH (su)	Specific Conduct-ance (µS)	Temp-erature (ºC)	LABORATORY Specific Conduct-ance (uS)	Total Alkalinity (mg/L)	Hardness (mg/L)	Sulfate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Barium (mg/L)	Dissolved Cadmium (mg/L)	Dissolved Calcium (mg/L)	Dissolved Chromium (mg/L)	Dissolved Copper (mg/L)	Dissolved Lead (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Mercury (mg/L)	Dissolved Nickel (mg/L)	Dissolved Selenium (mg/L)	Dissolved Silver (mg/L)	Dissolved Zinc (mg/L)
Human Health Standards - Groundwater								**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**NA**	**0.1**	**1.3**	**0.015**	**NA**	**0.002**	**0.1**	**0.05**	**0.1**	**2**
Aquatic Life Standard		**Acute**						**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0087***	**NA**	**NA**	**0.052***	**0.477***	**NA**	**0.0017**	**0.468***	**0.02**	**0.044***	**0.388***
		Chronic						**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00076***	**NA**	**NA**	**0.03***	**0.0186***	**NA**	**0.00091**	**0.052***	**0.005**	**NA**	**0.388***

Notes:

su - standard units
µS - microSiemens
ºC - Degrees Celsius
mg/L - milligrams per liter
NA - MDEQ water qualitystandard does not exist for given analyte.
* - Standard calculated using a hardness of 400 mg/L.
Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)
N - Natural Sample; D - Duplicate Sample; S - Split sample
-- - Field data not collected or parameter not analyzed.
U - Analyte concentration is less than laboratory reporting limit indicated.
M% - Matrix spike recoveries exceed acceptable limits.
J - Estimated value - the result is greater than method detection limit but less than the practical quantitation limit (PQL).

a - Anomalous data. No apparent explanation for discrepancy in data (not an EPA code)
H - Analysis performed past recommended holding time
J1 - Archive flag, definition unknown
J2 - Estimated quantity because calibration range exceeded or significant deviation from know value, possible bias
J4 - Estimated quantity because other QC outside control limits
- Value exceeds MDEQ human health standard.
- Value exceeds MDEQ acute aquatic life standard.
- Value exceeds MDEQ chronic aquatic life standard.

Values exceeding aquatic life criteria are shaded for comparison purposes however aquatic life criteria do not apply to groundwater.

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
BP-GW	9/30/2015	N	--	--	--	--	--	--	--	--	35.8	0.026	U 0.2	--	--	--	--	--	0.037	--
LPMW-5	10/2/2013	N	19.85	7.08	1548	6.36	1160	d 8.5	--	--	0.36	0.038	U 0.2	--	--	--	--	--	--	--
	5/28/2014	N	18.08	7.25	960	7.4	1260	--	--	--	0.27	0.014	U 0.2	--	--	--	--	--	--	--
	9/25/2014	N	21.87	--	--	--	1220	--	--	--	F% 0.13	0.006	U 0.2	--	--	--	--	--	--	--
	6/1/2015	N	15.86	--	--	--	1220	--	--	--	0.24	0.063	U 0.2	--	--	--	--	--	--	--
	10/8/2015	N	22.66	7.44	1250	8.6	1220	--	--	--	0.26	0.027	U 0.2	--	--	--	--	--	--	--
	5/26/2016	N	15.77	7.43	--	8.7	1230	--	--	--	F% 0.14	0.007	U 0.2	--	--	--	--	--	--	--
	9/21/2016	N	22.7	7.39	1462	4.89	1210	--	--	--	0.23	0.005	U 0.2	--	--	--	--	--	--	--
	6/6/2017	N	15.72	7.59	1420	8.8	1205	--	--	--	0.27	UH 0.004	U 0.2	--	--	--	--	--	--	--
	10/17/2017	N	20.18	7.51	1260	8.8	1220	--	--	--	0.19	F 0.006	U 0.2	--	--	--	--	--	--	--
	6/14/2018	N	17.07	7.45	1413	7.4	1290	--	--	--	0.18	0.022	U 0.2	--	--	--	--	--	--	--
	9/18/2018	N	22.03	7.26	-- 1439	6.5	1320	--	na	--	0.14	0.006	U 0.2	--	--	--	--	--	--	--
	6/20/2019	N	17.92	7.29	1290	5.6	1370	--	--	--	M% 0.1	U 0.004	U 0.2	--	--	--	--	--	--	--
	9/16/2019	N	21.85	7.2	1449	8.8	1370	--	--	--	0.10	U 0.004	U 0.2	--	--	--	--	--	--	--
LPMW-6	6/1/2015	N	8.1	7.21	1306	7.8	535	--	--	--	0.07	0.008	U 0.2	--	--	--	--	--	--	--
	10/8/2015	N	19.33	7.59	563	7.3	448	--	--	--	0.06	0.007	U 0.2	--	--	--	--	--	--	--
	6/15/2016	D	10.46	7.57	662	7.9	502	--	--	--	0.08	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/15/2016	N	10.46	7.57	662	7.9	486	--	--	--	0.08	U 0.005	U 0.2	--	--	--	--	--	--	--
	9/21/2016	D	21.39	7.42	633	4.68	451	--	--	--	0.08	U 0.005	U 0.2	--	--	--	--	--	--	--
	9/21/2016	N	21.39	7.42	633	4.68	462	--	--	--	0.09	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/8/2017	N	8.16	7.77	579	7.4	470	--	--	--	0.15	0.005	U 0.2	--	--	--	--	--	--	--
	10/16/2017	N	19.01	7.41	572	8.1	421	--	--	--	0.08	UF 0.004	U 0.2	--	--	--	--	--	--	--
	6/14/2018	N	9.26	7.54	532	7	397	--	--	--	0.06	0.017	U 0.2	--	--	--	--	--	--	--
	9/18/2018	N	18.41	7.6	550	7.4	375	--	na	--	0.06	U 0.004	U 0.2	--	--	--	--	--	--	--
	6/20/2019	N	8.96	7.31	458	7.1	373	--	--	--	M% 0.03	U 0.004	U 0.2	--	--	--	--	--	--	--
	9/16/2019	N	19.21	7.1	522	7.86	390	--	--	--	0.05	U 0.004	U 0.2	--	--	--	--	--	--	--
LPPZ-4	7/5/2012	N	17.56	6.99	919	4.09	600	dM% 3.38	--	--	0.04	0.015	U 0.2	--	--	--	--	--	--	--
	9/17/2012	N	20.85	7.37	413	6.4	448	d 2.93	--	--	0.05	0.014	U 0.2	--	--	--	--	--	--	--
	5/22/2013	N	14.92	7.04	544	4.9	665	d 4.61	--	--	0.06	0.009	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
LPPZ-4	10/2/2013	D	15.28	6.8	740	7.2	412	d 3.2	--	--	0.06	0.011	U 0.2	--	--	--	--	--	--	--
	10/2/2013	N	15.28	6.8	740	7.2	424	d 3.29	--	--	0.06	0.006	U 0.2	--	--	--	--	--	--	--
	5/28/2014	N	14.17	7.11	612	5.7	730	--	--	--	0.05	U 0.005	U 0.2	--	--	--	--	--	--	--
	9/25/2014	N	20.08	--	--	--	450	--	--	--	F% 0.02	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/1/2015	D	5.03	--	--	--	690	--	--	--	0.02	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/1/2015	N	5.03	--	--	--	699	--	--	--	0.02	U 0.005	U 0.2	--	--	--	--	--	--	--
	10/8/2015	N	21.34	7.5	616	7.8	460	--	--	--	0.03	0.012	U 0.2	--	--	--	--	--	--	--
	5/26/2016	N	14.39	7.31	--	5.2	789	--	--	--	F% 0.09	U 0.005	U 0.2	--	--	--	--	--	--	--
	9/21/2016	N	21.37	7.47	730	4.74	496	--	--	--	0.08	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/6/2017	N	14.18	7.46	829	6.8	633	--	--	--	0.2	H 0.005	U 0.2	--	--	--	--	--	--	--
	10/11/2017	N	16.79	7.38	988	6.7	546	--	--	--	0.07	U 0.004	U 0.2	--	--	--	--	--	--	--
	6/12/2018	N	14.49	7.51	797	4.4	537	--	--	--	0.16	H 0.005	U 0.2	--	--	--	--	--	--	--
	9/17/2018	N	20.52	7.71	697	7.2	415	--	na	--	L 0.08	U 0.004	U 0.2	--	--	--	--	--	--	--
	6/20/2019	N	14.97	7.39	680	3.6	490	--	--	--	M% 0.08	U 0.004	U 0.2	--	--	--	--	--	--	--
	9/16/2019	D	19.7	7.24	556	7.49	385	--	--	--	0.07	U 0.004	U 0.2	--	--	--	--	--	--	--
	9/16/2019	N	19.7	7.24	556	7.49	435	--	--	--	0.06	U 0.004	U 0.2	--	--	--	--	--	--	--
LPPZ-5	7/5/2012	N	14.65	6.52	716	4.29	452	M% 1.54	--	--	0.09	0.022	U 0.2	--	--	--	--	--	--	--
	9/17/2012	N	17.46	6.78	422	7.7	436	1.48	--	--	0.13	0.035	U 0.2	--	--	--	--	--	--	--
	5/22/2013	N	13.38	6.66	700	5.1	883	d 2.91	--	--	0.08	0.015	--	--	--	--	--	--	--	--
	10/2/2013	N	14.25	6.34	854	8.46	570	d 3.14	--	--	0.1	0.009	U 0.2	--	--	--	--	--	--	--
	5/28/2014	N	12.57	6.73	704	5.1	760	--	--	--	0.06	0.005	U 0.2	--	--	--	--	--	--	--
	9/25/2014	N	17.28	--	--	--	418	--	--	--	F% 0.07	U 0.005	U 0.2	--	--	--	--	--	--	--
PB WELL #1	5/29/1991	N	--	--	--	--	--	--	--	145	19.3	--	--	--	--	--	--	--	--	--
	7/26/1991	N	27.35	8.39	502	6.9	415	23.9	--	100	3.4	2.795	U 0.2	--	0.005	2.47	--	0.017	--	--
	8/28/1991	N	0	--	--	--	--	--	--	102	12.6	8.55	--	--	--	--	--	--	--	--
	9/17/1991	N	--	--	--	--	--	--	--	166	6.4	1.831	--	--	--	--	--	--	--	--
	12/18/1991	N	--	--	--	--	--	--	--	111	1.57	0.543	--	--	--	--	--	--	--	--
	1/20/1992	N	20	--	--	7	--	--	--	84	1.1	0.127	--	--	--	--	--	--	--	--
	2/27/1992	N	28.8	--	--	6	--	--	--	100	2.56	0.688	--	--	--	--	--	--	--	--
	3/18/1992	N	0	7.5	975	6.1	642	9.8	0.6	238	0.84	0.412	U 0.84	--	U 0.03	0.342	--	0.034	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
PB WELL #1	5/12/1992	N	--	--	--	7.5	--	--	--	118	0.15	0.027	U 0.15	--	--	--	--	--	--	--
	7/16/1992	N	--	7.36	796	8	568	9.9	U 0.5	172	0.17	0.099	U 0.2	--	U 0.001	0.243	--	0.037	--	--
	8/18/1992	N	--	--	--	--	--	9	--	141	0.006	U 0.005	--	--	--	--	--	--	--	--
	10/29/1992	N	30.31	7.15	618	6.7	450	8.4	U 0.5	119	0.01	U 0.005	U 0.2	--	0.005	0.033	--	0.022	--	--
	4/7/1993	N	0	6.7	946	7.4	864	17.9	0.46	322	0.08	0.018	U 0.2	--	0.004	0.069	--	0.042	--	--
	7/29/1993	N	0	6.87	694	9	462	8.5	J1,J4 0.11	177	0.07	0.033	0.009	--	J1,J4 0.009	0.013	--	0.023	--	--
	10/20/1993	N	--	6.82	708	6.4	442	J4 9.96	U 0.1	145	J2 0.07	0.019	U 0.2	--	U 0.005	0.01	--	J4 0.02	--	--
	3/8/1994	N	27.63	7.67	393	5.6	407	6.18	U 0.1	J4 130	0.04	0.03	U 0.2	--	U 0.005	U 0.01	--	0.014	--	--
	5/18/1994	N	26.89	7.21	786	5.5	--	--	--	--	0.11	0.11	U 0.2	--	--	--	--	--	--	--
SBB-87-08	5/10/1989	N	10.1	6.75	203	6.5	129	--	U 0.5	36	U 0.005	--	--	--	0.017	U 0.05	--	U 0.003	--	--
	5/29/1991	N	6	--	--	6	--	--	--	371	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	9	--	--	6	--	--	--	277	U 0.005	--	--	--	--	--	--	--	--	--
	3/17/1992	N	9.17	7.14	682	3.8	477	2.3	0.1	265	U 0.005	--	--	--	U 0.03	0.008	--	0.021	--	--
	6/23/1993	N	9.5	--	--	5.5	--	0.91	--	318	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1993	N	8.7	6.44	860	7.6	738	1.8	J4 0.75	351	U 0.005	--	--	--	J4 0.009	0.005	--	0.017	--	--
SBB-87-09	11/19/1987	D	--	--	--	--	122	0.07	U 0.1	16	--	U 0.01	--	--	--	--	--	--	U 0.005	0.26
	11/19/1987	N	--	--	--	--	112	0.08	U 0.1	15	--	U 0.01	--	--	0.028	U 0.01	--	U 0.005	U 0.005	0.27
	9/2/1988	N	--	--	--	--	101	--	0.1	16	--	0.007	--	--	0.037	U 0.01	--	U 0.005	--	--
	10/23/1988	D	--	--	--	--	--	--	--	15	U 0.01	--	--	--	--	--	--	--	--	--
	10/23/1988	N	--	--	--	--	--	--	--	15	U 0.01	--	--	--	--	--	--	--	--	--
	1/18/1989	N	34.86	7.83	155	6.2	--	--	--	15	U 0.01	--	--	--	--	--	--	--	--	--
	2/28/1989	N	36.22	7.81	--	5	--	--	--	17	U 0.01	--	--	--	--	--	--	--	--	--
	5/11/1989	N	34.76	6.83	128	8.4	94	--	U 0.5	17	U 0.005	--	--	--	0.038	U 0.05	--	0.006	--	--
	6/28/1989	N	39.29	7.53	201.6	8.2	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1989	N	33.78	--	182	7.9	A 148	--	U 1	16	U 0.005	--	--	--	0.027	U 0.02	--	0.006	--	--
	8/22/1989	N	35	8.16	181	7.9	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	9/29/1989	D	35.4	6.85	--	7.7	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	9/29/1989	N	35.4	6.85	--	7.7	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	31.34	7.01	--	5.7	90	--	U 1	18	U 0.005	--	--	--	0.027	U 0.02	--	U 0.001	--	--
	12/5/1989	N	32.6	--	--	--	--	--	--	16	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-87-09	12/6/1989	D	32.6	--	--	--	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	1/16/1990	N	34	--	--	4.5	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1990	D	33.2	--	--	--	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1990	N	33.2	--	--	--	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	4/19/1990	N	33.5	6.59	178	6.6	A 171	--	U 0.5	17	U 0.005	--	--	--	0.028	U 0.02	--	0.006	--	--
	5/23/1990	N	34.2	--	--	6.5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	6/19/1990	N	32.9	--	--	6.5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	7/19/1990	D	34.2	8.08	202	8	98	--	U 0.5	16	U 0.005	--	--	--	0.03	U 0.01	--	0.005	--	--
	7/19/1990	N	34.2	8.08	202	8	98	--	U 0.5	16	U 0.005	--	--	--	0.03	U 0.01	--	0.005	--	--
	9/25/1990	N	34.7	--	--	6.5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1990	N	34.68	7.99	146	5.7	98	--	U 0.5	15	U 0.005	--	--	--	0.03	U 0.02	--	0.003	--	--
	12/11/1990	D	35	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	12/11/1990	N	35	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	1/17/1991	N	36	--	--	5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1991	N	34	--	--	6	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/1991	N	33.76	7.74	158	6.6	A 186	--	1.1	18	U 0.005	--	--	--	0.023	U 0.002	--	0.004	--	--
	5/29/1991	N	32	--	--	6	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	6/26/1991	N	33	--	--	6	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	7/24/1991	N	33.83	8.57	183	7.7	136	--	0.16	18	U 0.005	--	--	--	0.028	U 0.002	--	0.003	--	--
	8/28/1991	N	33.9	--	--	5.5	--	--	--	21	U 0.005	--	--	--	--	--	--	--	--	--
	9/18/1991	N	33.3	--	--	--	--	--	--	22	U 0.005	--	--	--	--	--	--	--	--	--
	11/1/1991	N	34.56	7.62	186	5	130	U 1	U 0.1	16	U 0.005	--	--	--	0.03	U 0.006	--	0.005	--	--
	12/17/1991	N	34.9	--	--	6.5	--	--	--	22	U 0.005	--	--	--	--	--	--	--	--	--
	1/21/1992	N	35	--	--	6	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1992	N	35	--	--	6.5	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	3/17/1992	N	32.56	7.53	210	5.7	169	U 0.5	0.1	21	U 0.005	--	--	--	U 0.03	U 0.005	--	0.006	--	--
	5/13/1992	N	35	--	--	6	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	5/13/1992	N	35	--	--	6	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	5/13/1992	N	35	--	--	6	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	5/13/1992	N	35	--	--	6	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	31.1	--	--	6.5	--	--	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	7/16/1992	N	33.01	6.79	226	6.5	122	U 1	U 0.5	23	U 0.005	--	--	--	0.03	U 0.003	--	0.004	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-87-09	8/19/1992	N	34.25	--	--	5.5	--	U 1	--	21	U 0.005	--	--	--	--	--	--	--	--	--
	9/25/1992	N	35	--	--	5.5	--	U 1	--	22	U 0.005	--	--	--	--	--	--	--	--	--
	10/29/1992	N	34.27	8.07	203	5.7	137	U 1	U 0.5	19	U 0.005	--	--	--	0.028	U 0.003	--	0.007	--	--
	12/9/1992	N	34	--	--	5.5	--	U 1	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1993	D	34	--	--	5.5	--	U 1	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1993	N	34	--	--	5.5	--	U 1	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	2/22/1993	N	34.1	--	--	6	--	0.3	--	30	U 0.005	--	--	--	--	--	--	--	--	--
	4/7/1993	N	33.03	8.37	168	6.1	140	0.17	0.25	25	U 0.005	--	--	--	U 0.002	U 0.001	--	0.007	--	--
	5/19/1993	N	33.1	--	--	6.5	--	0.26	--	28	U 0.005	--	--	--	--	--	--	--	--	--
	6/23/1993	N	33.1	--	--	6	--	0.25	--	28	U 0.005	--	--	--	--	--	--	--	--	--
	7/28/1993	N	34.64	8.14	245	7.4	134	0.28	UJ12 0.11	29	U 0.005	--	--	--	J4 0.032	0.004	--	UJ1 0.009	--	--
	8/20/1993	N	33.7	--	--	6	--	J4 0.65	--	45	U 0.005	--	--	--	--	--	--	--	--	--
	9/23/1993	N	33.3	--	--	6	--	0.34	--	32	U 0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	N	35.86	7.83	215	5.3	141	J4 0.28	U 0.1	31	U,J2 0.005	--	--	--	0.034	U 0.01	--	U,J4 0.005	--	--
	12/9/1993	N	40.65	--	--	6	--	0.3	--	38	U 0.005	--	--	--	--	--	--	--	--	--
SBB-87-14	11/14/1987	N	--	--	--	--	--	U 0.05	U 0.1	6	--	--	--	--	U 0.005	U 0.01	--	U 0.005	U 0.005	0.4
SBB-88-15	9/1/1988	D	--	--	--	--	139	--	U 0.1	19	--	0.005	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	9/1/1988	N	--	--	--	--	139	--	U 0.1	19	--	0.008	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	5/13/1989	N	1.83	6.78	332	4.5	A 300	--	U 0.5	20	0.02	U 0.005	U 0.01	--	0.01	U 0.05	--	U 0.003	--	--
	6/27/1989	N	3.8	6.53	278.7	8.6	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1989	D	--	5.94	270	7.8	A 277	--	U 1	22	U 0.005	--	--	--	U 0.002	U 0.02	--	U 0.002	--	--
	7/26/1989	N	5.23	5.94	270	7.8	A 480	--	U 1	18	U 0.005	--	--	--	0.003	U 0.02	--	U 0.002	--	--
	8/21/1989	N	5.82	7.26	248	10.5	--	--	--	28	U 0.005	--	--	--	--	--	--	--	--	--
	9/28/1989	N	6.34	6.66	182	8	--	--	--	30	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	5.77	6.61	--	5	216	--	U 1	19	U 0.005	--	--	--	0.001	U 0.02	--	U 0.001	--	--
	12/5/1989	N	7	--	--	--	--	--	--	A 7.4	U 0.005	--	--	--	--	--	--	--	--	--
	1/16/1990	D	7.95	--	--	3	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	1/16/1990	N	7.95	--	--	3	--	--	--	33	0.006	--	--	--	--	--	--	--	--	--
	2/26/1990	N	8	--	--	3	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1990	N	2.98	6.48	225	3.5	A 113	--	U 0.5	21	U 0.005	--	--	--	0.002	U 0.03	--	U 0.002	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-15	5/22/1990	N	4.5	--	--	4	--	--	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	6/19/1990	N	4.3	--	--	4.5	--	--	--	31	U 0.005	--	--	--	--	--	--	--	--	--
	7/19/1990	N	6.85	6.7	305	9	212	--	U 0.5	30	U 0.005	--	--	--	0.003	U 0.01	--	U 0.002	--	--
SBB-88-16	9/1/1988	N	--	--	--	--	192	--	0.2	10	--	0.01	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	5/13/1989	N	0	7.8	309	5	A 153	--	U 0.1	8	U 0.005	--	--	--	0.005	U 0.05	--	U 0.003	--	--
	6/27/1989	D	0	7	313.9	7.1	--	--	--	6.7	U 0.005	--	--	--	--	--	--	--	--	--
	6/27/1989	N	0	7	313.9	7.1	--	--	--	7.4	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1989	N	0.3	7.03	278	9	231	--	U 1	11	U 0.005	--	--	--	0.003	U 0.02	--	U 0.002	--	--
	8/21/1989	N	0.88	7.76	320	5	--	--	--	9	U 0.005	--	--	--	--	--	--	--	--	--
	9/28/1989	N	2.35	7.35	208	7.6	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	2.36	7.17	--	3.7	152	--	U 1	9.26	U 0.005	--	--	--	0.003	U 0.02	--	U 0.001	--	--
	12/5/1989	N	2.9	--	--	--	--	--	--	8.2	U 0.005	--	--	--	--	--	--	--	--	--
	1/15/1990	N	3.9	--	--	3	--	--	--	8	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1990	N	4.5	--	--	3	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1990	N	0	6.51	225	5	144	--	U 0.5	6.8	U 0.005	--	--	--	0.003	U 0.03	--	U 0.002	--	--
	5/22/1990	N	2.2	--	--	6	--	--	--	6.1	U 0.005	--	--	--	--	--	--	--	--	--
	6/19/1990	N	0	--	--	5	--	--	--	7.7	U 0.005	--	--	--	--	--	--	--	--	--
	7/20/1990	N	1.15	7.95	279	5.5	223	--	U 0.5	12	U 0.005	--	--	--	0.004	U 0.01	--	U 0.002	--	--
SBB-88-19	5/10/1989	N	19.38	6.03	135	8	A 122	--	U 0.5	12	U 0.005	--	--	--	0.007	U 0.05	--	U 0.003	--	--
	6/28/1989	N	18.29	5.5	171.1	8.3	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	5/29/1991	N	18.5	--	--	8	--	--	--	16	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	19.1	--	--	10	--	--	--	33	U 0.005	--	--	--	--	--	--	--	--	--
	8/28/1991	N	0	--	--	--	--	--	--	11	0.01	--	--	--	--	--	--	--	--	--
	3/2/1995	N	17.2	7.33	381	5	237	8.11	U 0.1	4S 65	U 0.02	--	--	--	U 0.005	U 0.01	--	0.007	--	--
	5/17/1995	N	17.33	7.36	344	4.7	208	4.87	U 0.1	60	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	5/15/1997	N	16.67	7.01	530	5.8	394	4.86	--	178	U 0.005	--	--	--	U 0.003	0.001	--	0.016	--	--
SBB-88-20	10/22/1988	N	--	--	--	--	--	--	--	11	U 0.01	--	--	--	--	--	--	--	--	--
	1/17/1989	N	34.19	7.01	159	6	--	--	--	10	U 0.01	--	--	--	--	--	--	--	--	--
	3/1/1989	N	34.82	6.97	--	5	--	--	--	10	U 0.01	--	--	--	--	--	--	--	--	--
	5/9/1989	N	26.64	6.58	132	8.9	83	--	U 0.5	11	U 0.005	--	--	--	0.012	U 0.05	--	U 0.003	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-20	6/28/1989	N	27.35	7.02	168	8.4	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1989	N	28.6	6.36	172	7.9	160	--	U 1	15	U 0.005	--	--	--	0.003	U 0.02	--	U 0.002	--	--
	8/21/1989	N	18.76	7.88	197	6.9	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	9/28/1989	N	19.96	6.77	117	8	--	--	--	13	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	30.99	6.43	--	5.9	164	--	U 1	9.68	U 0.005	--	--	--	0.006	0.03	--	U 0.001	--	--
	12/5/1989	N	30.5	--	--	--	--	--	--	9	U 0.005	--	--	--	--	--	--	--	--	--
	1/16/1990	N	31.95	--	--	6	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1990	N	31.9	--	--	5	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1990	D	28.45	6.76	149	7.2	A 64	--	U 0.5	9.8	U 0.005	--	--	--	0.006	U 0.03	--	0.004	--	--
	4/18/1990	N	28.45	6.76	149	7.2	130	--	U 0.5	16	U 0.005	--	--	--	0.006	U 0.03	--	0.003	--	--
	5/23/1990	D	29.15	--	--	8	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	5/23/1990	N	29.15	--	--	8	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	6/19/1990	N	29	--	--	7	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	7/19/1990	N	28.85	6.91	165	6.9	115	--	U 0.5	11	U 0.005	--	--	--	0.004	U 0.01	--	U 0.002	--	--
	8/23/1990	N	29.3	--	--	7	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1990	N	29.4	--	--	7	--	--	--	9.63	U 0.005	--	--	--	--	--	--	--	--	--
	11/14/1990	D	31.22	7.32	143	6.5	A 162	--	U 0.5	18	U 0.005	--	--	--	0.008	U 0.02	--	U 0.001	--	--
	11/14/1990	N	31.22	7.32	143	6.5	A 154	--	U 0.5	14	U 0.005	--	--	--	0.006	U 0.02	--	0.002	--	--
	12/12/1990	N	31	--	--	--	--	--	--	13	U 0.005	--	--	--	--	--	--	--	--	--
	1/17/1991	N	32.5	--	--	7	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1991	N	32.6	--	--	7	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1991	D	32.6	--	--	7	--	--	--	8.7	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/1991	N	28.74	7.37	137	9.7	A 237	--	0.6	12	U 0.005	--	--	--	0.004	0.004	--	U 0.001	--	--
	5/29/1991	D	23.2	--	--	9	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	5/29/1991	N	23.2	--	--	9	--	--	--	16	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	24.95	--	--	5	--	--	--	30	U 0.005	--	--	--	--	--	--	--	--	--
	7/24/1991	N	27.82	6.85	277	9.5	A 173	--	U 0.1	23	U 0.005	--	--	--	0.003	0.021	--	U 0.002	--	--
	8/28/1991	N	28.95	--	--	6	--	--	--	24	U 0.005	--	--	--	--	--	--	--	--	--
	9/17/1991	N	29.4	--	--	--	--	--	--	21	U 0.005	--	--	--	--	--	--	--	--	--
	10/31/1991	N	30.24	7.04	164	4.9	145	3.2	U 0.1	14	U 0.005	--	--	--	0.007	U 0.006	--	0.003	--	--
	12/17/1991	N	30.9	--	--	7	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1992	N	31.2	--	--	7	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-20	2/27/1992	N	29	--	--	5	--	--	--	25	U 0.005	--	--	--	--	--	--	--	--	--
	3/18/1992	N	27.79	7.35	272	6	152	6.7	0.1	25	U 0.005	--	--	--	U 0.03	U 0.005	--	0.004	--	--
	5/12/1992	N	29.4	--	--	6.5	--	--	--	30	0.01	U 0.005	U 0.01	--	--	--	--	--	--	--
	6/18/1992	D	30	--	--	6.5	--	--	--	29	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	30	--	--	6.5	--	--	--	26	0.005	--	--	--	--	--	--	--	--	--
	7/9/1992	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	7/14/1992	N	28.31	7.39	265	7.1	A 196	5.6	U 0.5	24	U 0.005	--	--	--	0.003	0.004	--	0.003	--	--
	8/6/1992	N	--	--	--	--	--	--	--	--	0.005	--	--	--	--	--	--	--	--	--
	8/18/1992	N	28.4	--	--	7.1	--	7.4	--	31	U 0.005	U 0.005	--	--	--	--	--	--	--	--
	9/2/1992	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	9/25/1992	N	30.2	--	--	7	--	6.6	--	28	U 0.005	--	--	--	--	--	--	--	--	--
	10/28/1992	N	31.23	7.37	291	6.5	A 229	6.5	U 0.5	27	U 0.005	--	--	--	0.008	0.009	--	0.008	--	--
	12/10/1992	N	31.8	--	--	6.5	--	8.4	--	29	0.008	U 0.005	U 0.2	--	--	--	--	--	--	--
	1/19/1993	N	32.9	--	--	6.5	--	6.9	--	26	0.01	U 0.005	--	--	--	--	--	--	--	--
	2/23/1993	N	33.15	--	--	7	--	6.59	--	28	0.009	0.007	--	--	--	--	--	--	--	--
	4/6/1993	N	26.78	7.02	274	5.4	A 221	7.13	0.51	40	U 0.005	--	--	--	0.003	0.003	--	0.007	--	--
	5/19/1993	N	26.5	--	--	6	--	7.65	--	36	0.006	U 0.005	U 0.2	--	--	--	--	--	--	--
	6/23/1993	N	27.6	--	--	6	--	8.34	--	30	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1993	N	27.6	6.65	336	7.3	204	7.6	J4 0.29	37	0.009	--	--	--	U,J4 0.002	0.007	--	0.006	--	--
	8/20/1993	N	27.4	--	--	7	--	J4 8.2	--	46	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	28.25	--	--	6.5	--	8.7	--	46	0.006	--	--	--	--	--	--	--	--	--
	10/18/1993	N	28.8	6.64	305	6.1	185	J4 6.11	U 0.1	35	U,J2 0.005	--	--	--	0.007	U 0.01	--	U,J4 0.005	--	--
	12/9/1993	N	30.25	--	--	7	--	7.5	--	42	0.01	0.002	U 0.2	--	--	--	--	--	--	--
	3/8/1994	N	30.81	7.15	264	6.8	240	8.61	U 0.1	J4 39	0.02	U 0.02	U 0.2	--	0.006	0.01	--	0.006	--	--
	5/18/1994	N	26.98	7.1	412	6.2	246	J4 8.84	U 0.1	52	U 0.02	--	--	--	0.005	U 0.01	--	U 0.005	--	--
	8/2/1994	N	29.37	6.58	355	6.6	263	8.85	U 0.1	46	U 0.02	--	--	--	0.005	0.01	--	0.008	--	--
	12/13/1994	N	31.19	7.54	438	6.7	272	10.2	U 0.1	57	U 0.02	--	--	--	0.006	0.02	--	0.01	--	--
	3/2/1995	D	24.85	7.26	365	6.2	248	8.44	U 0.1	63	U 0.02	--	--	--	U 0.005	U 0.01	--	0.005	--	--
	3/2/1995	N	24.85	7.26	365	6.2	243	8.68	U 0.1	4S 63	U 0.02	--	--	--	U 0.005	U 0.01	--	0.006	--	--
	5/17/1995	N	19.78	7.05	365	4.9	217	5.18	U 0.1	56	U 0.02	--	--	--	U 0.005	U 0.01	--	0.005	--	--
	8/15/1995	N	27.75	6.89	660	7.1	J4S 494	13.1	U 0.1	162	0.005	U 0.005	U 0.2	--	U 0.005	U 0.01	--	0.026	--	--
	10/8/1995	N	29.5	6.71	552	6.1	359	12.2	U 0.05	111	U 0.005	U 0.005	U 0.2	--	0.003	0.012	--	0.019	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-20	6/10/1996	N	25.28	6.22	806	5.3	528	12.8	--	228	U 0.005	--	--	--	U 0.003	J4 0.013	--	0.021	--	--
	9/24/1996	N	29.9	6.88	627	6	384	13.75	U 0.05	134	U 0.005	--	--	--	0.004	0.014	--	0.021	--	--
	12/5/1996	N	30.87	7.03	722	5.2	420	14.22	--	142	U 0.005	--	--	--	0.005	0.022	--	0.022	--	--
	3/12/1997	N	32.18	6.81	647	6.4	436	15.08	--	152	U 0.005	--	--	--	0.004	--	--	0.026	--	--
	5/15/1997	N	19.24	6.87	525	5.8	398	5.08	--	177	U 0.005	--	--	--	U 0.003	U 0.001	--	0.017	--	--
	10/16/1997	N	28.85	6.91	715	6.3	544	13.3	U 0.05	216	U 0.005	--	--	--	0.004	0.016	--	0.032	--	--
	12/4/1997	N	30.04	7.17	661	5.4	512	13.6	--	195	U 0.005	--	--	--	0.004	0.023	--	J4 0.031	--	--
	3/2/1998	N	31.71	7.33	668	6.7	502	14.2	--	201	U 0.005	--	--	--	U 0.003	0.029	--	0.028	--	--
	11/20/1998	N	30.05	7.29	0	4.9	516	13.2	--	229	U 0.005	--	--	--	U 0.003	0.021	--	0.03	--	--
	6/10/1999	N	--	--	--	--	538	11.04	--	252	U 0.005	--	--	--	U 0.003	0.022	--	0.012	--	--
	11/11/1999	N	--	--	--	--	547	11.4	--	262	U 0.005	--	--	--	0.004	0.026	--	0.027	--	--
	12/21/1999	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	12/28/1999	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	1/4/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	1/10/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	1/18/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	1/27/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	2/14/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	3/2/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	3/20/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	5/3/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	6/8/2000	N	--	--	--	--	--	--	--	--	U 0.005	--	--	--	--	--	--	--	--	--
	6/23/2000	N	--	--	--	--	567	10.6	--	266	U 0.005	--	--	--	U 0.003	0.02	--	0.035	--	--
	12/4/2000	N	--	--	--	--	557	9.6	--	264	U 0.005	--	--	--	U 0.003	0.05	--	0.023	--	--
	11/16/2001	N	--	--	--	--	557	8.63	--	264	U 0.005	--	--	--	U 0.003	0.082	--	0.023	--	--
	6/12/2002	N	27.1	7.3	720	--	550	5.83	--	243	0.02	0.006	--	--	U 0.003	0.009	--	0.016	--	--
	11/13/2002	N	30.1	7.1	800	--	593	6.69	--	237	0.02	U 0.005	--	--	0.008	0.194	--	0.025	--	--
	11/13/2003	N	32.52	7.1	870	6.7	659	9	--	336	0.01	U 0.005	--	U 0.2	U 0.003	0.004	--	0.026	--	--
	6/10/2004	D	--	--	--	--	--	--	--	--	--	--	--	--	U 0.003	0.01	--	0.023	--	--
	6/10/2004	N	28.2	6.92	925	6.9	--	--	--	--	--	--	--	--	U 0.003	0.008	--	0.021	--	--
	12/31/2004	N	34	7.11	993	6.3	--	7.7	--	--	0.03	UJ 0.005	--	--	--	0.035	--	0.027	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-20	6/28/2005	N	26.35	7.37	1137	5.7	--	7.84	U 0.05	--	0.02	0.005	--	--	--	0.02	--	0.023	--	--
	9/17/2019	N	30.2	6.67	844	6.69	691	--	--	--	0.01	U 0.004	U 0.2	--	--	--	--	--	--	--
SBB-88-21	5/10/1989	N	12.22	7.01	107	6.1	A 111	--	U 0.5	20	U 0.005	--	--	--	0.011	U 0.05	--	U 0.003	--	--
	6/28/1989	N	13.6	6.74	124	6.4	--	--	--	5.5	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1989	N	18.14	7.16	136	9.5	A 264	--	U 1	9.7	U 0.005	--	--	--	0.005	U 0.02	--	U 0.002	--	--
	4/19/1990	N	17.99	6.98	113	5.1	A 162	--	U 0.5	10	U 0.005	--	--	--	0.005	U 0.03	--	0.003	--	--
	5/22/1990	N	10.7	--	--	5	--	--	--	7.5	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1990	N	12	--	--	6	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	5/28/1991	N	5.7	--	--	5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	10.5	--	--	5	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1991	N	15.51	8.1	144	7.8	125	--	U 0.1	12	U 0.005	--	--	--	0.004	0.006	--	U 0.002	--	--
	5/12/1992	N	13.15	--	--	5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	6/19/1992	N	12.15	--	--	6	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	7/15/1992	N	13.42	7.4	163	7.7	114	1	U 0.5	24	U 0.005	--	--	--	0.002	0.014	--	0.032	--	--
	4/7/1993	N	15.62	6.68	184	5.1	172	1.39	0.18	41	U 0.005	--	--	--	0.004	0.001	--	0.053	--	--
	5/19/1993	N	12.4	--	--	5	--	1.22	--	47	U 0.005	--	--	--	--	--	--	--	--	--
	6/23/1993	N	10.9	--	--	5	--	0.91	--	26	0.01	0.012	0.02	--	--	--	--	--	--	--
	7/28/1993	N	10.33	6.61	258	7.1	178	1.2	J1,J4 0.14	48	U 0.005	--	--	--	U,J4 0.002	0.006	--	UJ1 0.011	--	--
	8/20/1993	N	12.8	--	--	9	--	J4 1.5	--	23	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	14.6	--	--	6.5	--	2.1	--	28	0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	N	14.18	6.93	282	7.4	183	J4 2.19	U 0.1	59	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	J4 0.029	--	--
	12/10/1993	N	19.5	--	--	5	--	2.11	--	21	0.04	0.021	U 0.2	--	--	--	--	--	--	--
SBB-88-22	9/2/1988	N	--	--	--	--	131	--	0.2	16	--	0.014	--	--	U 0.004	U 0.01	--	U 0.005	--	--
	11/8/1988	N	--	--	--	--	--	--	--	20	U 0.01	--	--	--	--	--	--	--	--	--
	1/17/1989	N	28.25	7.12	167	5.3	--	--	--	13	U 0.01	--	--	--	--	--	--	--	--	--
	2/28/1989	N	29.54	6.84	380	5.6	--	--	--	12	U 0.01	--	--	--	--	--	--	--	--	--
	5/9/1989	N	14.31	7.24	191	10.6	143	--	U 0.5	20	U 0.005	--	--	--	0.017	U 0.05	--	U 0.003	--	--
	6/28/1989	N	15.5	7.27	168	7.6	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1989	N	19.45	6.58	169	8.1	A 176	--	U 1	12	U 0.005	--	--	--	0.004	U 0.02	--	U 0.002	--	--
	8/21/1989	N	21	7.67	184	6.2	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-22	9/28/1989	N	22.97	7.52	132	6.7	--	--	--	13	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	D	24.79	7.28	--	5.6	154	--	--	11	U 0.005	--	--	--	0.004	U 0.02	--	U 0.001	--	--
	11/15/1989	N	24.79	7.28	--	5.6	131	--	--	11	U 0.005	--	--	--	0.004	U 0.02	--	U 0.001	--	--
	12/5/1989	N	24.3	--	--	--	--	--	U 1	11	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1990	N	27.5	--	--	6	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/1990	N	18.94	7.25	100	7.8	88	--	U 0.5	12	U 0.005	--	--	--	0.006	U 0.03	--	0.02	--	--
	5/22/1990	N	13.75	--	--	6	--	--	--	9	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1990	N	15	--	--	7	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	7/19/1990	N	19.18	--	--	--	115	--	U 0.5	7	U 0.005	--	--	--	0.004	U 0.01	--	U 0.002	--	--
	8/20/1990	N	21.85	--	--	7	--	--	--	8.4	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1990	N	23.34	--	--	7	--	--	--	8.31	U 0.005	--	--	--	--	--	--	--	--	--
	11/14/1990	N	24.93	7.24	146	5.4	A 187	--	U 0.5	10	U 0.005	--	--	--	0.004	U 0.02	--	U 0.001	--	--
	12/11/1990	N	25.5	--	--	--	--	--	--	9.34	U 0.005	--	--	--	--	--	--	--	--	--
	1/17/1991	N	26.7	--	--	7	--	--	--	7.7	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1991	N	26.5	--	--	6	--	--	--	7.5	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1991	N	21.48	7.18	148	6	A 184	--	U 0.5	9.2	U 0.005	--	--	--	0.003	U 0.002	--	U 0.001	--	--
	5/28/1991	N	8.8	--	--	6	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	13.85	--	--	5	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	7/24/1991	N	18	7.25	184	7.5	142	--	U 0.1	10	U 0.005	--	--	--	0.005	0.03	--	U 0.002	--	--
	8/28/1991	N	20.8	--	--	5.5	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	9/17/1991	N	22.4	--	--	--	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	10/31/1991	N	24.55	7.4	187	6.6	143	1.1	U 0.1	9.2	U 0.005	--	--	--	0.005	U 0.006	--	U 0.002	--	--
	12/17/1991	N	26.1	--	--	5	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1992	N	27.4	--	--	6.5	--	--	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1992	N	28.3	--	--	7	--	--	--	9.6	U 0.005	--	--	--	--	--	--	--	--	--
	3/17/1992	N	25.58	7.48	199	6.3	119	1.3	0.1	12	U 0.005	--	--	--	U 0.03	0.007	--	U 0.002	--	--
	5/12/1992	N	16.33	--	--	5.5	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	14.95	--	--	6	--	--	--	12	U 0.005	--	--	--	--	--	--	--	--	--
	7/15/1992	N	15.99	8.03	187	7.5	130	U 1	U 0.5	U 10	U 0.005	--	--	--	0.003	0.007	--	0.002	--	--
	8/18/1992	N	19.5	--	--	6	--	U 1	--	U 10	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1992	N	21.2	--	--	7	--	U 1	--	11	U 0.005	--	--	--	--	--	--	--	--	--
	10/28/1992	N	22.15	7.35	195	5.9	146	1.1	U 0.5	U 10	U 0.005	--	--	--	0.007	0.009	--	0.01	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-22	12/10/1992	D	22.5	--	--	5.5	--	1.4	--	13	U 0.005	--	--	--	--	--	--	--	--	--
	12/10/1992	N	22.5	--	--	5.5	--	1.4	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	1/19/1993	N	25.3	--	--	5	--	1.5	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	4/6/1993	N	17.49	7.36	191	5.2	A 175	1.4	0.16	27	U 0.005	--	--	--	0.003	0.007	--	0.04	--	--
	5/19/1993	N	14.2	--	--	6	--	1.31	--	38	U 0.005	--	--	--	--	--	--	--	--	--
	6/22/1993	N	12.8	--	--	6	--	1.2	--	27	U 0.005	--	--	--	--	--	--	--	--	--
	7/27/1993	N	13.74	7.39	231	6.4	164	1.3	J4 0.18	26	U 0.005	--	--	--	U,J4 0.002	0.011	--	0.04	--	--
	8/20/1993	N	15.9	--	--	6	--	J4 1.4	--	27	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	17.1	--	--	5.5	--	1.5	--	27	U 0.005	--	--	--	--	--	--	--	--	--
	10/18/1993	N	16.64	7.13	231	5.4	139	J4 1.58	U 0.1	28	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	J4 0.029	--	--
	12/8/1993	N	20.4	--	--	6	--	1.98	--	25	U 0.005	--	--	--	--	--	--	--	--	--
SBB-88-25	10/21/1988	N	--	--	--	--	--	--	--	16	U 0.01	--	--	--	--	--	--	--	--	--
	1/17/1989	N	22.96	7.11	235	5.3	--	--	--	15	U 0.01	--	--	--	--	--	--	--	--	--
	3/1/1989	N	22.91	7.09	--	5.8	--	--	--	14	U 0.01	--	--	--	--	--	--	--	--	--
	4/27/1989	N	14.66	7.08	294	6	205	--	U 0.5	20	U 0.005	U 0.005	U 0.005	--	0.002	U 0.02	--	U 0.003	--	--
	6/28/1989	N	15.22	7.35	262.8	5.1	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1989	N	16.34	6.38	264	7.6	152	--	U 0.1	15	U 0.005	--	--	--	0.004	U 0.02	--	U 0.002	--	--
	8/21/1989	N	15.7	7.41	260	5.5	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	9/29/1989	N	20.73	7.27	179	6.5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	20.51	6.87	--	4.8	A 241	--	U 1	17	U 0.005	--	--	--	0.004	U 0.02	--	U 0.001	--	--
	12/5/1989	N	18	--	--	--	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	1/15/1990	N	18.25	--	--	--	--	--	--	24	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1990	N	20	--	--	3	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1990	N	13.7	6.52	241	5	175	--	U 0.5	25	U 0.005	--	--	--	0.003	U 0.03	--	0.003	--	--
	5/22/1990	N	14.9	--	--	5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1990	N	14.5	--	--	5	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	7/19/1990	N	15	7.48	247	6.5	A 240	--	U 0.5	14	U 0.005	--	--	--	0.003	U 0.01	--	U 0.002	--	--
	9/24/1990	N	15.9	--	--	6	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	11/14/1990	N	16.44	7.32	219	5.2	174	--	U 0.5	17	U 0.005	--	--	--	0.003	U 0.02	--	U 0.001	--	--
	12/11/1990	N	17.2	--	--	--	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	1/17/1991	N	18.5	--	--	6	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-25	2/27/1991	N	19	--	--	5.5	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/1991	N	17.15	7.51	254	5.8	191	--	0.6	28	U 0.005	--	--	--	U 0.002	U 0.002	--	U 0.001	--	--
	5/28/1991	N	A 5.45	--	--	4	--	--	--	A 18	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	8.75	--	--	4	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	7/24/1991	N	11.77	7.16	256	7.2	192	--	0.12	15	U 0.005	--	--	--	0.003	0.02	--	U 0.002	--	--
	8/28/1991	N	13.8	--	--	5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	9/17/1991	N	14	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	10/31/1991	N	15.94	7.38	256	5.3	204	1.7	U 0.1	16	U 0.005	--	--	--	0.005	U 0.006	--	0.003	--	--
	12/17/1991	N	17	--	--	5.5	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1992	N	17.6	--	--	5.5	--	--	--	19	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1992	N	17.5	--	--	5.5	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	3/18/1992	N	15.29	7.39	--	5.2	222	U 0.5	0.1	26	U 0.005	--	--	--	U 0.03	0.019	--	0.002	--	--
	5/12/1992	N	14	--	--	5	--	--	--	27	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	14	--	--	5	--	--	--	34	U 0.005	--	--	--	--	--	--	--	--	--
	7/15/1992	N	14.37	6.59	383	5	260	4.2	U 0.5	38	U 0.005	--	--	--	0.003	0.006	--	0.008	--	--
	8/18/1992	D	15.6	--	--	6.5	--	4.5	--	40	U 0.005	--	--	--	--	--	--	--	--	--
	8/18/1992	N	15.6	--	--	6.5	--	4.5	--	37	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1992	N	16.7	--	--	6	--	5	--	38	U 0.005	--	--	--	--	--	--	--	--	--
	10/29/1992	D	17.45	7.51	390	5.4	269	7.7	U 0.5	45	U 0.005	--	--	--	0.004	0.012	--	0.017	--	--
	10/29/1992	N	17.45	7.51	390	5.4	282	7.6	U 0.5	43	U 0.005	--	--	--	0.006	0.009	--	0.018	--	--
	12/9/1992	N	18.5	--	--	5.5	--	6.7	--	54	U 0.005	--	--	--	--	--	--	--	--	--
	1/19/1993	N	19.5	--	--	5.5	--	6.3	--	54	U 0.005	--	--	--	--	--	--	--	--	--
	2/23/1993	N	20	--	--	5	--	5.71	--	54	U 0.005	--	--	--	--	--	--	--	--	--
	4/7/1993	N	15.46	7.08	378	5.5	313	2.82	0.19	75	U 0.005	--	--	--	0.004	0.002	--	0.002	--	--
	5/19/1993	N	7.25	--	--	5	--	6.21	--	51	U 0.005	--	--	--	--	--	--	--	--	--
	6/22/1993	N	6.4	--	--	5	--	3.99	--	50	U 0.005	--	--	--	--	--	--	--	--	--
	7/28/1993	N	7.8	7.43	375	5.6	270	3.4	J1,J4 0.07	53	U 0.005	--	--	--	U,J4 0.002	0.006	--	UJ1 0.008	--	--
	8/20/1993	N	8.7	--	--	5.5	--	J4 2.8	--	48	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	9.55	--	--	5	--	2.6	--	46	U 0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	N	10.4	7.23	348	5.7	264	J4 2.12	U 0.1	46	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	U,J4 0.005	--	--
	12/8/1993	N	13.2	--	--	5.5	--	2.78	--	60	U 0.005	--	--	--	--	--	--	--	--	--
	3/8/1994	N	16.51	7.25	317	4.5	289	3.86	U 0.1	J4 73	U 0.02	--	--	--	U 0.005	0.01	--	0.011	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-25	8/1/1994	N	13.32	6.84	427	5	251	1.74	U 0.1	48	U 0.02	--	--	--	U 0.005	0.02	--	0.006	--	--
	10/16/1994	N	7.56	7.23	275	4	219	J4 1.38	U 0.1	34	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	12/12/1994	N	12.39	7	587	5.5	329	3.32	U 0.1	104	U 0.02	--	--	--	U 0.005	0.03	--	0.009	--	--
	3/1/1995	N	15.36	7.22	528	4.6	317	3.48	U 0.1	4S 97	U 0.02	--	--	--	U 0.005	U 0.01	--	0.01	--	--
	5/17/1995	N	1.91	7.2	388	5.3	207	1.55	U 0.1	53	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	8/14/1995	N	14.67	7.16	330	5.5	J4S 197	0.54	U 0.1	27	U 0.005	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	10/8/1995	N	13.7	7.09	370	5.2	206	0.92	U 0.05	45	U 0.005	--	--	--	0.004	0.01	--	0.003	--	--
	3/4/1996	N	17.3	6.57	405	5	289	2.07	--	72.5	U 0.005	--	--	--	0.004	--	--	0.0076	--	--
	6/12/1996	N	5.53	6.64	342	5	192	0.64	--	24	U 0.005	--	--	--	0.003	J4 0.002	--	0.002	--	--
	9/13/1996	N	15.33	7.75	400	4.9	236	1.23	U 0.05	56.1	U 0.005	--	--	--	0.004	0.001	--	0.003	--	--
	12/5/1996	D	17.4	7.25	467	5.4	293	1.77	--	78.7	U 0.005	--	--	--	0.004	J1,J4 0.009	--	0.003	--	--
	12/5/1996	N	17.4	7.25	467	5.4	293	1.77	--	78.7	U 0.005	--	--	--	0.004	J1,J4 0.007	--	0.004	--	--
	3/11/1997	N	10.5	7.32	369	5.5	255	1.53	--	52	U 0.005	--	--	--	U 0.003	--	--	0.003	--	--
	5/19/1997	N	1.22	7.4	321	6.4	197	0.69	--	33.8	U 0.005	--	--	--	0.004	0.009	--	0.009	--	--
	10/14/1997	N	14	7.22	363	4.8	212	0.66	U 0.05	42.5	U 0.005	--	--	--	0.004	0.025	--	0.005	--	--
	12/3/1997	N	15.27	0	374	5.2	260	0.85	--	60	U 0.005	--	--	--	0.003	0.01	--	0.006	--	--
	2/23/1998	N	17.68	7.57	385	5.4	266	1.04	--	65.6	U 0.005	--	--	--	0.004	0.004	--	0.005	--	--
	2/23/1998	N	17.68	7.57	385	5.4	266	1.04	--	65.6	U 0.005	--	--	--	U 0.003	0.008	--	0.005	--	--
	2/23/1998	N	17.68	7.57	385	5.4	266	1.03	--	65.6	U 0.005	--	--	--	0.004	0.004	--	0.005	--	--
	2/23/1998	N	17.68	7.57	385	5.4	266	1.03	--	65.6	U 0.005	--	--	--	U 0.003	0.008	--	0.005	--	--
	6/4/1998	N	8.11	7.7	410	4.8	220	0.73	--	44.1	U 0.005	--	--	--	0.004	0.016	--	U 0.001	--	--
	11/19/1998	N	16.85	7.41	0	4.9	330	1.18	--	107	U 0.005	--	--	--	U 0.003	0.008	--	0.008	--	--
	6/4/1999	N	--	--	--	--	319	1.52	--	109	U 0.005	--	--	--	U 0.003	0.008	--	0.01	--	--
	11/10/1999	N	--	--	--	--	371	2.13	--	157	0.006	U 0.005	--	--	U 0.003	0.007	--	0.01	--	--
	6/23/2000	N	--	--	--	--	453	3.59	--	207	0.02	0.006	--	--	U 0.003	0.013	--	0.013	--	--
	12/4/2000	N	--	--	--	--	552	4.57	--	261	0.02	0.006	--	--	U 0.003	U 0.001	--	0.014	--	--
	6/15/2001	N	--	--	--	--	--	3.14	--	207	0.05	0.033	--	--	U 0.003	0.012	--	0.008	--	--
	11/30/2001	N	--	--	--	--	603	2.65	--	288	0.12	0.018	--	--	U 0.003	0.007	--	0.013	--	--
	6/13/2002	N	--	--	--	--	483	3	--	217	0.09	0.046	--	--	0.004	0.028	--	0.019	--	--
	11/6/2002	N	--	--	--	--	558	2.91	--	266	0.12	0.499	--	0.4	U 0.003	0.016	--	0.018	--	--
	11/13/2002	N	16.6	7.2	710	--	551	2.84	--	221	0.11	0.02	--	--	U 0.003	0.017	--	0.016	--	--
	6/30/2003	N	6.1	7.2	444	5.4	277	1.2	--	82	0.05	0.013	--	U 0.2	0.003	0.007	--	0.01	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-25	11/13/2003	N	18.25	7.5	570	5.6	411	2	--	168	0.06	0.018	--	U 0.2	U 0.003	0.011	--	0.013	--	--
	6/10/2004	N	13.35	7.29	650	5.8	--	--	--	--	--	--	--	--	U 0.003	0.011	--	0.01	--	--
	12/30/2004	N	19.1	7.25	726	5.7	--	2.19	--	--	0.09	0.017	--	--	--	0.028	--	0.013	--	--
	6/28/2005	N	6.72	7.31	461	4.9	--	1.17	U 0.05	--	0.07	0.011	--	--	--	0.005	--	0.011	--	--
	5/27/2010	N	6.34	7.13	511	5.6	368	1.47	U 0.05	--	0.06	0.019	U 0.2	--	--	--	0.011	--	0.007	--
	9/17/2010	N	12.25	6.97	473	5.4	320	1.29	U 0.05	--	0.09	F% 0.032	U 0.2	--	--	--	0.002	--	0.006	--
	6/2/2011	D	0.56	7.13	298	5.8	331	1	U 0.1	--	M% 0.05	F 0.024	U 0.2	--	--	--	0.002	--	0.007	--
	6/2/2011	N	0.56	7.13	298	5.8	324	1	U 0.1	--	M% 0.06	F 0.016	U 0.2	--	--	--	0.002	--	0.006	--
	9/15/2011	D	12.76	6.96	254	6.5	274	M% 0.95	U 0.1	--	0.05	0.014	U 0.2	--	--	--	0.003	--	0.004	--
	9/15/2011	N	12.76	6.96	254	6.5	268	M% 0.95	U 0.1	--	0.05	0.019	U 0.2	--	--	--	0.002	--	0.004	--
SBB-88-26	10/21/1988	N	--	--	--	--	--	--	--	21	U 0.01	--	--	--	--	--	--	--	--	--
	1/17/1989	D	20.96	7.25	260	5.4	--	--	--	18	U 0.01	--	--	--	--	--	--	--	--	--
	1/17/1989	N	20.96	7.25	260	5.4	--	--	--	17	U 0.01	--	--	--	--	--	--	--	--	--
	3/1/1989	N	22.39	5.86	--	6	--	--	--	17	U 0.01	--	--	--	--	--	--	--	--	--
	5/9/1989	D	12.79	7.1	272	9.3	172	--	U 0.5	20	U 0.005	--	--	--	0.008	U 0.05	--	U 0.003	--	--
	5/9/1989	N	12.79	7.1	272	9.3	172	--	U 0.5	20	U 0.005	--	--	--	0.01	U 0.05	--	U 0.003	--	--
	6/28/1989	N	14.23	7.06	190.4	5.3	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	7/26/1989	N	14.74	6.34	271	7.1	210	--	U 1	17	U 0.005	--	--	--	0.003	U 0.02	--	U 0.002	--	--
	8/21/1989	N	14.78	7.38	286	5.2	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	9/28/1989	N	15.79	7.14	194	6	--	--	--	15	U 0.005	--	--	--	--	--	--	--	--	--
	11/15/1989	N	16.01	6.92	--	4.8	A 244	--	--	16	U 0.005	--	--	--	0.004	U 0.02	--	U 0.001	--	--
	12/5/1989	N	16.9	--	--	--	--	--	U 1	9.8	U 0.005	--	--	--	--	--	--	--	--	--
	1/15/1990	N	18.25	--	--	5	--	--	--	25	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1990	N	19	--	--	3	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	4/18/1990	N	12.81	6.53	269	5.2	195	--	U 0.5	38	U 0.005	--	--	--	0.004	U 0.03	--	0.005	--	--
	5/22/1990	N	14	--	--	5	--	--	--	14	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1990	N	13.5	--	--	6	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	7/18/1990	N	14.02	7.31	261	5.9	A 270	--	U 0.5	16	U 0.005	--	--	--	0.003	U 0.01	--	U 0.002	--	--
	9/24/1990	N	14.9	--	--	5.5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	11/14/1990	N	15.39	7.02	234	5.3	136	--	U 0.5	20	U 0.005	--	--	--	0.003	U 0.02	--	U 0.001	--	--
	12/11/1990	N	16.2	--	--	--	--	--	--	16	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-26	1/17/1991	N	17.4	--	--	5.5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	2/26/1991	N	17.9	--	--	5	--	--	--	34	U 0.005	--	--	--	--	--	--	--	--	--
	4/17/1991	N	16.1	7.47	322	5	A 396	--	U 0.5	69	U 0.005	--	--	--	U 0.002	U 0.002	--	0.008	--	--
	5/28/1991	N	--	--	--	--	--	--	--	24	U 0.005	--	--	--	--	--	--	--	--	--
	6/25/1991	N	8.5	--	--	4	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	7/24/1991	N	14.06	7.28	259	6.4	187	--	U 0.1	16	U 0.005	--	--	--	0.005	U 0.002	--	U 0.002	--	--
	8/28/1991	N	13.3	--	--	5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	9/17/1991	N	13.05	--	--	--	--	--	--	18	U 0.005	--	--	--	--	--	--	--	--	--
	10/31/1991	N	14.8	7.32	239	6.1	207	1.2	U 0.1	17	U 0.005	--	--	--	0.006	U 0.006	--	U 0.002	--	--
	12/17/1991	N	15.5	--	--	5.5	--	--	--	20	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1992	N	16.5	--	--	6	--	--	--	10	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1992	N	16.33	--	--	5.5	--	--	--	17	U 0.005	--	--	--	--	--	--	--	--	--
	3/18/1992	N	14.27	7.45	355	4.7	239	U 0.5	0.2	35	U 0.005	--	--	--	U 0.03	U 0.005	--	U 0.002	--	--
	5/12/1992	N	13.05	--	--	5	--	--	--	28	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	13	--	--	5.5	--	--	--	29	U 0.005	--	--	--	--	--	--	--	--	--
	7/16/1992	N	13.41	6.73	369	5.1	263	3.9	U 0.5	A 51	U 0.005	--	--	--	0.003	U 0.003	--	0.007	--	--
	8/18/1992	N	14.6	--	--	6	--	5.5	--	30	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1992	D	15.6	--	--	6	--	5.7	--	34	U 0.005	--	--	--	--	--	--	--	--	--
	9/24/1992	N	15.6	--	--	6	--	5.6	--	32	U 0.005	--	--	--	--	--	--	--	--	--
	10/28/1992	N	16.39	7.43	398	5.2	296	6.5	U 0.5	37	U 0.005	--	--	--	0.006	U 0.003	--	0.013	--	--
	12/9/1992	N	17.4	--	--	5.2	--	6.7	--	40	U 0.005	--	--	--	--	--	--	--	--	--
	1/19/1993	N	18.5	--	--	5.2	--	6.1	--	43	U 0.005	--	--	--	--	--	--	--	--	--
	2/23/1993	N	19.1	--	--	5	--	5.31	--	46	U 0.005	--	--	--	--	--	--	--	--	--
	4/7/1993	N	14.33	6.76	377	5.4	290	0.89	0.21	90	U 0.005	--	--	--	0.005	U 0.001	--	0.002	--	--
	5/19/1993	N	7	--	--	5	--	5.58	--	60	U 0.005	--	--	--	--	--	--	--	--	--
	6/22/1993	N	6.1	--	--	5	--	4.78	--	41	U 0.005	--	--	--	--	--	--	--	--	--
	7/28/1993	N	7.32	6.97	399	5.9	251	2.9	J1,J4 0.93	43	U 0.005	--	--	--	U,J4 0.002	U 0.002	--	UJ1 0.006	--	--
	8/20/1993	N	8	--	--	5.5	--	J4 2.3	--	40	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	8.83	--	--	5.5	--	1.9	--	37	U 0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	N	9.61	7.27	319	5.5	249	J4 1.82	U 0.1	40	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	U,J4 0.005	--	--
	10/19/1993	N	9.61	7.27	319	5.5	234	2	U 0.1	39	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	U,J4 0.005	--	--
	12/8/1993	N	12.2	--	--	5	--	2.16	--	50	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-26	3/8/1994	N	14.23	7.53	304	4.7	280	2.94	U 0.1	J4 64	U 0.02	--	--	--	U 0.005	U 0.01	--	0.009	--	--
	5/16/1994	N	7.06	7.48	323	5.5	219	J4 1.28	U 0.1	33	U 0.02	--	--	--	U 0.005	U 0.01	--	0.008	--	--
	8/1/1994	N	12.45	7.81	396	6.1	230	1.17	U 0.1	38	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	12/12/1994	N	11.39	7.01	510	5	343	3.13	U 0.1	105	U 0.02	--	--	--	U 0.005	U 0.01	--	0.008	--	--
	3/1/1995	N	14.39	7.19	530	4.8	334	3.41	U 0.1	4S 104	U 0.02	--	--	--	U 0.005	U 0.01	--	0.014	--	--
	5/17/1995	N	1.9	7.15	390	5.1	231	1.73	U 0.1	58	U 0.02	--	--	--	U 0.005	U 0.01	--	0.014	--	--
	8/14/1995	N	14	6.91	314	5.4	J4S 171	0.24	U 0.1	27	U 0.005	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	10/8/1995	N	12.7	7.47	324	5	189	0.59	U 0.05	32	U 0.005	--	--	--	0.003	U 0.001	--	0.002	--	--
	3/4/1996	N	16.75	6.32	406	5.2	318	1.295	--	63.2	0.01	J,UJ2 0.005	--	--	0.004	--	--	0.0054	--	--
	6/12/1996	N	5.1	6.87	327	5.3	185	0.52	--	20.6	0.02	U 0.005	--	--	0.004	J,UJ4 0.001	--	U 0.001	--	--
	9/13/1996	N	19.35	7.84	358	6	251	0.42	U 0.05	38.7	U 0.005	--	--	--	0.003	U 0.001	--	0.001	--	--
	12/5/1996	N	16.4	7.55	452	4.6	283	1.08	--	71.1	U 0.005	--	--	--	0.003	U 0.001	--	0.004	--	--
	3/11/1997	N	7.7	7.46	413	5.1	262	1.26	--	55.7	U 0.005	--	--	--	U 0.003	--	--	0.003	--	--
	5/19/1997	N	1.06	7.33	326	6.3	218	0.64	--	36.3	U 0.005	--	--	--	0.003	U 0.001	--	0.009	--	--
	10/14/1997	N	13.14	7.34	363	4.3	206	0.51	U 0.05	35.9	U 0.005	--	--	--	0.003	0.006	--	0.008	--	--
	12/3/1997	N	14.3	0	365	5	237	0.62	--	46.6	U 0.005	--	--	--	U 0.003	0.004	--	0.005	--	--
	2/23/1998	N	16.65	7.71	406	4.3	262	2.56	--	59.8	U 0.005	--	--	--	U 0.003	0.009	--	0.006	--	--
	6/4/1998	N	13.65	7.52	399	4.8	222	0.6	--	40.4	U 0.005	--	--	--	0.004	0.001	--	U 0.001	--	--
	11/19/1998	N	16.5	7.75	0	5.1	312	1.04	--	93.2	U 0.005	--	--	--	U 0.003	U 0.001	--	0.007	--	--
	6/4/1999	N	--	--	--	--	315	1.33	--	104	U 0.005	--	--	--	U 0.003	0.001	--	0.009	--	--
	11/10/1999	N	--	--	--	--	394	1.94	--	169	0.007	U 0.005	--	--	U 0.003	U 0.001	--	0.009	--	--
	6/23/2000	N	--	--	--	--	516	2.99	--	243	0.01	U 0.005	--	--	U 0.003	0.001	--	0.012	--	--
	6/30/2000	N	--	--	--	--	129	0.16	--	22.2	U 0.005	--	--	--	0.003	0.001	--	U 0.001	--	--
	12/4/2000	N	--	--	--	--	571	3.72	--	272	0.02	U 0.005	--	--	U 0.003	0.004	--	0.012	--	--
	6/15/2001	N	--	--	--	--	--	2.73	--	193	0.06	0.03	--	--	U 0.003	U 0.001	--	0.008	--	--
	11/30/2001	N	--	--	--	--	612	2.39	--	285	0.13	0.028	--	--	U 0.003	0.003	--	0.013	--	--
	6/13/2002	N	--	--	--	--	507	858	--	226	0.10	0.054	--	--	U 0.003	0.002	--	0.019	--	--
	6/30/2003	N	7	7.35	420	5.1	293	1	--	88	0.07	0.011	--	U 0.2	0.003	0.002	--	0.008	--	--
	11/13/2003	N	17.5	7.4	610	5.6	432	2.2	--	181	0.09	0.022	--	U 0.2	U 0.003	0.003	--	0.009	--	--
	6/10/2004	N	13.6	7.35	681	6.5	--	--	--	--	--	--	--	--	U 0.003	0.002	--	0.009	--	--
	12/30/2004	D	--	--	--	--	--	3.73	--	--	0.13	0.023	--	--	--	0.005	--	0.01	--	--
	12/30/2004	N	21	7.35	919	5	--	3.68	--	--	0.11	0.023	--	--	--	0.005	--	0.01	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-88-26	6/28/2005	N	3.8	7.39	464	5.1	--	1.18	U 0.05	--	0.08	0.012	--	--	--	0.006	--	0.01	--	--
SBB-88-28	10/22/1988	N	--	--	--	--	--	--	--	12	U 0.01	--	--	--	--	--	--	--	--	--
SBB-91-29	10/22/1988	N	--	--	--	--	--	--	--	12	U 0.01	--	--	--	--	--	--	--	--	--
	11/14/1991	N	--	--	--	--	798	--	0.1	283	0.01	U 0.005	--	--	0.006	0.023	--	0.002	--	--
	12/17/1991	N	0	--	--	6.5	--	--	--	268	U 0.005	--	--	--	--	--	--	--	--	--
	3/17/1992	N	10.6	6.59	1019	4.2	734	25	0.2	285	U 0.005	--	--	--	U 0.03	U 0.005	--	0.188	--	--
	5/12/1992	N	10.9	--	--	4.5	--	--	--	381	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	10.4	--	--	6	--	--	--	358	U 0.005	--	--	--	--	--	--	--	--	--
	7/16/1992	N	11.54	6.55	1319	6.8	961	51.2	U 0.5	345	U 0.005	--	--	--	U 0.001	U 0.003	--	0.235	--	--
	8/18/1992	N	12.5	--	--	7	--	54	--	401	U 0.005	U 0.005	--	--	--	--	--	--	--	--
	9/25/1992	N	11.7	--	--	7	--	37	--	359	U 0.005	--	--	--	--	--	--	--	--	--
	10/29/1992	N	12.18	6.65	1130	7.7	905	29	U 0.5	366	U 0.005	--	--	--	0.002	U 0.003	--	0.219	--	--
	12/9/1992	N	12.5	--	--	7.7	--	33	--	340	0.009	0.008	U 0.2	--	--	--	--	--	--	--
	1/19/1993	N	12.7	--	--	7.7	--	41	--	324	U 0.005	--	--	--	--	--	--	--	--	--
	2/23/1993	N	12.6	--	--	5	--	27.21	--	282	U 0.005	--	--	--	--	--	--	--	--	--
	4/6/1993	N	11.95	6.52	877	5.1	671	19.6	0.34	288	U 0.005	--	--	--	0.003	U 0.001	--	0.093	--	--
	5/19/1993	N	0	--	--	4	--	24	--	428	U 0.005	--	--	--	--	--	--	--	--	--
	6/22/1993	N	0	--	--	5	--	63	--	492	U 0.005	--	--	--	--	--	--	--	--	--
	7/28/1993	D	10.52	6.7	1659	7	1350	78	J1,J4 0.17	530	U 0.005	--	--	--	U 0.002	0.003	--	0.515	--	--
	7/28/1993	N	10.52	6.7	1659	7	1350	78	J1,J4 0.17	530	U 0.005	--	--	--	U,J4 0.002	0.006	--	0.524	--	--
	8/19/1993	N	0	--	--	7	--	J4 54	--	446	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	12.43	--	--	8	--	41	--	470	U 0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	D	12.45	6.7	1271	7.3	1100	32.1	U 0.1	465	U 0.005	--	--	--	U 0.005	U 0.01	--	0.42	--	--
	10/19/1993	N	12.45	6.7	1271	7.3	1110	J4 33	U 0.1	453	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	J4 0.398	--	--
	12/8/1993	D	13.2	--	--	6	--	35.7	--	480	U 0.005	--	--	--	U 0.005	U 0.01	--	0.29	--	--
	12/8/1993	N	13.2	--	--	6	--	36.3	--	480	U 0.005	--	--	--	U 0.005	U 0.01	--	0.33	--	--
	3/8/1994	N	12.74	6.56	945	3.5	1030	35.3	U 0.1	J4 478	U 0.02	--	--	--	U 0.005	U 0.01	--	0.42	--	--
	5/16/1994	N	11.95	6.76	993	4.2	1010	J4 27.2	U 0.1	444	U 0.02	--	--	--	U 0.005	U 0.01	--	0.21	--	--
	8/1/1994	N	13.07	5.01	1270	8.1	1060	28.4	0.2	473	U 0.02	--	--	--	U 0.005	U 0.01	--	0.009	--	--
	12/14/1994	N	13.55	6.34	1680	6.4	1140	36.6	U 0.1	525	U 0.02	--	--	--	U 0.005	U 0.01	--	0.194	--	--

TABLE A-4

1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-91-29	3/1/1995	N	12.4	6.52	1557	4.8	1180	36.9	0.1	4S 513	U 0.02	--	--	--	U 0.005	U 0.01	--	0.2	--	--
	5/18/1995	N	9	6.72	1430	4.1	955	28.9	U 0.1	442	U 0.02	--	--	--	U 0.005	U 0.01	--	0.12	--	--
	8/14/1995	N	15.8	6.6	1485	7.5	J4S 1300	30.2	U 0.1	580	U 0.005	--	--	--	U 0.005	U 0.01	--	0.172	--	--
	10/8/1995	N	12.5	6.79	1540	7.9	1270	32	U 0.05	629	U 0.005	--	--	--	U 0.003	U 0.001	--	0.15	--	--
	3/4/1996	N	13.3	6.29	1820	4.6	1289	35.257	--	612	U 0.005	--	--	--	U 0.003	--	--	0.217	--	--
	3/4/1996	N	13.3	6.29	1820	4.6	1250	33.1	--	647	U 0.005	--	--	--	U 0.003	--	--	0.217	--	--
	6/12/1996	N	9.55	6.46	1712	5.2	1151	20.07	--	599	U 0.005	--	--	--	U 0.003	,UJ4 0.001	--	0.141	--	--
	9/13/1996	N	13.19	6.84	1397	8.4	1116	20.58	U 0.05	577	U 0.005	--	--	--	U 0.003	0.002	--	0.013	--	--
	12/4/1996	N	13.25	6.53	1632	6.4	1154	24.79	--	588	U 0.005	--	--	--	U 0.003	0.004	--	0.077	--	--
	3/10/1997	N	11.08	6.67	1490	4.7	1050	18.4	--	556	U 0.005	--	--	--	U 0.003	--	--	J4 0.057	--	--
	3/10/1997	N	11.08	6.67	1490	4.7	1056	20.53	--	550	U 0.005	--	--	--	U 0.003	--	--	J4 0.057	--	--
	5/27/1997	N	9.77	6.53	1136	6.3	873	13.43	--	447	U 0.005	--	--	--	U 0.003	U 0.001	--	0.091	--	--
	5/27/1997	N	9.77	6.53	1136	6.3	898	13.4	--	441	U 0.005	--	--	--	U 0.003	U 0.001	--	0.091	--	--
	10/15/1997	N	11.98	6.53	1166	6.9	886	9.38	0.26	498	U 0.005	--	--	--	U 0.003	J4 0.005	--	J4 0.046	--	--
	12/3/1997	N	13.04	0	1299	4.3	995	11.5	--	527	U 0.005	--	--	--	U 0.003	0.001	--	0.061	--	--
	2/26/1998	N	13.32	6.98	1159	4.2	852	8.06	--	446	U 0.005	--	--	--	U 0.003	0.003	--	0.038	--	--
	11/19/1998	N	13.24	6.81	0	6.5	918	7.61	--	507	U 0.005	--	--	--	U 0.003	U 0.001	--	0.022	--	--
	6/4/1999	N	--	--	--	--	1073	12.2	--	592	U 0.005	--	--	--	U 0.003	0.002	--	0.05	--	--
	11/10/1999	N	--	--	--	--	914	9.37	--	521	U 0.005	--	--	--	U 0.003	0.009	--	0.037	--	--
	6/23/2000	N	--	--	--	--	1073	5.82	--	620	U 0.005	--	--	--	U 0.003	0.001	--	0.019	--	--
	6/28/2000	N	--	--	--	--	--	--	--	--	--	--	--	--	U 0.003	U 0.001	--	U 0.001	--	--
	12/4/2000	N	--	--	--	--	969	5.66	--	544	0.006	U 0.005	--	--	U 0.003	0.036	--	0.026	--	--
	6/15/2001	N	--	--	--	--	--	9.74	--	756	4.16	1.568	--	--	U 0.003	0.009	--	0.042	--	--
	11/29/2001	N	--	--	--	--	1475	6.74	--	806	2.06	0.26	--	--	U 0.003	0.003	--	0.064	--	--
	11/5/2002	N	--	--	--	--	1520	12.9	--	774	1.54	0.78	--	0.7	U 0.003	0.001	--	0.058	--	--
	6/30/2003	N	10.5	6.8	1570	--	1390	16	--	734	d 1.68	d 0.27	--	U 0.2	U 0.003	0.002	--	0.047	--	--
	6/10/2004	N	11.25	6.97	1635	5.6	--	--	--	--	--	--	--	--	U 0.003	0.002	--	0.02	--	--
	12/31/2004	N	12	7.12	1680	5.4	--	10.3	--	--	d 1	0.094	--	--	--	0.005	--	0.006	--	--
	6/28/2005	N	10.85	6.88	1635	4.2	--	13	0.06	--	0.93	0.311	--	--	--	U 0.001	--	0.021	--	--
	5/27/2010	N	9.56	6.6	1351	4.8	1130	2.97	0.11	--	0.29	0.072	U 0.2	--	--	--	0.009	--	0.006	--
	9/17/2010	D	11.36	6.49	1429	7.8	1170	3.66	U 0.05	--	0.37	F% 0.069	U 0.2	--	--	--	U 0.001	--	0.007	--
	9/17/2010	N	11.36	6.49	1429	7.8	1120	3.67	0.05	--	0.38	F% 0.122	U 0.2	--	--	--	0.001	--	0.007	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-91-29	6/16/2011	N	9.55	6.47	786	10.8	1060	3.12	U 0.1	--	0.34	0.098	U 0.2	--	--	--	U 0.001	--	0.008	--
	9/15/2011	N	11.56	6.4	863	7.8	1020	M% 2.99	U 0.1	--	0.34	0.088	U 0.2	--	--	--	U 0.001	--	0.007	--
	7/5/2012	D	11.3	6.38	1502	5.26	1120	d 2.58	--	--	d 0.3	d 0.11	U 0.2	--	--	--	--	--	--	--
	7/5/2012	N	11.3	6.38	773	5.26	1120	d 2.59	--	--	d 0.29	d 0.13	U 0.2	--	--	--	--	--	--	--
	9/17/2012	N	12.24	6.56	890	8.6	1090	d 2.63	--	--	0.30	0.044	U 0.2	--	--	--	--	--	--	--
	5/22/2013	N	10.77	6.49	783	5	1110	d 2.78	--	--	0.22	0.042	--	--	--	--	--	--	--	--
	10/2/2013	N	10.87	6.5	1392	8.5	1090	d 2.02	--	--	0.23	0.027	U 0.2	--	--	--	--	--	--	--
	5/28/2014	N	9.42	6.61	813	5	1150	--	--	--	0.15	0.016	U 0.2	--	--	--	--	--	--	--
	9/25/2014	D	12.08	6.65	934	9.8	1150	--	--	--	d 0.13	0.023	U 0.2	--	--	--	--	--	--	--
	9/25/2014	N	12.08	6.65	934	9.8	1150	--	--	--	dF% 0.2	0.02	U 0.2	--	--	--	--	--	--	--
	5/26/2016	D	9.88	--	--	5	1210	--	--	--	F% 0.16	0.009	U 0.2	--	--	--	--	--	--	--
	5/26/2016	N	9.88	6.81	--	5	1220	--	--	--	F% 0.19	0.009	U 0.2	--	--	--	--	--	--	--
	9/21/2016	N	12.07	5.61	1472	6.27	1260	--	--	--	0.18	0.009	U 0.2	--	--	--	--	--	--	--
	6/6/2017	N	9.39	6.9	1330	5.7	1170	--	--	--	0.23	H 0.009	U 0.2	--	--	--	--	--	--	--
	10/16/2017	D	11.8	6.8	1218	8.3	1240	--	--	--	0.20	F 0.006	U 0.2	--	--	--	--	--	--	--
	10/16/2017	N	11.8	6.8	1218	8.3	1230	--	--	--	0.20	F 0.013	U 0.2	--	--	--	--	--	--	--
	6/14/2018	N	10.11	6.83	1240	4.3	1090	--	--	--	0.21	0.035	U 0.2	--	--	--	--	--	--	--
	9/18/2018	N	11.95	6.73	1328	7.8	1200	--	na	--	L 0.16	0.012	U 0.2	--	--	--	--	--	--	--
	6/20/2019	N	10.23	6.74	1016	4.3	993	--	--	--	M% 0.17	0.004	U 0.2	--	--	--	--	--	--	--
	9/17/2019	N	11.9	6.92	1103	6.42	1020	--	--	--	0.12	U 0.004	U 0.2	--	--	--	--	--	--	--
SBB-91-30	11/14/1991	N	--	--	--	--	488	--	U 0.1	109	U 0.005	--	--	--	0.003	0.027	--	0.014	--	--
	12/17/1991	N	0	--	--	6	--	--	--	95	U 0.005	--	--	--	--	--	--	--	--	--
	1/20/1992	N	--	--	--	5.5	--	--	--	59	U 0.005	--	--	--	--	--	--	--	--	--
	2/27/1992	D	--	--	--	5.5	--	--	--	131	0.009	U 0.005	--	--	--	--	--	--	--	--
	2/27/1992	N	--	--	--	5.5	--	--	--	127	U 0.005	--	--	--	--	--	--	--	--	--
	3/17/1992	N	9.46	6.93	931	3.9	633	20	0.1	246	U 0.005	--	--	--	U 0.03	U 0.005	--	0.02	--	--
	5/12/1992	N	0	--	--	4.5	--	--	--	223	U 0.005	--	--	--	--	--	--	--	--	--
	6/18/1992	N	0	--	--	6	--	--	--	176	U 0.005	--	--	--	--	--	--	--	--	--
	7/16/1992	N	9.76	6.76	1633	7.2	1080	103	U 0.5	210	U 0.005	--	--	--	0.001	0.003	--	0.043	--	--
	8/18/1992	N	10	--	--	7	--	92	--	269	U 0.005	U 0.005	--	--	--	--	--	--	--	--
	9/25/1992	N	10	--	--	7	--	37	--	204	U 0.005	--	--	--	--	--	--	--	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-91-30	10/29/1992	N	11.03	6.78	928	7.5	658	20	U 0.5	198	U 0.005	--	--	--	0.004	U 0.003	--	0.023	--	--
	1/19/1993	N	11	--	--	7.5	--	14	--	125	U 0.005	--	--	--	--	--	--	--	--	--
	2/23/1993	N	11	--	--	4.5	--	12.37	--	85	U 0.005	--	--	--	--	--	--	--	--	--
	4/6/1993	D	9.72	6.79	950	4	742	25.5	0.41	223	U 0.005	--	--	--	0.003	U 0.001	--	0.018	--	--
	4/6/1993	N	9.72	6.79	950	4	742	25.5	0.41	223	U 0.005	--	--	--	0.003	U 0.001	--	0.018	--	--
	5/19/1993	N	7.85	--	--	3.5	--	46.2	--	359	U 0.005	--	--	--	--	--	--	--	--	--
	6/22/1993	N	7.7	--	--	5	--	24	--	372	U 0.005	--	--	--	--	--	--	--	--	--
	7/28/1993	N	8.17	7.15	960	7.5	704	13	J1,J4 0.19	259	U 0.005	--	--	--	U,J4 0.002	0.003	--	0.013	--	--
	8/19/1993	N	8.6	--	--	7	--	J4 9.4	--	208	U 0.005	--	--	--	--	--	--	--	--	--
	9/21/1993	N	8.32	--	--	7	--	5.8	--	208	U 0.005	--	--	--	--	--	--	--	--	--
	10/19/1993	N	8.36	6.79	773	7.6	576	J4 5.86	U 0.1	199	U,J2 0.005	--	--	--	U 0.005	U 0.01	--	U,J4 0.005	--	--
	12/8/1993	N	9.9	--	--	5.5	--	3.04	--	145	U 0.005	--	--	--	--	--	--	--	--	--
	3/8/1994	D	10.22	6.91	638	3.3	632	13.1	U 0.1	239	U 0.02	--	--	--	U 0.005	U 0.01	--	0.015	--	--
	3/8/1994	N	10.22	6.91	638	3.3	635	13.1	U 0.1	J4 239	U 0.02	--	--	--	U 0.005	U 0.01	--	0.015	--	--
	5/16/1994	N	7.38	6.82	1157	4.1	1030	J4 22.3	U 0.1	453	U 0.02	--	--	--	U 0.005	U 0.01	--	0.03	--	--
	8/1/1994	N	9.76	6.05	957	7.3	698	10.4	U 0.1	286	U 0.02	--	--	--	U 0.005	U 0.01	--	0.016	--	--
	12/14/1994	N	11.35	6.17	1206	6	854	18.3	U 0.1	365	U 0.02	--	--	--	U 0.005	U 0.01	--	0.028	--	--
	3/8/1995	N	10.32	6.98	957	4.6	614	8.9	U 0.1	4S 276	U 0.02	--	--	--	U 0.005	U 0.01	--	0.015	--	--
	5/18/1995	D	7.99	6.54	1309	3.6	796	11.2	U 0.1	379	U 0.02	--	--	--	U 0.005	U 0.01	--	0.016	--	--
	5/18/1995	N	7.99	6.54	1309	3.6	725	11.6	U 0.1	375	U 0.02	--	--	--	U 0.005	U 0.01	--	0.016	--	--
	8/14/1995	D	15.3	6.69	1050	8.7	J4S 832	7.82	U 0.1	424	U 0.005	--	--	--	U 0.005	U 0.01	--	0.022	--	--
	8/14/1995	N	15.3	6.69	1050	8.7	800	7.97	U 0.1	395	U 0.005	--	--	--	U 0.005	U 0.01	--	0.024	--	--
	10/8/1995	N	10.95	6.88	949	7.4	730	6.68	U 0.05	332	U 0.005	--	--	--	U 0.003	U 0.001	--	0.014	--	--
	3/4/1996	N	11.4	6.76	964	3.7	566	2.557	--	214	U 0.005	--	--	--	0.004	--	--	J4 0.0056	--	--
	6/12/1996	N	10.18	6.82	1370	4.2	932	9.8	--	462	0.01	U 0.005	--	--	U 0.003	J,UJ4 0.001	--	0.016	--	--
	9/13/1996	N	11.12	7.09	884	8.3	630	5.21	U 0.05	271	0.01	U 0.005	--	--	0.003	0.006	--	0.055	--	--
	12/4/1996	N	11.35	6.84	912	5.9	550	4.25	--	203	U 0.005	--	--	--	U 0.003	0.003	--	0.005	--	--
	3/10/1997	N	11.08	7.01	814	3.9	523	4.21	--	177	U 0.005	--	--	--	U 0.003	--	--	0.005	--	--
	5/27/1997	N	9.18	7.04	1336	4	1121	8.28	--	612	U 0.005	--	--	--	U 0.003	U 0.001	--	0.031	--	--
	10/15/1997	N	10.86	6.84	777	7.8	554	3.02	U 0.05	206	U 0.005	--	--	--	0.004	0.006	--	0.007	--	--
	12/3/1997	N	11.19	0	810	5.7	539	2.79	--	183	U 0.005	--	--	--	U 0.003	U 0.001	--	0.007	--	--
	2/25/1998	N	11.65	7.31	868	2.9	527	3.42	--	189	U 0.005	--	--	--	U 0.003	U 0.001	--	0.006	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-91-30	11/19/1998	N	11.6	6.97	0	6	564	3.39	--	222	U 0.005	--	--	--	U 0.003	U 0.001	--	0.004	--	--
	6/4/1999	N	--	--	--	--	1058	9.32	--	577	U 0.005	--	--	--	U 0.003	0.001	--	0.012	--	--
	11/10/1999	N	--	--	--	--	589	3.64	--	264	U 0.005	--	--	--	U 0.003	U 0.001	--	0.007	--	--
	6/23/2000	N	--	--	--	--	822	5.19	--	431	0.04	0.01	--	--	U 0.003	0.003	--	0.017	--	--
	12/4/2000	N	--	--	--	--	613	3.61	--	273	0.01	U 0.005	--	--	U 0.003	U 0.001	--	0.006	--	--
	6/15/2001	N	--	--	--	--	--	9.92	--	501	0.12	0.038	--	--	U 0.003	0.006	--	0.008	--	--
	11/30/2001	N	--	--	--	--	806	6.73	--	394	0.03	0.007	--	--	U 0.003	0.002	--	0.007	--	--
	11/5/2002	N	--	--	--	--	801	5.81	--	385	0.05	0.014	--	--	U 0.003	0.001	--	0.012	--	--
	6/30/2003	N	10.6	6.8	1420	6.8	1200	10.7	--	616	0.11	0.024	--	U 0.2	U 0.003	0.002	--	0.02	--	--
	6/10/2004	N	10.4	6.94	1393	5.3	--	--	--	--	--	--	--	--	U 0.003	0.001	--	0.014	--	--
	12/31/2004	N	12	7.66	1080	5.2	--	3.73	--	--	0.03	0.005	--	--	--	0.002	--	0.01	--	--
	6/28/2005	N	9.97	6.94	1504	4.1	--	12.5	U 0.05	--	0.07	0.017	--	--	--	0.001	--	0.018	--	--
SBB-94-31	6/14/1994	N	59.74	7.67	327	4.2	184	1.15	0.1	11	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	8/1/1994	N	65.32	7.47	362	6.1	168	1.1	0.4	12	U 0.02	--	--	--	U 0.005	U 0.01	--	U 0.005	--	--
	12/12/1994	N	71.81	7.32	344	4.5	169	1.18	U 0.1	8	U 0.02	--	--	--	U 0.005	0.02	--	U 0.005	--	--
	12/13/1994	N	0	7.93	606	8.5	379	U 0.05	U 0.1	199	U 0.02	--	--	--	0.055	U 0.01	--	U 0.005	--	--
	3/1/1995	N	74.17	7.81	265	4.5	145	1.2	U 0.1	4S 8	U 0.02	--	--	--	U 0.005	0.02	--	U 0.005	--	--
	5/22/1995	N	65.05	7.69	487	5	171	2.39	2.1	31	U 0.02	--	--	--	U 0.005	0.02	--	U 0.005	--	--
	8/15/1995	N	0	6.84	734	5.3	J4S 497	4.75	2.7	212	U 0.005	--	--	--	U 0.005	0.01	--	0.057	--	--
	10/8/1995	N	53.8	7.39	703	4.9	494	4.27	1.2	222	U 0.005	--	--	--	U 0.003	0.014	--	0.044	--	--
	6/30/1996	N	45	7.3	1087	2.4	837	7.65	--	441	U 0.005	--	--	--	--	--	--	--	0.08	0.03
	9/24/1996	D	66.6	7.39	768	5.1	476	4.4	U 0.05	224	U 0.005	--	--	--	U 0.003	0.049	--	0.037	--	--
	9/24/1996	N	66.6	7.39	768	5.1	480	4.36	U 0.05	223	0.007	U 0.005	--	--	U 0.003	0.056	--	0.038	--	--
	12/4/1996	N	71	7.64	597	4.4	370	3.31	--	149	U 0.005	--	--	--	U 0.003	J4 0.045	--	J4 0.016	--	--
	5/28/1997	N	30.65	7.2	892	5.2	658	5.73	--	347	U 0.005	--	--	--	U 0.003	0.074	--	0.054	--	--
	10/15/1997	N	60.41	7.14	1164	4.4	874	6.1	U 0.05	470	U 0.005	--	--	--	0.003	0.063	--	0.067	--	--
	12/3/1997	N	46.42	0	1073	5.3	868	6.17	--	466	U 0.005	--	--	--	U 0.003	0.037	--	0.083	--	--
	2/26/1998	N	56.28	7.84	990	3.6	654	U 0.01	--	331	U 0.005	--	--	--	U 0.003	0.042	--	0.051	--	--
	6/4/1998	N	37.1	7.5	400	4.6	755	4.16	--	401	U 0.005	--	--	--	U 0.003	0.081	--	0.052	--	--
	11/20/1998	N	67.52	7.49	0	4.4	578	3.98	--	296	U 0.005	--	--	--	U 0.003	0.023	--	0.04	--	--
	6/8/1999	N	--	--	--	--	411	3.43	--	172	U 0.005	--	--	--	U 0.003	0.061	--	0.028	--	--

TABLE A-4
1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

				FIELD INSTRUMENT			LABORATORY													
Station	Sample Date	Sample Type	Depth To Water (feet)	pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-94-31	11/10/1999	N	--	--	--	--	366	3.14	--	151	U 0.005	--	--	--	U 0.003	0.067	--	0.025	--	--
	10/23/2000	N	--	--	--	--	472	3.08	U 0.05	208	U 0.005	--	--	--	--	--	--	--	0.028	0.02
	12/9/2000	N	--	--	--	--	407	0.28	--	158	U 0.005	--	--	--	--	--	--	--	0.023	--
	6/15/2001	N	--	--	--	--	--	3.16	--	233	U 0.005	--	--	--	U 0.003	0.003	--	0.019	--	--
	8/31/2001	N	--	--	--	--	493	3.41	--	235	U 0.005	--	--	--	U 0.003	0.005	--	0.024	--	--
	9/30/2001	N	--	--	--	--	464	6.79	--	189	U 0.005	--	--	--	U 0.003	0.016	--	0.03	--	--
	10/30/2001	N	--	--	--	--	374	6.88	--	133	U 0.005	--	--	--	U 0.003	0.014	--	0.018	--	--
	11/29/2001	D	--	--	--	--	369	5.48	--	121	U 0.005	--	--	--	U 0.003	0.007	--	0.016	--	--
	11/29/2001	N	--	--	--	--	372	5.55	--	121	U 0.005	--	--	--	U 0.003	0.007	--	0.015	--	--
	11/29/2001	N	--	--	--	--	386	5.27	--	117	U 0.005	--	--	--	U 0.003	0.006	--	0.024	--	--
	12/17/2001	N	--	--	--	--	349	4.48	--	118	U 0.005	--	--	--	U 0.003	0.009	--	0.017	--	--
	1/23/2002	N	--	--	--	--	335	4.21	--	121	U 0.005	--	--	--	U 0.003	0.008	--	0.022	--	--
	2/18/2002	N	--	--	--	--	356	5.6	--	121	U 0.005	--	--	--	U 0.005	0.01	--	0.022	--	--
	3/26/2002	N	--	--	--	--	366	5.16	--	124	U 0.005	--	--	--	U 0.003	0.013	--	0.02	--	--
	4/23/2002	N	--	--	--	--	381	5.48	--	118	U 0.005	--	--	--	U 0.003	0.016	--	0.018	--	--
	5/28/2002	N	--	--	--	--	391	12.5	--	65	U 0.005	--	--	--	U 0.003	0.012	--	0.007	--	--
	6/13/2002	N	74.1	7.5	460	--	304	3	--	95	U 0.005	--	--	--	0.004	0.004	--	0.024	--	--
	7/11/2002	N	--	--	--	--	337	4.93	--	75	U 0.005	--	--	--	0.003	0.008	--	0.006	--	--
	8/25/2002	N	--	--	--	--	332	4.64	--	77	U 0.005	--	--	--	0.003	0.013	--	0.008	--	--
	9/18/2002	N	69.9	--	--	--	325	3.79	--	75	U 0.005	--	--	0.3	U 0.003	0.007	--	0.01	--	--
	10/25/2002	N	--	--	--	--	324	3.68	--	75	0.008	U 0.005	--	0.4	U 0.003	0.009	--	0.011	--	--
	11/5/2002	N	73.1	7.9	520	--	322	3.15	--	87	0.07	0.014	--	--	U 0.003	0.006	--	0.011	--	--
	12/10/2002	N	--	7.31	260	--	337	2.9	--	94	0.07	0.014	--	--	U 0.003	0.006	--	0.014	--	--
	1/15/2003	N	--	7.5	560	4.1	340	2.7	--	103	0.05	0.02	--	0.3	U 0.003	0.006	--	0.015	--	--
	2/13/2003	N	--	7.08	576	4.7	339	2.46	--	117	0.12	0.018	--	0.3	U 0.003	0.005	--	0.016	--	--
	3/11/2003	N	--	7.83	227	4.5	358	2.4	--	119	0.15	0.027	--	0.4	U 0.003	0.006	--	0.016	--	--
	4/30/2003	N	56.1	7.6	510	4.8	366	2.3	--	123	U 0.005	--	--	0.3	U 0.003	0.005	--	0.018	--	--
	5/21/2003	N	34.1	7.6	560	5.1	400	2.9	--	125	0.16	0.085	--	U 0.2	U 0.003	0.004	--	0.018	--	--
	6/30/2003	N	47.1	7.4	560	5.1	393	4.2	--	125	0.14	0.038	--	U 0.2	U 0.003	0.004	--	0.015	--	--
	7/25/2003	N	76.5	7.5	620	5.5	430	3.2	--	132	d 0.21	0.054	--	U 0.2	U 0.003	0.004	--	0.019	--	--
	8/22/2003	N	--	7.8	625	5.2	457	2	--	168	d 0.25	0.046	--	U 0.2	U 0.003	0.002	--	0.021	--	--
	11/13/2003	N	71.75	7.35	530	5	454	2.2	--	177	0.14	0.04	--	U 0.2	U 0.003	0.003	--	0.02	--	--

TABLE A-4

1987 to 2019 GERMAN GULCH, LAD, AND LEACH PAD AREA GROUNDWATER QUALITY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	Sample Type	Depth To Water (feet)	FIELD INSTRUMENT			LABORATORY													
				pH (su)	Specific Conductance (uS)	Temperature (ºC)	Total Dissolved Solids (mg/L)	Nitrate+Nitrite as N (mg/L)	Ammonia (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	WAD Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)	Dissolved Arsenic (mg/L)	Dissolved Copper (mg/L)	Total Recoverable Copper (mg/L)	Dissolved Selenium (mg/L)	Total Recoverable Selenium (mg/L)	Total Recoverable Zinc (mg/L)
Human Health Standards - Groundwater							**NA**	**10**	**NA**	**NA**	**0.2**	**NA**	**NA**	**NA**	**0.01**	**1.3**	**1.3**	**0.05**	**0.05**	**2**
Aquatic Life Standard		**Acute**					**NA**	**NA**	**9.65A**	**NA**	**0.022**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.014***	**NA**	**0.02**	**0.12***
		Chronic					**NA**	**NA**	**3.58B**	**NA**	**0.0052**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.009***	**NA**	**0.005**	**0.12***
SBB-94-31	6/10/2004	N	69.85	7.48	570	5.6	--	--	--	--	--	--	--	--	U 0.003	0.002	--	0.017	--	--
	12/30/2004	N	76	7.45	617	4.5	--	2.01	--	--	0.11	0.017	--	--	--	0.007	--	0.018	--	--
	6/28/2005	N	60.62	7.28	518	4.7	--	2.98	U 0.05	--	0.07	0.009	--	--	--	0.009	--	0.012	--	--
	5/27/2010	N	67.39	7.38	386	7.1	215	3.46	U 0.05	--	U 0.005	U 0.005	U 0.2	--	--	--	0.032	--	U 0.001	--
	9/17/2010	N	63.57	7.4	454	8.2	298	2.44	U 0.05	--	0.06	F% 0.018	U 0.2	--	--	--	0.002	--	0.007	--
	6/2/2011	N	63.62	7.21	252	5.4	296	1.86	U 0.1	--	M% 0.03	F 0.006	U 0.2	--	--	--	0.001	--	0.007	--
	9/15/2011	N	60.84	7.3	266	6.6	292	M% 1.71	U 0.1	--	0.06	0.008	U 0.2	--	--	--	0.002	--	0.009	--

Notes:

su - standard units
uS - microSiemens
ºC - Degrees Celsius
mg/L - milligrams per liter
WAD - weak acid dissociable
NA - MDEQ water qualitystandard does not exist for given analyte.
A - Standard calculated using pH of 7.7 with salmonids present.
B - Standard calculated using pH of 7.7 with early life stage fish present at 0-14 degrees C
* - Standard calculated using a hardness of 100 mg/L.
Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)
N - Natural sample; D- Duplicate Sample; S - Split sample.
-- - Field data not collected or parameter not analyzed.

U - Analyte concentration is less than laboratory reporting limit indicated.
M% - Matrix spike recoveries exceed acceptable limits.
F - Result exceeded quality control criteria - PQL based.
F% - Result exceeded quality control criteria - RPD based.
H - Analysis performed past recommended holding time
d - RL increased due to sample matrix
- Value exceeds MDEQ human health standard.
- Value exceeds MDEQ acute aquatic life standard.
- Value exceeds MDEQ chronic aquatic life standard.

Values exceeding aquatic life criteria are shaded for comparison purposes however aquatic life criteria and total recoverale digestion procedures do not apply to groundwater.

TABLE A-5
1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY
Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
INF-01	9/18/2006	4490	16.5	223	40.6	0.16	114	152	U 0.5	2280	3.1	0.311	--	U 0.2
	9/25/2006	--	14.7	234	42.4	--	120	--	U 1	--	2.42	--	--	--
	10/8/2006	5250	14.8	228	42	0.13	126	160	U 1	2370	3.35	0.391	--	U 0.2
	7/22/2008	5100	20	168	52.8	0.16	78.2	--	--	2510	7.38	--	--	--
	8/25/2008	4700	13.9	132	34.1	0.15	89.4	--	--	2430	7.71	--	--	--
	8/25/2008	4400	13.7	145	28.6	1.57	91.5	--	--	2430	0.784	--	--	--
	9/8/2008	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/10/2008	--	--	--	--	--	--	--	--	--	--	--	--	--
	7/30/2009	4983	16.8	110	--	0.156	88	175	31.2	2630	1.625	--	0.02	--
	9/16/2009	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/17/2010	--	19	73	--	--	--	--	--	2800	4.9	0.374	0.32	--
	6/25/2010	--	16.3	64.9	--	--	--	--	--	--	3.75	0.228	U 0.061	--
	6/29/2010	5300	17.6	91	27	1.57	66	220	0.3	3000	5.4	0.317	--	1.4
	7/7/2010	5140	14	67	--	--	--	--	--	2800	3.85	0.155	--	--
	7/14/2010	5180	15.4	69	--	--	--	--	--	2900	4.18	0.198	U 0.061	--
	7/22/2010	5250	14.8	67	--	--	--	--	--	3000	4.09	0.195	U 0.2	--
	7/29/2010	1000	15.3	64	16	0.05	120	180	0.4	2900	3.99	0.307	--	0.53
	8/3/2010	5230	15.4	65	--	--	--	--	--	2900	4.09	0.292	0.34	--
	8/10/2010	5230	15.6	63	--	--	--	--	--	2800	3.97	0.28	0.26	--
	8/18/2010	4840	15.9	59.7	--	--	--	--	--	2800	3.69	0.137	U 0.2	--
	8/24/2010	5240	15.6	68.6	17.4	0.05	97	230	0.4	2900	4.01	0.305	--	U 0.2
	8/31/2010	5410	15.3	66.3	--	--	--	--	--	3000	3.76	0.29	0.22	--
	9/8/2010	5470	15.5	69.9	--	--	--	--	--	3000	3.99	0.264	0.21	--
	9/16/2010	5730	16.5	87.3	--	--	--	--	--	3300	5	0.5	0.29	--
	9/17/2010	5530	16	80.3	17.7	0.04	89	250	U 2	3200	4.6	0.199	--	0.57
	9/30/2010	6030	17.5	86.1	--	--	--	--	--	3400	3.6	0.34	U 0.2	--
	10/17/2010	5870	18.2	2.1	21	0.05	72	260	0.3	3000	5.5	0.31	--	0.67
	6/15/2011	6100	16.3	62.4	--	--	--	--	--	3100	4.7	0.379	0.31	--

TABLE A-5

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
INF-01	7/5/2011	5520	14	74.5	13.2	0.04	110	240	0.3	3000	4.2	0.19	--	0.51
	7/14/2011	5340	14.4	69.6	--	--	--	--	--	5900	3.4	0.241	0.24	--
	7/29/2011	5610	14.7	69.5	10.8	0.05	130	190	0.4	2500	2.4	0.2	--	0.42
	8/10/2011	5490	15	70.2	--	--	--	--	--	2800	3.7	0.282	U 0.2	--
	8/24/2011	5440	10	72.2	11	19.3	110	240	0.4	2700	3.37	0.316	--	U 0.2
	9/9/2011	5750	16.7	69.8	--	--	--	--	--	3300	2	1.46	U 0.2	--
	9/29/2011	6050	15.4	86.2	13	0.03	67	300	0.4	3200	3.89	0.298	--	0.32
	10/19/2011	6130	15	86.8	--	--	--	--	--	3300	3.4	0.34	U 0.2	--
	11/3/2011	6800	17.1	98.4	14.2	0.04	56	390	0.3	3300	3.7	0.23	--	0.46
	6/27/2012	6680	13	110	11.8	0.06	51	500	0.3	3400	6.2	0.74	--	0.35
	7/16/2012	6480	15.3	83	--	--	--	--	--	3000	3.8	0.31	U 0.2	--
	7/29/2012	6170	15.8	81.6	8.3	0.04	75	360	0.4	3000	3.24	0.49	--	0.46
	8/13/2012	6400	15.3	81	--	--	--	--	--	3100	3.1	0.21	U 0.2	--
	8/27/2012	7590	15.5	82.8	8.7	0.04	81	410	0.4	3200	1.9	0.37	--	0.32
	9/10/2012	6950	15.1	112	--	--	--	--	--	3600	3.6	0.53	U 0.2	--
	9/27/2012	9300	16.9	124	14.5	0.05	82	550	U 1	3600	3.8	0.48	--	0.4
	10/11/2012	8680	17.3	149	--	--	--	--	--	3700	6.1	0.7	U 0.2	--
	10/18/2012	9070	17.9	178	21.3	0.06	75	820	0.4	4100	5.9	0.6	--	0.51
	7/12/2013	8480	18.7	170	--	--	--	--	--	3500	5.7	0.074	--	--
	7/25/2013	8870	19	180	27.9	0.09	100	870	0.4	3800	7	0.142	--	0.41
	8/8/2013	9510	20	189	--	--	--	--	--	4200	0.68	0.059	--	--
	8/26/2013	9950	21	217	32.4	0.1	86	1400	0.4	5300	7.8	0.06	--	0.58
	9/5/2013	10400	22	265	--	--	--	--	--	4600	10.6	0.06	--	--
	8/11/2014	7350	d 13.7	d 117	d 13	0.08	130	520	0.3	d 2700	--	0.052	--	0.64
	9/4/2014	9200	d 14.7	d 198	d 22.7	0.12	110	730	0.5	d 3400	--	0.061	--	0.75
	9/15/2014	9000	d 16.8	d 162	--	--	--	--	--	d 3400	d 5.7	0.049	U 0.2	--
	10/1/2014	10220	d 18.8	d 198	Ud 0.02	0.13	110	890	0.4	d 4000	d 6.5	0.039	--	0.85
	10/15/2014	11900	23	d 253	--	--	--	--	--	d 4700	d 2.7	0.056	U 0.2	--
	10/31/2014	12100	d 25	d 310	UdH 0.05	0.16	85	d 1200	0.4	d 3800	d 7.5	0.052	--	1.3

TABLE A-5
1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY
Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
INF-01	8/18/2015	11500	23	170	16	0.14	150	1250	0.4	3520	4.9	0.14	--	1.2
	8/25/2015	13200	--	--	--	--	390	1000	0.3	5200	--	--	--	--
	9/4/2015	--	--	--	--	--	--	--	--	--	--	--	--	--
	10/21/2015	7580	17.6	100	8.9	0.13	110	603	0.4	3860	2.45	0.023	--	0.51
	8/2/2016	d 9140	17.6	104	3.36	0.16	160	780	0.4	d 4550	0.85	0.023	--	0.62
	10/18/2016	7810	21	36.1	3.64	0.05	160	609	0.4	d 4140	1.43	0.008	--	0.4
	6/28/2017	7640	18.5	28.8	1.59	0.09	140	670	0.4	4000	1.18	0.175	--	0.5
	7/27/2017	--	--	--	--	--	--	520	--	3700	--	--	--	--
	8/17/2017	--	--	--	--	--	--	--	--	4020	--	--	--	--
	9/10/2017	--	--	--	--	--	--	--	--	4120	--	--	--	--
	9/10/2017	8220	18	7.04	2.58	0.08	160	592	0.4	4130	1.03	0.139	--	0.4
	6/15/2018	8140	d 17	d 3.79	0.4	0.1	160	629	0.4	d 3850	d 0.78	0.055	--	0.51
	9/6/2018	--	--	--	--	--	--	--	--	d 4640	--	--	--	--
	10/9/2018	7740	d 18	0.03	UH 0.01	0.09	190	525	0.4	d 4150	d 0.71	0.031	--	2.3
	5/31/2019	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/6/2019	d 6950	d 15.3	U 0.01	--	0.08	d 220	450	0.4	3780	d 0.5	0.004	--	-- 1
	6/20/2019	d 6510	d 14.2	U 0.01	U 0.01	--	200	447	0.4	d 4070	--	--	--	--
	7/1/2019	6660	d 14.6	U 0.01	U 0.01	--	d 210	382	0.4	3720	--	--	--	--
	7/17/2019	d 6220	d 15	U 0.01	U 0.01	--	220	422	0.4	3790	--	--	--	--
	8/21/2019	d 5930	d 17.4	U 0.01	U 0.01	--	d 220	472	0.3	d 4270	d 0.78	0.094	--	--
	10/7/2019	d 8110	d 19	U 0.05	0.02	0.1	d 210	534	0.4	4150	d 0.6	0.004	--	2.8
INF-02	8/25/2015	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/4/2015	--	--	--	--	--	--	--	--	--	--	--	--	--
INF-03	9/4/2015	--	--	--	--	--	--	--	--	--	--	--	--	--
PAD SOLUTION	7/22/2002	--	27.6	--	--	--	70	--	--	2480	9	0.85	--	--
	8/1/2002	6070	29.5	252	65.2	0.07	--	--	--	2570	8.5	0.6	--	0
	9/23/2002	5850	2.4	170	58.4	0.07	--	--	--	2660	14.6	3.26	--	--

TABLE A-5

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
PAD SOLUTION	6/4/2003	--	--	--	--	--	--	--	--	--	1.35	--	--	--
	8/7/2003	5030	26.5	104	H 41.2	0.05	--	175	0.26	2540	9.5	0.61	--	19.4
	3/11/2004	5210	24	76.9	18.2	0.42	127	315	--	2520	5.8	0.7	--	1.5
	5/20/2004	--	--	--	--	--	119	--	--	--	5.5	1.76	--	--
	6/11/2004	--	24.8	206	--	--	306	--	--	2540	4.9	0.171	--	1.4
	7/19/2004	--	--	176	--	--	--	--	--	2510	6.3	0.468	--	1.3
	9/28/2004	--	--	261	--	--	--	--	--	2410	5.4	0.75	--	--
	10/29/2004	--	27	268	--	--	205	--	--	2450	5.6	0.55	--	--
	12/31/2004	--	27.5	204	--	--	112	--	--	2510	6.3	0.6	--	--
	2/1/2005	5460	26.6	216	50	--	92	--	--	2540	6.2	0.69	--	2.8
	3/29/2005		22.1	206	--	--	113	--	--	2500	6	0.55	--	--
	5/31/2005	--	--	157	42.7	0.116	--	--	--	--	7.3	0.382	--	--
	6/21/2005	--	22	150	40.8	--	62	--	--	2540	7.8	0.37	--	--
	7/28/2005	--	22.2	120	37.4	--	70	--	--	2540	--	--	--	--
	9/28/2005	4820	30.2	--	62.6	--	105	--	--	2680	9.3	0.582	--	1.9
PAD SOLUTION SUMP1	8/16/2005	--	28.7	133	44.7	--	65	--	--	2490	7.2	0.276	--	--
	9/18/2006	4490	16.5	223	40.6	0.16	114	152	U 0.5	2280	3.1	0.311	--	U 0.2
	9/25/2006	--	14.7	234	42.4	--	120	--	U 1	--	2.42	--	--	--
	10/8/2006	5250	14.8	228	42	0.13	126	160	U 1	2370	3.35	0.391	--	U 0.2
	7/22/2008	5100	20	168	52.8	0.16	78.2	--	--	2510	7.38	--	--	--
	8/25/2008	4700	13.9	132	34.1	0.15	89.4	--	--	2430	7.71	--	--	--
	9/10/2008	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/27/2010	3660	35	23.7	0.5	0.02	M% 57	120	0.2	2200	0.076	0.013	--	U 0.2
	9/16/2010	3600	6	6.01	2.2	0.03	240	80	U 2	2500	0.357	0.076	--	U 0.2
	6/2/2011	2730	6.4	3.12	0.37	U 0.01	F% 25	58	0.2	1700	F% 0.054	F% 0.019	--	U 0.2
	6/2/2011	2640	7	2.8	0.44	U 0.01	F% 34	61	0.2	1700	F% 0.148	F% 0.075	--	U 0.2
	9/14/2011	3560	7.2	18.1	7	0.05	M% 260	86	M% 0.4	2200	0.33	F% 0.18	--	0.39
	10/2/2013	8730	d 21	d 190	d 22.1	0.14	63	dF% 1100	d 0.4	d 4100	F%H 7.1	d 0.294	--	1.4

TABLE A-5

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY

Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
PAD SOLUTION SUMP1	5/28/2014	7820	d 17	--	--	0.02	58	670	d 0.4	d 3000	dH 0.26	0.087	--	0.31
	5/28/2014	F% 5540	d 17	--	--	0.02	51	F% 460	d 0.4	d 2700	d 0.26	0.08	--	F 0.65
	4/13/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/26/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/8/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/21/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/9/2019	--	--	--	--	--	--	--	--	--	--	--	--	--
PAD SOLUTION SUMP3A	8/16/2005	--	24.7	199	4.59	--	244	--	--	1890	3.27	0.071	--	--
	5/27/2010	3900	35	26.9	1.58	0.5	M% 1400	93	0.2	1400	1.16	0.146	--	0.64
	9/16/2010	10100	27	184	35	0.73	120	460	81	5500	7.4	0.44	--	0.88
	6/2/2011	3370	10.9	88.7	6.2	0.14	F% 210	170	0.5	1700	F% 0.96	F% 0.076	--	0.31
	9/14/2011	8500	25	124	20	0.66	M% 140	430	M% 0.6	4800	5.5	F% 2.01	--	0.57
	9/14/2011	8670	25	129	19	0.63	M% 140	420	M% 0.6	4600	5.5	F% 1.58	--	0.64
	6/26/2012	6970	17.5	121	1.5	0.58	240	540	0.7	4700	1.31	0.38	--	0.23
	9/17/2012	8740	d 15.8	d 132	dH 13.2	d 0.22	84	d 540	d 0.5	d 4200	d 6.1	d 0.31	--	0.55
	5/22/2013	8500	d 15	d 116	d 2.74	0.54	250	d 440	0.6	d 2800	d 2.58	0.263	--	0.52
	10/2/2013	6160	d 13	d 57.5	1.86	0.28	320	dF% 330	d 0.8	d 3600	F%H 1.99	0.26	--	0.28
	10/2/2013	5150	d 13.1	d 57.6	d 2.14	0.28	300	dF% 260	d 0.8	d 3400	F%H 2.92	0.294	--	0.27
	5/28/2014	F% 5190	d 12	--	--	0.19	380	F% 56	d 0.7	d 3100	d 1.51	0.114	--	F 0.85
	9/25/2014	4820	d 9.1	--	--	0.08	360	44	d 1	d 3300	d 0.17	0.034	--	0.25
	8/26/2015	d 5710	d 20	0.83	0.42	0.21	410	52	0.9	d 3490	d 0.18	0.041	--	0.28
	4/13/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/27/2016	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-5
1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY
Beal Mountain Mine

Station	Sample Date	LABORATORY												
		Total Dissolved Solids (mg/L)	Ammonia (mg/L)	Nitrate+Nitrite as N (mg/L)	Nitrite (mg/L)	Total Phosphorus (mg/L)	Total Alkalinity (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Sulfate (mg/L)	Total Cyanide (mg/L)	Weak Acid Dissociable Cyanide (mg/L)	Free Cyanide (mg/L)	Thio-cyanate (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**10**	**1**	**NA**	**NA**	**NA**	**4**	**NA**	**0.2**	**NA**	**NA**	**NA**
Aquatic Life Standard	**Acute**	**NA**	**9.65A**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.022**	**NA**	**NA**	**NA**
	Chronic	**NA**	**3.58B**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.0052**	**NA**	**NA**	**NA**
PAD SOLUTION SUMP3A	5/4/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/26/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/8/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/17/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/21/2016	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/9/2019	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

mg/L - milligrams per liter
A - Standard calculated using German Gulch receiving water pH of 7.7 with salmonids present.
B - Standard calculated using German Gulch receiving water pH of 7.7 with early life stage fish present at 0-14 degrees C.
NA - Standard does not exist for given analyte.
Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)
N - Natural sample; D- Duplicate Sample; S - Split sample.
-- - Field data not collected or parameter not analyzed.
U - Analyte not detected above the practical quantitation limit (PQL).
M% - Matrix spike recoveries exceed acceptable limits.

J - Estimated value - the result is greater than method detection limit but less than the practical quantitation limit (PQL).
F - Result exceeded quality control criteria - PQL based.
F% - Result exceeded quality control criteria - RPD based.
d - RL increased due to sample matrix
H - Analysis performed past recommended holding time
- Value exceeds human health standard MDEQ CIRCULAR DEQ-7 (May 2017).
- Value exceeds acute aquatic life standard MDEQ CIRCULAR DEQ-7 (May 2017).
- Value exceeds chronic aquatic life standard MDEQ CIRCULAR DEQ-7 (May 2017).

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

Station	Sample Date	LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
		Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
INF-01	9/18/2006	706	19.5	16.8	784	0.166	0.016	U 0.0002	0.0901	1.02	U 0.0002	0.165	U 0.003	0.36	U 0.0001	4.04
	9/25/2006	--	--	--	--	0.158	--	--	--	--	--	--	--	0.343	--	4.25
	10/8/2006	755	17.2	15.1	716	0.176	0.0176	U 0.0005	0.101	1.14	U 0.0002	0.197	U 0.003	0.385	U 0.0002	4.21
	7/22/2008	--	--	--	--	0.175	0.0159	--	0.227	1.6	--	0.0812	--	0.313	--	3.94
	8/25/2008	--	--	--	--	0.154	0.0158	--	0.0609	1.5	--	0.12	--	0.321	--	3.88
	8/25/2008	--	--	--	--	0.159	0.004	--	0.0554	1.6	--	0.321	--	0.313	--	3.9
	9/8/2008	--	--	--	--	--	--	--	--	1.42	--	0.461	--	--	--	--
	9/10/2008	--	--	--	--	--	--	--	--	1.44	--	0.19	--	--	--	--
	7/30/2009	--	--	--	--	0.211	0.0202	--	0.0571	1.93	--	0.14	--	J 0.305	--	4.03
	9/16/2009	--	--	--	--	--	--	--	--	1.54	--	0.122	--	--	--	--
	6/17/2010	641	--	--	--	--	--	--	0.027	--	--	--	--	0.243	--	--
	6/25/2010	--	--	--	--	--	--	--	0.045	--	--	--	--	0.186	--	--
	6/29/2010	676	11	17	873	0.224	0.019	0.0002	0.06	1.73	U 0.0001	0.08	U 0.002	0.25	U 0.0005	4.4
	7/7/2010	124	--	--	--	--	--	--	0.039	--	--	--	--	0.174	--	--
	7/14/2010	621	--	--	--	--	--	--	0.018	--	--	--	--	0.189	--	--
	7/22/2010	645	--	--	--	--	--	--	0.024	--	--	--	--	0.217	--	--
	7/29/2010	644	18	15	804	0.196	0.018	0.0003	0.03	1.26	U 0.0001	0.12	U 0.002	0.169	U 0.0005	4.1
	8/3/2010	616	--	--	--	--	--	--	0.026	--	--	--	--	0.164	--	--
	8/10/2010	599	--	--	--	--	--	--	0.02	--	--	--	--	0.165	--	--
	8/18/2010	658	--	--	--	--	--	--	0.019	--	--	--	--	0.157	--	--
	8/24/2010	648	15	16	894	0.208	0.019	0.0002	0.02	1.34	U 0.0001	0.09	U 0.002	0.175	U 0.0005	4.3
	8/31/2010	644	--	--	--	--	--	--	0.019	--	--	--	--	0.16	--	--
	9/8/2010	615	--	--	--	--	--	--	0.025	--	--	--	--	0.158	--	--
	9/16/2010	713	--	--	--	--	--	--	0.01	--	--	--	--	0.202	--	--
	9/17/2010	749	16	16	1070	0.236	0.019	0.0002	0.02	1.33	U 0.0001	0.08	0.002	0.188	U 0.0005	4.2
	9/30/2010	668	--	--	--	--	--	--	0.02	--	--	--	--	0.198	--	--
	10/17/2010	686	13	17	1040	0.248	0.019	0.0003	0.05	1.53	U 0.0001	0.06	U 0.002	0.196	U 0.0005	4.4
	6/15/2011	698	--	--	--	--	--	--	0.04	1.53	--	--	--	0.221	--	--
	7/5/2011	660	16	18	982	0.215	0.019	0.0003	0.05	1.23	U 0.0001	0.1	U 0.002	0.161	U 0.005	4.1

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

		LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
Station	Sample Date	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
INF-01	7/14/2011	612	--	--	--	--	--	--	0.03	1.16	--	--	--	0.151	--	--
	7/29/2011	633	19	17	939	0.221	0.017	0.0003	0.04	1.05	U 0.0001	0.13	U 0.002	0.132	U 0.005	3.8
	8/10/2011	629	--	--	--	--	--	--	0.05	1.07	--	--	--	0.146	--	--
	8/24/2011	625	18	17	966	0.222	0.02	0.0003	0.04	0.97	U 0.0001	0.11	U 0.002	0.128	U 0.005	4.1
	9/9/2011	663	--	--	--	--	--	--	0.05	1.05	--	--	--	0.147	--	--
	9/29/2011	675	14	19	1130	0.262	0.02	0.0003	0.05	1.21	U 0.0001	0.07	U 0.002	0.166	U 0.005	4.1
	10/19/2011	702	--	--	--	--	--	--	0.06	0.95	--	--	--	0.155	--	--
	11/3/2011	724	14	20	1270	0.26	0.022	0.0003	0.02	1.21	U 0.0001	0.05	U 0.002	0.176	U 0.005	4.6
	6/27/2012	710	15	19	1380	0.275	0.024	0.0007	0.124	1.14	--	0.068	--	0.204	U 0.0005	4.67
	7/16/2012	645	--	--	--	--	--	--	0.048	1.01	--	--	--	0.136	--	--
	7/29/2012	668	14	18	1220	0.28	U 0.05	U 0.001	0.044	1.11	--	0.064	--	0.151	U 0.001	4.62
	8/13/2012	639	--	--	--	--	--	--	0.043	0.96	--	--	--	0.128	--	--
	8/27/2012	685	16.7	19	1310	0.264	U 0.05	U 0.001	U 0.049	U 0.95	--	0.056	--	0.13	U 0.001	4.69
	9/10/2012	733	--	--	--	--	--	--	0.054	1.09	--	--	--	0.166	--	--
	9/27/2012	731	15	22	1610	0.245	U 0.05	U 0.001	0.047	1.37	--	0.065	--	0.184	U 0.001	5.87
	10/11/2012	815	--	--	--	--	--	--	0.05	1.74	--	--	--	0.239	--	--
	10/18/2012	818	19	24	1870	0.248	U 0.05	U 0.001	0.057	1.92	--	0.064	--	0.254	U 0.001	6.62
	7/12/2013	702	--	--	--	--	--	--	0.049	1.83	--	--	--	0.22	--	--
	7/25/2013	766	18	24	1990	0.251	0.04	0.0011	0.09	2.07	--	0.118	--	0.259	U 0.0007	5.96
	8/8/2013	793	--	--	--	--	--	--	0.103	2.09	--	--	--	0.242	--	--
	8/26/2013	771	15.5	26	2160	0.298	0.042	0.0012	0.1	2.43	--	0.076	--	0.291	U 0.0005	6.59
	9/5/2013	848	--	--	--	--	--	--	0.11	2.73	--	--	--	0.341	--	--
	8/11/2014	575	24	18	1500	0.204	0.025	0.001	0.107	1.23	--	0.185	--	0.142	U 0.0005	4.74
	9/4/2014	620	d 22.8	23	1940	0.266	0.036	0.0011	0.074	1.73	--	0.168	--	0.202	U 0.0005	d 5.36
	9/15/2014	672	--	--	--	--	--	--	0.107	1.98	--	--	--	0.216	--	--
	10/1/2014	719	25	25	2210	0.281	0.042	d 0.0013	0.119	2.32	--	0.148	--	0.255	U 0.0005	5.98
	10/15/2014	759	--	--	--	--	--	--	0.086	2.71	--	--	--	0.303	--	--
	10/31/2014	754	20	28	2820	0.348	0.054	d 0.0018	0.118	2.85	--	0.091	--	0.315	U 0.0005	7.27
	8/18/2015	605	24.1	27	2710	0.29	0.043	0.0019	0.325	2.48	--	0.143	--	0.298	U 0.0005	6.38
	8/25/2015	887	63	32	--	--	--	--	--	1.92	--	0.75	--	--	--	--

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

Station	Sample Date	LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
		Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
INF-01	9/4/2015	--	--	--	--	--	--	--	--	1.39	--	--	--	--	--	--
	10/21/2015	579	31.5	24	1950	0.472	0.03	0.0146	0.072	1.21	--	0.132	--	0.104	U 0.0005	4.89
	8/2/2016	511	38.7	23	1960	0.259	0.034	0.0062	0.17	0.63	--	0.265	--	0.107	U 0.0005	5.38
	10/18/2016	587	47	23	1780	0.304	0.035	0.0012	0.06	0.52	--	0.234	--	0.072	U 0.001	5.24
	6/28/2017	560	52.6	23	1780	0.221	0.029	0.0013	0.07	0.31	--	0.24	--	0.054	U 0.0005	5
	7/27/2017	--	--	--	--	--	--	--	--	0.35	--	--	--	--	--	--
	8/17/2017	552	--	--	--	--	--	--	--	0.34	--	--	--	--	--	--
	9/10/2017	528	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/10/2017	548	53.7	24	1900	0.282	0.032	0.0012	0.06	0.37	--	0.26	--	0.049	U 0.0005	5.5
	6/15/2018	525	d 55.2	23	1760	0.236	0.03	0.0016	0.08	0.3	--	0.29	--	0.047	U 0.0005	5.3
	9/6/2018	555	--	--	--	--	--	--	--	0.79	--	0.902	--	--	--	--
	10/9/2018	569	d 61.1	23	1750	0.252	0.031	0.0009	0.02	0.33	--	0.5	--	0.031	U 0.0005	5.2
	5/31/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/6/2019	513	65	20	1510	0.197	0.027	0.0009	0.016	0.23	--	0.542	--	0.023	0.0005	4.43
	6/20/2019	510	L 64.2	22	1510	--	0.027	--	--	0.26	--	0.59	--	--	--	4.7
	7/1/2019	d 512	d 58.6	21	1460	--	0.026	--	--	0.28	--	0.59	--	--	--	5
	7/17/2019	478	d 56.6	21	d 1510	--	0.027	--	--	0.3	--	0.56	--	--	--	4.7
	8/21/2019	497	62	24	1660	0.241	0.03	0.0006	U 0.01	0.32	--	0.58	--	0.024	--	4.9
	10/7/2019	527	L 74.6	24	1820	0.258	0.035	d 0.0009	U 0.01	0.36	--	0.62	--	0.026	U 0.0005	5.51
INF-02	8/25/2015	--	--	--	--	--	--	--	--	1.89	--	--	--	--	--	--
	9/4/2015	--	--	--	--	--	--	--	--	1.41	--	--	--	--	--	--
INF-03	9/4/2015	--	--	--	--	--	--	--	--	1.28	--	--	--	--	--	--
PAD SOLUTION	7/22/2002	--	--	--	--	0.158	--	--	0.19	--	--	--	--	--	--	--
	8/1/2002	727	7	--	832	0.137	--	--	0.13	4.03	--	--	--	0.58	--	--
	9/23/2002	724	6	--	862	0.158	U 0.1	--	0.42	4.13	U 0.001	--	--	0.604	--	4.6
	6/4/2003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	8/7/2003	586	3	15	685	0.171	U 0.1	U 0.001	0.34	3.01	U 0.001	0.02	U 0.01	0.329	U 0.005	3.8

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

		LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
Station	Sample Date	Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
PAD SOLUTION	3/11/2004	676	13	21	721	0.208	0.019	0.0007	0.177	1.78	U 0.0006	0.125	U 0.003	0.534	--	3.9
	5/20/2004	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/11/2004	--	--	--	--	0.173	--	--	0.131	--	--	--	--	0.409	--	--
	7/19/2004	--	--	--	--	0.17	--	--	0.149	--	--	--	--	0.366	--	--
	9/28/2004	--	--	--	--	--	--	--	0.176	--	--	--	--	0.37	--	--
	10/29/2004	--	--	--	--	0.13	--	--	0.102	--	--	--	--	0.291	--	--
	12/31/2004	--	--	--	--	0.144	--	--	0.176	--	--	--	--	0.27	--	--
	2/1/2005	--	--	--	--	0.154	--	--	0.218	--	--	--	--	0.352	--	--
	3/29/2005	--	--	--	--	0.06	--	--	0.086	--	--	--	--	0.303	--	--
	5/31/2005	--	--	--	--	--	--	0.0004	0.093	--	--	--	--	0.317	--	--
	6/21/2005	--	--	--	--	0.16	--	U 0.001	0.083	--	--	--	--	0.284	--	--
	7/28/2005	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/28/2005	--	--	--	--	0.282	--	U 0.001	0.17	4.17	--	--	--	0.37	--	--
PAD SOLUTION SUMP1	8/16/2005	--	--	--	--	0.224	--	--	0.057	2.27	--	--	--	0.349	--	--
	9/18/2006	706	19.5	16.8	784	0.166	0.016	U 0.0002	0.0901	1.02	U 0.0002	0.165	U 0.003	0.36	U 0.0001	4.04
	9/25/2006	--	--	--	--	0.158		--	--	--	--	--	--	0.343	--	4.25
	10/8/2006	755	17.2	15.1	716	0.176	0.0176	U 0.0005	0.101	1.14	U 0.0002	0.197	U 0.003	0.385	U 0.0002	4.21
	7/22/2008	--	--	--	--	0.175	0.0159	--	0.227	1.6	--	0.0812	--	0.313	--	3.94
	8/25/2008	--	--	--	--	0.154	0.0158	--	0.0609	1.5	--	0.12	--	0.321	--	3.88
	9/10/2008	--	--	--	--	--	--	--	--	1.44	--	0.19	--	--	--	--
	5/27/2010	322	17	16	609	U 0.005	U 0.005	0.0004	U 0.01	2.61	U 0.0001	0.32	U 0.002	0.012	U 0.0005	1.4
	9/16/2010	618	57	14	540	0.06	0.016	0.0004	0.02	1	U 0.0001	0.34	U 0.002	0.035	U 0.0005	3.5
	6/2/2011	337	40	12	428	U 0.005	0.011	F% 0.0058	U 0.01	12.2	U 0.0001	F% 2.16	U 0.002	F 0.012	U 0.0005	F% 2
	6/2/2011	321	34	12	401	U 0.005	0.012	F% 0.0023	0.02	12.8	U 0.0001	F% 1.48	U 0.002	F 0.015	U 0.0005	F% 2.7
	9/14/2011	560	59	15	475	0.134	0.018	F% 0.0003	0.03	0.75	--	0.26	--	0.069	U 0.0005	3.5
	10/2/2013	865	18	27	2520	d 0.234	d 0.033	F% 0.0015	0.05	dF% 6.18	--	0.23	--	d 0.354	U 0.0005	6.69
	5/28/2014	441	19	20	1020	0.006	0.017	0.0030	0.043	13.9	--	1.19	--	0.063	U 0.0005	3.65
	5/28/2014	461	21	20	1050	0.007	0.017	F% 0.0448	0.045	14.4	--	1.28	--	d 0.061	d 0.0007	3.47
	4/13/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

Station	Sample Date	LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
		Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
PAD SOLUTION SUMP1	4/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/26/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/8/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/21/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/9/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PAD SOLUTION SUMP3A	8/16/2005	--	--	--	--	0.02	--	--	0.012	1.29	--	--	--	0.379	--	--
	5/27/2010	224	18	34	554	0.148	0.014	0.0041	0.35	41.6	0.0017	2.69	0.003	0.076	U 0.0005	1.7
	9/16/2010	1410	26	28	1700	0.436	0.039	0.0005	0.03	2.87	0.0001	0.15	0.002	0.361	U 0.0005	7.7
	6/2/2011	300	17	16	744	0.201	0.021	F% 0.0004	0.03	1.12	U 0.0001	F% 0.65	U 0.002	F 0.218	U 0.0005	F% 4
	9/14/2011	1230	32	30	1690	0.423	0.034	F% 0.0005	0.05	1.78	--	0.16	--	0.257	U 0.0005	7.2
	9/14/2011	1240	32	30	1680	0.423	0.037	F% 0.0006	0.05	1.89	--	0.17	--	0.252	U 0.0005	7.2
	6/26/2012	505	23	24	1530	0.358	0.02	0.0007	0.01	1.27	--	0.21	--	0.139	U 0.0005	4.06
	9/17/2012	798	20	25	1790	0.307	0.031	0.0006	0.068	1.48	--	0.091	--	0.2	U 0.0005	6.01
	5/22/2013	601	21	26	1680	0.332	0.022	0.0004	U 0.01	2.52	--	0.18	--	0.156	U 0.0005	4.58
	10/2/2013	548	78	24	1430	0.158	0.025	F% 0.0005	0.03	F% 0.82	--	2.48	--	0.095	U 0.0005	4.61
	10/2/2013	533	78	24	1410	0.197	0.027	F% 0.0007	0.03	F% 1.14	--	2.06	--	0.115	U 0.0005	4.82
	5/28/2014	459	78	21	1010	0.006	0.017	F% 0.0032	0.043	13.5	--	1.18	--	0.062	U 0.0005	3.73
	9/25/2014	466	89	23	932	0.053	0.023	0.0003	0.014	0.17	--	3.84	--	0.019	U 0.0005	4.05
	8/26/2015	490	d 69	25	1360	0.241	0.027	0.0006	0.03	2.33	--	1.44	--	0.042	U 0.0005	4.5
	4/13/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/19/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/27/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/4/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/18/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/26/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	6/8/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE A-6

1995 to 2019 LEACH PAD CHEMISTRY DATA SUMMARY - Metals

Beal Mountain Mine

Station	Sample Date	LABORATORY														
		DISSOLVED				TOTAL RECOVERABLE										
		Calcium (mg/L)	Magnesium (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Cadmium (mg/L)	Copper (mg/L)	Iron (mg/L)	Mercury (mg/L)	Manganese (mg/L)	Lead (mg/L)	Selenium (mg/L)	Silver (mg/L)	Strontium (mg/L)
Human Health Standard - Groundwater		**NA**	**NA**	**NA**	**NA**	**0.01**	**1**	**0.005**	**1.3**	**NA**	**0.002**	**NA**	**0.015**	**0.05**	**0.1**	**4**
Aquatic Life Standard	**Acute**	**NA**	**NA**	**NA**	**NA**	**0.34**	**NA**	**0.0019***	**0.014***	**NA**	**0.0017**	**NA**	**0.082***	**0.02**	**0.0041***	**NA**
	Chronic	**NA**	**NA**	**NA**	**NA**	**0.15**	**NA**	**0.00072***	**0.009***	**1**	**0.0009**	**NA**	**0.0032***	**0.005**	**NA**	**NA**
PAD SOLUTION SUMP3A	6/17/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	9/21/2016	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	5/9/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

mg/L - milligrams per liter

NA - Standard does not exist for given analyte.

* - Standard based on a hardness of 100 mg/L.

Water Quality Standards from MDEQ CIRCULAR DEQ-7 (June 2019)

N - Natural Sample; D - Duplicate Sample; S - Split sample

-- - Field data not collected or parameter not analyzed.

U - Analyte not detected above the practical quantitation limit (PQL).

M% - Matrix spike recoveries exceed acceptable limits.

J - Estimated value - the result is greater than method detection limit but less than the practical quantitation limit (PQL).

F - Result exceeded quality control criteria - PQL based.

F% - Result exceeded quality control criteria - RPD based.

d - RL increased due to sample matrix

H - Analysis performed past recommended holding time

- Value exceeds human health standard MDEQ CIRCULAR DEQ-7 (May 2017).
- Value exceeds acute aquatic life standard MDEQ CIRCULAR DEQ-7 (May 2017).
- Value exceeds chronic aquatic life standard MDEQ CIRCULAR DEQ-7 (May 2017).

APPENDIX B. 2019 SAMPLING LOGS AND FIELD DATA

See Enclosed CD

10/22/18 J. Mans Clear calm 65°

1100 Arrive onsite to winterize slide dewatering system, download transducers, change batteries etc.

) RO system off ~ 1 WK

		DTW	Ducer	V	
1140	Sump-1	60.70	14.68	16.19	* TOC steel Δ
1230	Sump-3A	62.28	12.86	16.27	* TOC steel Δ
1250	SBB-88-25	15.88	13.16	16.47	* Δ
1255	LPMW-3	13.97	27.21	16.21	* Δ
1305	LPPZ-5	17.29	5.76	16.47	* Δ
1315	LPPZ-4	19.26	3.22	16.61	* Δ
1325	LPPZ-1	12.01	14.48	16.42	* Δ
1335	LPPZ-3	15.60	10.98	16.42	* Δ
1340	LPMW-5	22.62	21.57	16.34	* Δ
1355	LPMW-6	19.65	25.48	16.26	* Δ

RO treatment (~200gpm) end 10/9 10/9-10/17 ~3:09PM Sump-1 to Sump 3A to avoid freezing

* change batteries

Δ calibration OK

Took misc. photos of site

1500 Leave Site

Jm 10/22/18

5/9/19 J. Mans P. cloudy, 35°F

Light wind out of N. scattered snow showers.

1340 Arrive onsite to start dewater system and download transducers, change ducer batteries.

		DTW	Ducer	V	
1400	Sump-1	54.15	21.21	15.54	X Δ
1450	Sump-3A **	64.11	65.55	15.18	**
1515	SBB-88-25	5.28	23.63	15.75	X Δ
1525	LPMW-3	7.81	33.41	15.47	X Δ
1533	LPPZ-5	11.53	11.41	15.76	X Δ
1540	LPPZ-4	14.40	8.06	15.87	X Δ
1550	LPPZ-1	4.19	22.25	15.64	X Δ
1555	LPPZ-3	7.38	18.85	12.58	X Δ
1605	LPMW-5	21.18	23.04	15.69	X Δ
—	LPMW-6	— Not accessible			

X change batteries

Δ calibration OK

1435 Start Dewatering wells

DW-2 meter = 4314

DW-4 = 2037

** Sump-3A Reading well out of range will take ducer back to Office to trouble shoot. Unusual white and black slime on cable when pulled.

1620 LV site

Rite in the Rain

6-4-19 J. Mans clear calm 50F

0745 Arrive on site for spring site wide SW monitoring.
calibrate pH/SC meter

0810 Sample STA-2

0840 Sample STA-3B
Waste rock drain is discharging to by pass (former pump STA-4) ~~an~~ not infiltration galleries. So decided to collect opportunity sample STA-3B same location as 9/17/18. Strong flow noted from former pump STA-4 overflow directly into stream.
- NWE onsite to read meter

0900 Sample STA-3A ; Dup-1 also @ 0600

0925 Sample SPR-3
NWE off site

0940 Sample SPR-5

0950 Sample SPR-10A

1005 Sample Toe Drain
Note: very wet seep/spring just above waste rock bench above piezometers. (2nd bench from bottom). Located directly down slope of WRMW-1.

- Also found well located due North of toe drain vault in small cluster of trees on edge of main beal pit.

- Ground near one waste rock piezometer (2nd from north end) has sunken like a sink hole. hole is ~ 18" diameter x 2.5 ft deep.

1115 Sample SPR-2

1205 Sample SPR-18

1255 Sample SPR-D2

1420 Start Siphon BCDA

1440 Start siphon BCD

1450 Sample SPR-BCD

1510 Sample BCD

1550 Left site

JM 6-4-19

Rite in the Rain

6/6/19 J. Mans P. cloudy calm 50°
0800 onsite to finish sitewide SW
calibrate Hanna pH/sc.

0825 sample BCD-Barren
0940 East Vault is accessible
contains 3-4 ft of water in it
wet flowing seep ~20 ft to South
close all valves.
4" line (BCD East) shows NO pressure
No flow upon opening.
2" line (BCD-Barren) Barren drain
shows greater than 30 psi
0930 sample Barren Drain
surges

1010 Peak GW onsite to install
pump in DW-5

1045 sample BCD-A
pH 6.84 SC 907 µs Temp 8.6°C
~~2.75 gal~~
3.0 ~~43.5~~ 13.5
3.0 13.7 sec
3.0 13.4

1215 Lv site Peak GW still working
on DW-5. R. English agreed to
stay for over-sight

6-20-19 J. Mans over cast 38°F
~~on~~ 0745 onsite to complete spring
site wide GW sampling
DW-5 DW-4 DW-2 pumping

810 begin setup on SBB-91-29
0900 sample SBB-91-29
Begining to SNOW

0945 sample LPPZ-4
1220 sample LPMW 6
1335 sample LPMW-5 after going almost
dry
1400 done w/ site wide check on
RP

Rite in the Rain

6/24/19 onsite for RO restart
Sump 1 DTW @ 1020 = ~~52.70~~ gm
53.17 ft to top steel casing
pump has been off ~72 hrs
DW-2, -4, -5 are working.

7/12/19 J. Mans clear calm 60°F
0900 onsite for RO backwash
check other site wide stuff.
BWRIS Vault 4 ~50 psi in 0psi out **
*-little water in bottom likely condsate.
Vault 3 ~0 psi in 0psi out **
*
Vault 2

Vault 1 ~5psi in 0psi out **
dry. Missing lid lock bolt

Vault 5 Same as Vault 3

**System is still set to by pass discharge

DW-4 & 5 Running

Wells that need pumps pulled?
DW-9
DW-10
SBB 87-14 (?) above Minnesota Pond
SBB-87-5 (?) NW of LPMW-1
called Peak GW
They will be onsite Friday 7/19/19

Dillon Davis onsite for more RO Training

Rite in the Rain

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: Toe Drain Time: 1005

Site Name: Beal Mtn Sitewide Date: 6-4-19

Field Crew: J. Mans

Weather: clear light breeze 60°F

Discharge Summary

Total Discharge (cfs): 0.6405 CFS Meter Type: V-notch weir

287.5 gpm

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

weir reads 0.58 is almost flowing over top of weir

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna pH/SC/Temp

Calibration Info: _____

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.19	1467	7.5				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Toe Drain Sample Time: 1005

Sample Method: grab Sample Filtered?: Yes / (No)

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-10A Time: 0950

Site Name: Beal MTN Site wide Date: 6-4-19

Field Crew: J. Mans

Weather: Clear light breeze 60°F

Discharge Summary

Total Discharge (cfs): 0.1944 cfs Meter Type: V-Notch Weir

Width: 87.25 gpm Method:

Area: Spin Test:

Average Velocity: weir Reads 0.36

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/sc/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.06	476	5.6				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-10A Sample Time: 0950

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-5 Time: 0940

Site Name: Beal Mtn Sitewide Date: 6-4-19

Field Crew: J. Mans

Weather: Clear Calm 60°F

Discharge Summary

Total Discharge (cfs): N/A Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna pH/sc/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS	C				
Measure-ment	7.46	1356	6.1				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-5 Sample Time: 0940

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-3 Time: 0925

Site Name: Beal Mtn Site Wide Date: 6-4-19

Field Crew: J. Mans

Weather: Clear calm 60°F

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna pH/SC/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS					
Measure-ment	7.85	468	6.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-3 Sample Time: 0925

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STA-3A Time: 0900

Site Name: Beal Mtn site wide Date: 6-4-19

Field Crew: J. Mans

Weather: clear calm 60F

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading — feet above / below grade

Measurement Rating: Excellent ____ Good ____ Fair ____ Poor ____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna pH/sc/temp

Calibration Info: _____

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measurement	7.81	301	3.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

DUP-1 also @ 0600

Sample Summary

Sample Name: grab Sample Time: 0900

Sample Method: _____ Sample Filtered?: Yes / (No)

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STA-3B Time: 0840

Site Name: Beal Mtn Site Wide Date: 6-4-19

Field Crew: J. Mans

Weather: clear calm 50°F

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna pH/SC/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.61	400	9.4				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Low Turbidity

Sample Summary

Sample Name: STA-3B Sample Time: 0840

Sample Method: Grab Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STa-2 Time: 0810

Site Name: Beal Mtn Sitewide Date: 6/4/19

Field Crew: J. Mans

Weather: clear calm 50°F

Discharge Summary

Total Discharge (cfs): NA Meter Type: NA

Width: Method:

Area: Spin Test:

Average Velocity:

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent ____ Good ____ Fair ____ Poor ____

Flow (describe): Turbulent

Cross Section (describe): gravel cobble

Field Parameters

Instrument(s): HANNA pH/sc/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS	C				
Measure-ment	7.91	131	3.8				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Low turbidity

Sample Summary

Sample Name: STA-2 Sample Time: 0810

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: NA Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-2 Time: 1115

Site Name: Bearl Mtn Sitewide Date: 6-4-19

Field Crew: J. Mans

Weather: clear breezy 65°

Discharge Summary

Total Discharge (cfs): 0.0044 cfs Meter Type:

Width: 1.98 gpm Method: Time Vol.

Area: Spin Test:

Average Velocity: 4 Qts 30.7 sec
4 Qts 30.6 sec
4 Qts 30.5 sec
0.033 gal/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Sample at Stock Tank inlet

Instrument(s): Hanna pH/sc/Temp

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.40	239	7.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-2 Sample Time: 1115

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters: Total CN Wad CN

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft²)	Discharge (ft³/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD Time: 1510

Site Name: Beal Mtn Sitewide Date: 6-4-19

Field Crew: J. Mans

Weather: P. cloudy breezy 70°F

Discharge Summary

Total Discharge (cfs): 0.0005 Meter Type:

Width: 0.23 gpm Method: Time Vol.

Area: Spin Test:

Average Velocity: 1/2 qrt 31 sec.

Stream Information

250 ml 19 sec
250 ml 18 sec
500 ml 32 sec
1 Qrt 71 sec

Wading _____ feet above / below grade

Measurement Rating: Excellent X Good X Fair ____ Poor ____

14.25 ml/sec

Flow (describe): Pipe

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/sc/Temp

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.55	2087	9.5				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: BCD Sample Time: 1510

Sample Method: grab Sample Filtered?: Yes / (No)

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-BCD Time: 1450

Site Name: Beal Mtn Sitewide Date: 6-4-19

Field Crew: J. Mans

Weather: clear breezy 70°

Discharge Summary

Total Discharge (cfs): 0.015 cfs Meter Type:

Width: 6.84 gpm Method: Time Vol

Area: Spin Test:

Average Velocity: 2.5 Qts 5.5 sec

2.25 Qts 4.8 sec

2.5 Qts 5.6 sec

432 ml/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent X Good X Fair ____ Poor ____

Flow (describe): Sample at culvert outlet

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/SC/temp

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.85	502	6.1				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-BCD Sample Time: 1450

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-D2 Time: 1255

Site Name: Beal Sitewide Date: 6-4-19

Field Crew: Jo Mans

Weather: Clear breezy 70°

Discharge Summary

Total Discharge (cfs): 0.0668 cfs Meter Type:

Width: 30 gpm Method: Time Volume

Area: Spin Test:

Average Velocity: 4 Qts 2 sec / 2 sec / 2 sec / 0.5 gal/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/sc/Temp

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	6.30	91	3.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-D2 Sample Time: 1255

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-1B Time: 1205

Site Name: Beal Mtn site wide Date: 6-4-19

Field Crew: J. Maus

Weather: clear breezy 70°

Discharge Summary

Total Discharge (cfs): 0.0079 cfs Meter Type:

Width: 3.54 gpm Method: Time Vol.

Area: Spin Test:

Average Velocity: 5/8 Qrt 3 sec

Stream Information

3/4 Qrt 3 sec

Wading _____ feet above / below grade 3/4 Qrt 3 sec

Measurement Rating: Excellent X Good X Fair ____ Poor ____ 223.5 ml/sec

Flow (describe): Laminar

Cross Section (describe): gravel, silt, cobble

Field Parameters

Instrument(s): HaNNa pH/SC/Temp

Calibration Info: 6-4-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µs	C				
Measure-ment	7.39	141	14.8				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: SPR-1B Sample Time: 1205

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: Barren Drain Time: 0955

Site Name: Beal Mtn Date: 6-6-19

Field Crew: J. Mans

Weather: Partly cloudy calm 60 F

Discharge Summary

Total Discharge (cfs): 0.037 cfs Meter Type:

Width: 16.56 gpm Method: Time vol.

Area: Spin Test:

Average Velocity:

5 gal 18.5 sec
18.2 sec
17.7 sec
0.276 gal/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent X Good ____ Fair ____ Poor ____

Flow (describe): Pipe

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/SC/Temp

Calibration Info: 6-6-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.01	412	4.6				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Barren Drain Sample Time: 0950

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD-East

Time: 0940

Site Name: Beal Mtn Site Wide

Date: 6-6-19

Field Crew: J. Mans

Weather: clear calm 60°F

Discharge Summary

Total Discharge (cfs): NO flow

Meter Type:

Width: No Pressure

Method:

Area:

Spin Test:

Average Velocity: NO

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s):

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units						
Measure-ment							

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name:

Sample Time:

Sample Method:

Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading:

Intake Flushed?: Yes / No

Inside Gage Reading:

Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD - Barren Time: 0825

Site Name: Beal Mtn Date: 6-6-19

Field Crew: J. Mans

Weather: P. Cloudy calm 50

Discharge Summary

Total Discharge (cfs): 0.036 cfs Meter Type:

Width: 16.08 gpm Method: Time Vol.

Area: Spin Test:

Average Velocity:

4.5 gal 16.5 sec
4.5 gal 16.9 sec
4.5 gal 17.0 sec
0.268 gal/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent X Good X Fair ____ Poor ____

Flow (describe): Pool

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/SC/Temp

Calibration Info: 6-6-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µs	C				
Measure-ment	6.78	496	6.3				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: BCD - Barren Sample Time: 0825

Sample Method: grab Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD-A Time: 1045

Site Name: Beal Mtn Sitewide Date: 6-6-19

Field Crew: J. Mows

Weather: P. Cloudy Calm 5

Discharge Summary

Total Discharge (cfs): 0.0297 cfs Meter Type:

Width: 13.32 gpm Method: Time Vol.

Area: Spin Test:

Average Velocity: 3 gal 13.5 sec

13.7

13.4

0.222 gal/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent X Good ____ Fair ____ Poor ____

Flow (describe): Pipe

Cross Section (describe):

Field Parameters

Instrument(s): Hanna pH/SC/temp

Calibration Info: 6-6-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	6.84	907	8.8				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: BCD-A Sample Time: 1045

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal Sitewide Sample Date 6 / 20 / 19 Sample Time: 1335 Well ID: LPMW-5

Personnel: ~~TT~~ J. Mans Weather: Overcast snow 40° F

Casing Diameter/Type: 4" PVC Measuring Point Description: top of casing, north side

Well Depth: 50.05 Depth to Water: 17.92 Depth to Product:

Screen: Well Condition:

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y (N)

32.13 ft. water x __ gal./ft * = one casing volume ~~20.7~~ 21 gals. x 3 = purge volume 63 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time: 1253 Purge Rate (mls/pc) Pump Depth: 48

Comments:
~~145~~ HZ 139 HZ 5gal 4 min 20 sec

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW	
1253	7.40		5.0		1370		17.92	
1307	7.35		4.7		1168		35.30	
1335	7.29		5.6		1290		42.7	

Amount Purged: 30 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y (N)

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH		
SC		
DO		
ORP		

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [ ]	No [ ]	DI Water:	Yes [ ]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments: Taper off to <0.5 gpm

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal sitewide Sample Date 6 / 20 / 19 Sample Time: 1220 Well ID: LPMW-6

Personnel: J. Mans Weather: overcast 40°

Casing Diameter/Type: 4" PVC Measuring Point Description: top of casing, north side

Well Depth: 53.5 Depth to Water: 8.86 Depth to Product:

Screen: Well Condition:

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y (N)

44.54 ft. water x __ gal./ft * = one casing volume 29.1 gals. x 3 = purge volume 87 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ] Start Time: 1020 Purge Rate (mls/pc) Pump Depth: 48'

Comments: 5 gal 3 min 20 sec

150 HZ *141 HZ *

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1020	7.70		6.4		540		
1040	7.21		5.3		450		29.3
1140	7.38		7.1		507		32.80
1220	7.31		7.1		458		32.80

Amount Purged: 87 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y (N)

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [X] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	Hanna	6-20-19
SC		
DO		
ORP		

Decontamination					
Potable Water:	Yes [X]	No [ ]	10% Nitric Acid:	Yes [ ]	No [X]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [X]	Steam	Yes [ ]	No [X]

Comments:

TETRA TECH GROUNDWATER SAMPLING LOG

LPPZ-4

Project: Beal Sitewide Sample Date 6 / 20 / 19 Sample Time: 0945 Well ID: ~~LPMW-4~~

Personnel: J. Mans Weather: Overcast SNOWING 36°F

Casing Diameter/Type: 2" PVC Measuring Point Description: top of casing, north side

Well Depth: 25.25 Depth to Water: 14.97 Depth to Product:

Screen: Well Condition:

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [ ] SST Bailer [ ] Disp. Polyethylene Bailer [X] Other:
Dedicated: Y N

10.23 ft. water x __ gal./ft * = one casing volume 1.7 gals. x 3 = purge volume 5 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time: 0930 Purge Rate (mls/pc) Pump Depth:

Comments:

EVACUATION DATA

Time	pH	DO	Temp. °C	ORP	SC µs	Turbidity	DTW	
0934	7.51		4.9		715			2 gal
0939	7.52		3.7		660			3.5 gal
0945	7.39		3.6		680			5 gal

Amount Purged: 5.0 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [ ] SST Bailer [ ] Disp. Polyethylene Bailer [X] QED Low Flow [ ] Other:
Dedicated: Y N

Sample Type: [X] Natural, [X] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [X] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	Hanna	6-20-19
SC	α	α
DO		
ORP		

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [ ]	No [ ]	DI Water:	Yes [ ]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments:

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal Site wide Sample Date 6 / 20 / 19 Sample Time: 0900 Well ID: SBB-91-29

Personnel: J. Mauss Weather: overcast 38°F

Casing Diameter/Type: 4" PVC Measuring Point Description: top of casing, north side

Well Depth: 37.8 Depth to Water: 10.23 Depth to Product: ✓

Screen: Well Condition: good

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y (N)

27.57 ft. water x __ gal./ft * = one casing volume 18.0 gals. x 3 = purge volume 54 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time: 0840 Purge Rate (~~ml/pc~~) Pump Depth: 30

Comments: 244.3 HZ

5gal in 90 sec

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
0840	6.68		5.5 c		1180	Rusty	
0847	6.73		4.9 c		1066	clear	12.96
0852	6.69		4.7		1066		13.50
0900	6.74		4.3		1076	clear	13.60

20 gal
36

Amount Purged: 60 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y (N)

Sample Type: [X] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [X] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	Hanna	6-20-19
SC	✓	✓
DO		
ORP		

Decontamination					
Potable Water:	Yes [X]	No [ ]	10% Nitric Acid:	Yes [ ]	No [X]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [X]	Steam	Yes [ ]	No [X]

Comments:

6/24/19 onsite for RO restart
Sump 1 DTW @ 1020 = ~~52.10~~ 9m
53.17 ft to top steel casing
pump has been off ~72 hrs
DW-2, -4, -5 are working.

7/12/19 J. Mans clear calm 60°F
0900 onsite for RO backwash
check other site wide stuff.
BWRIS Vault 4 ~50 psi in 0 psi out **
*-little water in bottom likely condsate.
Vault 3 ~0 psi in 0 psi out **
*
Vault 2

Vault 1 ~5 psi in 0 psi out **
dry. Missing lid lock bolt

Vault 5 Same as Vault 3

**System is still set to bypass discharge

DW-4 & 5 Running

Wells that need pumps pulled?
DW-9
DW-10
SBB-87-14 (?) above Minnesota Pond
SBB-87-5 (?) NW of LPMW-1
called Peak GW
They will be onsite Friday 7/19/19

Dillon Davis onsite for more RO Training
7/17/19 S. Thornborrow, L. Caulfield, J. Mans met at FWP gate to discuss road improvements.
7/19/19 JM onsite for RO
Peak GW onsite @ 1130 to pull pumps.
1530 Peak leaving site. All four pumps pulled ~~success~~ pipe + wire left at well heads, will round up later
1545 leave site also

Jm

- Since doing removal action CERCLA will only pay for access to remedial action.
- County road portion design for 60 ton
- Plow to replace culverts and add surface mat.
- 1200 J. Dierking (TT) onsite to rev. Highwall Slide. Rite in the Rain

See bottom Next pg.

8/9/19 J. Mans overcast calm 65°F

0900 onsite to locate and label wells for surveyor.

		DTW	TD	
0915	SBB-87-06	17.44	13~~1.89~~ 20	
0930	SBB-87-07	15.10	34.36	
0950	SBB-87-05	10.39	26.04	Added cap
1000	SBB-87-03	16.07	22.35	
	SBB-87-04	45.74	136.98	Added Cap
	DW-1	>150.0'		
	DW-2	Pumping		
	DW-3	>150'	has pump	
	DW-4	Pumping		
	DW-5	Pumping		
	DW-6	>150.0'		
	DW-7	>150.0'		
	DW-8	>150.0'		Added cap
	DW-9	>150.'		Added cap
	DW-10	>150'		
1110	OW-7	113.70	136.94	1½" PVC broken ~6' down
	OW-6	>150.'		
	OW-5	>150.0'		
	OW-8	Dry	85.47	
1130	UNK-2	87.00	115.00	
	UNK-3	139.90	>150.00	

		DTW	TD
	OW-1	Dry	67.80
	UNK-7	Dry	146.60?
1230	SBB-88-19	Dry	21.95
	SBB-88-20	28.72	~~25.18~~
1247	SBB-87-08	2.54	12.06
	SBB-87-09	31.20	>150
	MB-97-01	5.18	80.90
	MB-97-02	22.11	>150.00
	SBB-87-02	6.57	105.40
	SBB-87-01	7.41	28.30
	SBB-88-15	12.68	? pump obstruction?
	SBB-88-16	13.85	21.04

1417 Leave site

8/19/19 J. Mans clear breezy 80°

1700 TD

DW-1 297.73 Bent hole out of alignment

8/2/19 @ 1030 Sump-1 DTW: 56.74' steel

Ducer = 18.53 Bat = 17.02 V RO System

down since 7/31/19 @ ~1400

1055 sump3A DTW = 60.45 top steel. Install repaired ducer in sound tube w/ 1.35 ft tube stickup above steel.

Cable length = 75.66' Ducer reads 13.88 ft

Kid in the Rain

8/21/19 J.Mauns P. cloudy 75° F

		DTW	TD
1340			
1540	OW-6	200.02	206.75
	OW-5	197.02	247.8 ?
	UNK3	141.10	155.07
	DW-1	142.92	>300
	DW-6	198.56	>300
	DW-7	185.66	285 ?
	DW-8	183.02	>300
	DW-9	185.79	295.11
	DW-10	132.73	213.65

**

Though out of order, the following transcribed other notes J.Mauns 8-22-19

8/2/19

		DTW	Ducer	V	
1030	Sump-1	56.74*	18.53	17.02	*top of steel
1055	Sump-3A	60.45*	13.88		

- sound tube stick up = 1.35
- install repaired ducer w/75' cable (75.66' from rim to sensor tip)
- calibrate reads 13.88' in position

Water treatment off since 7/31/19 @ 1400

9/16/19 J. Mauns Overcast light breeze 75°F

	Download ducers	DTW	Ducer	
1155	LPMW-6	19.21	23.88	17.0 V
	LPMW-5	21.82	22.44	13 V * change
	LPPZ-4	19.71	2.66	16.66 V
	LPPZ-3	14.62 ~~11.94~~ gm	11.94	16.4 V
1225	LPPZ-1	12.92	13.58	16.5
1255	LPPZ-5	16.64	6.40	16.5 V
	LPMW-3	13.39	27.82	16.2 V
	SBB-BB-25	16.05	12.96	16.5 V
	Sump-3A	~~14.54~~	14.54	16.5

Active discharge No manual DTW

1325	Sump-1	60.73	14.60	16.3 V
	Pump running			

1400 Sample STA-2
1420 Sample STA-3B
1435 Sample STA-3A w/dup-2 also
1450 Sample SPR-3
1530 Start BCD siphon
1550 Start BCD-A siphon
Dylan Davis complete GW sampling
1400 Sample LPMW-6
1600 Sample LPMW-5
1700 Sample LPPZ-4 (Dup Also)
1800 LV site

Rite in the Rain

9/17/19 J. Mans overcast/fog 45°

0830 on site ck RO System/prep gear/ wait for D. Davis, who will complete GW sampling

1015 Sample SPR-2

1040 Sample SPR-18

1130 Sample SPR-D2

1200 SPR-BCD dry

1245 Sample SPR-5

1300 Sample SPR 10A

1310 Sample Toe Drain

Dylan sampling wells.

Got flat tire head into Butte while Dylan continues to sample.

1130 Sample SBB-91-29

1315 Sample SBB 88-20

1615 Sample DW-10

1840 Sample OW-5

JM 9/17/19

9/18/19 J. Mans overcast 50's

1520 Sample BCD-A
1545 Sample BCD-Barren
1600 Sample BCD

} while onsite for treatment system.

JM 9-18-19

9/24/19 J. Mans overcast 50° strong wind

0900 Arrive onsite to install ducers in SBB-88-20, DW-10, OW-5.

complications w/ laptop communication w/ New USB ducers.

	TD	DTW
SBB-88-20	51.92 ft	30.11 ft

ducer set at 51.22 ft below top of PVC

ducer reads 20.98 ft → Δ 0.13 ft

OW-5 TD = >300 DTW = 201.61 ft below top PVC

ducer set at 227.26 ft below top of PVC

ducer reads 25.65 → Δ 0.00 ft

DW-10 TD = >300 DTW = 135.57 Below top PVC

ducer set at 152.15 ft below top PVC

ducer reads (16.57?)

All ducers programmed to read every 4 hrs

JM

Rite in the Rain

INCH

1

2

3

4

5

6

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Beal Sitewide
10/4/19 –

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ALL-WEATHER

TRANSIT

№ 303

CONTENTS

PAGE	REFERENCE	DATE

10/4/19 J.mans
winterize dewatering system

10/7/19 J. Mans
1430 OW-5 DTW = 197.65 Ducer = 29.61
1435 Sump-1 DTW - 62.54 Ducer = Pump running

10/23/19 J Mans leav 45° strong winds
0930 on site for final RO wrap up
and service ducers.

		DTW	Ducer	Notes
1215	LPMW-6	19.08	26.04	D, V
1235	LPMW-5	0.41	23.79	D, V
1250	LPPZ-3	4.94	11.67	D, V
	LPPZ-1	10.82	15.73	D, V
1320	LPPZ-4	19.23	4.26	D, V *
1335	LPPZ-5	16.33	6.73	D, V
1345	L MW-3	13.07	28.16	D, V
1355	BB-88-25	16.92	12.17	DV
1600	SUMP - A	63.59	10.82	
1435	OW-5	179.81	47.	D, V
1445	DW-10	137.02	14.98	D, V
	SUMP-1	61.60	13.78	D, V
1420	SBB-88-	3.74	20.48	D, V

load

Leave site 1700

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STA-2 Time: 1400

Site Name: Beal Mtn Date: 9-16-19

Field Crew: J. Mauns

Weather: P cloudy 75°

Discharge Summary

Total Discharge (cfs): NA Meter Type: ~~#~~ NA

Width: Method:

Area: Spin Test:

Average Velocity:

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): —

Cross Section (describe): —

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-16-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units						
Measure-ment	8.05	245	10.3				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: STA-2 Sample Time: 1400

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters: Table 4

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STA-3B

Time: 1420

Site Name: Beal MtN

Date: 9-16-19

Field Crew: J. Maus

Weather: P. cloudy 73°

Discharge Summary

Total Discharge (cfs): NA

Meter Type:

Width:

Method:

Area:

Spin Test:

Average Velocity:

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS	C				
Measure-ment	7.88	454	9.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name:

Sample Time: 1420

Sample Method:

Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading:

Intake Flushed?: Yes / No

Inside Gage Reading:

Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: STA-3A

Time: 1435

Site Name: Beal Mtn

Date: 9-16-19

Field Crew: J. Mans

Weather: P. Cloudy 75°F

Discharge Summary

Total Discharge (cfs): NA

Meter Type: _____

Width: _____

Method: _____

Area: _____

Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-16-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µs	C				
Measure-ment	7.94	400	9.6				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: _____

Sample Time: 1435

Sample Method: _____

Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: Dup-2 also @ 1200

Gage Information

Saff Gage Reading: _____

Intake Flushed?: Yes / No

Inside Gage Reading: _____

Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-3 Time: 1450

Site Name: Beal MTN Date: 9-16-19

Field Crew: J. Mans

Weather: p cloudy 75°

Discharge Summary

Total Discharge (cfs): NA Meter Type:

Width: Method:

Area: Spin Test:

Average Velocity: FW Pond discharging

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-16-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS					
Measure-ment	7.60	110	12.6				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Sample Time: 1450

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-2 Time: 1015

Site Name: Beal MtN Date: 9-17-19

Field Crew: J. Mans

Weather: fog 45°

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS					
Measure-ment	~~6.7~~	~~405~~	8.4				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

7.05 450

Sample Summary

Sample Name: _____ Sample Time: 1015

Sample Method: _____ Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-18 Time: 1040

Site Name: Beal Mtn Date: 9-17-19

Field Crew: J. Mans

Weather: fog drizzle 45°

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS	C				
Measure-ment	7.72	268	6.9				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: _____ Sample Time: 1040

Sample Method: _____ Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-D2 Time: 1130

Site Name: Beal Mtn Date: 9-17-19

Field Crew: J. mans

Weather: fog drizzle 45°

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uc	c				
Measure-ment	7.77	204	7.0				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: _____ Sample Time: _____

Sample Method: _____ Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-5 Time: 1245

Site Name: Beal MTN Date: 9-17-19

Field Crew: J. Maus

Weather: Rain 50°

Discharge Summary

Total Discharge (cfs): NA Meter Type: _____

Width: _____ Method: _____

Area: _____ Spin Test: _____

Average Velocity: _____

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe): _____

Cross Section (describe): _____

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS					
Measure-ment	7.67	1545	8.0				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: _____ Sample Time: _____

Sample Method: _____ Sample Filtered?: Yes / No

Analytical Parameters: _____

Size and Number of Containers: _____

Gage Information

Saff Gage Reading: _____ Intake Flushed?: Yes / No

Inside Gage Reading: _____ Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: SPR-10A Time: 1300

Site Name: Beal Mtn Date: 9-17-19

Field Crew: J. Mans

Weather: Rain 50°

Discharge Summary

Total Discharge (cfs): 2.73 gpm Meter Type:

Width: Method: weir 0.09 ft

Area: Spin Test:

Average Velocity:

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS	C				
Measure-ment	7.10	797	9.6				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Sample Time:

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: Toe Drain

Time: 1310

Site Name: Beal Mtn

Date: 9-17-19

Field Crew: J. Mans

Weather: Rain 50°

Discharge Summary

Total Discharge (cfs): 0.0781 cfs

Meter Type:

Width: 35.06 gpm

Method: Weir 0.25 ft

Area:

Spin Test:

Average Velocity:

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-17-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	µS					
Measure-ment	6.97	1495	8.0				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name:

Sample Time:

Sample Method:

Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading:

Intake Flushed?: Yes / No

Inside Gage Reading:

Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD-A Time: 1520

Site Name: Beal Mtn Date: 9-18-19

Field Crew: J. Mans

Weather: Overcast

Discharge Summary

Total Discharge (cfs): 0.005 cfs Meter Type:

2.24 gpm

Width: Method: TV

Area: Spin Test:

Average Velocity: 3 Qts 19.6 sec

20.0 sec

19.8 sec Avg 19.8

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s):

Calibration Info:

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS	C				
Measure-ment	7.01	816	7.4				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Sample Time: 1520

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD-Barren Time: 1545

Site Name: Beal MTN Date: 9-18-19

Field Crew: J. Mans

Weather: overcast 50°

Discharge Summary

Total Discharge (cfs): 0.004 cfs Meter Type:

Width: 1.79 gpm Method: TV

Area: Spin Test:

Average Velocity: 4 Qts 30 sec

30 sec

31 sec / avg 30.66

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-18-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	uS					
Measure-ment	6.48	731	8.2				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Sample Time: 1545

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

STREAMFLOW MEASUREMENT / SAMPLE NOTES

Site Information

Station No.: BCD Time: 1600

Site Name: Beal Mtn Date: 9-18-19

Field Crew: J. Maws

Weather: over cast 50

Discharge Summary

Total Discharge (cfs): 0.00016 cfs Meter Type:

Width: 0.072 gpm Method: TV

Area: Spin Test:

Average Velocity:

1000 ml 4 min
500 ml 1 min 46 sec
250 ml 1 min
250 ml 50 sec

Avg 4.52 ml/sec

Stream Information

Wading _____ feet above / below grade

Measurement Rating: Excellent _____ Good _____ Fair _____ Poor _____

Flow (describe):

Cross Section (describe):

Field Parameters

Instrument(s): Hanna

Calibration Info: 9-18-19

Parameter	pH	SC	Temp.	DO	ORP	Turbidity	
Unit of Measure	std. units	mS	C				
Measure-ment	8.31	2046	12.7				

SC - Specific Conductance, Temp - Temperature, DO - Dissolved Oxygen

Sample Summary

Sample Name: Sample Time: 1600

Sample Method: Sample Filtered?: Yes / No

Analytical Parameters:

Size and Number of Containers:

Gage Information

Saff Gage Reading: Intake Flushed?: Yes / No

Inside Gage Reading: Record Removed/Replaced? Yes / No

Angle Coeff.	Dist. From Initial point (ft)	Width (ft)	Depth (ft)	Observation Depth (ft)	Revolut-ions	Time in Seconds	Velocity (ft/sec) At Point	Velocity (ft/sec) Mean in Vertical	Adjusted for Horizontal Angle	Area (ft^2)	Discharge (ft^3/sec)	
												.85
												.90
												.92
												.94
												.96
												.97
												.98
												.99
												1.00

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9/16/19 Sample Time: 1400 Well ID: LPMW-6

Personnel: Dylan Davis Weather: windy, partly cloudy, mid 60's

Casing Diameter/Type: 2" PVC Measuring Point Description: top of casing, north side

Well Depth: Depth to Water: ~~19.21~~ 19.21 Depth to Product: N/A

Screen: Well Condition: Good, no damage

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y ~~N~~

3.25 gal

0.0361 gal/min

____ ft. water x __ gal./ft * = one casing volume ____ gals. x 3 = purge volume ____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ] Start Time: 1215 Purge Rate (mls/pc) 0.0361 gal/min Pump Depth: ~31 ft

Comments:

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1215	7.26	23.2%	5.64	320	538		19.90
1249	7.11	3.45	7.59	317	548		20.65
1300	7.21	4.02	8.36	308.8	532		19.90
1310	7.19	3.65	10.13	307	531		19.80
1322	7.20	3.26	12.92	299.4	527		19.80
1333	7.10	3.87	8.91	296.3	525		19.82
1343	7.09	3.89	7.83	293.7	519		20.00
1353	7.10	3.78	7.86	294.7	522		20.02

Amount Purged: 2.5 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y ~~N~~

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	0424005510 1	9/16/19
SC		
DO		
ORP		

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments:

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9 / 16 / 19 Sample Time: 1600 Well ID: ~~LPPZ-MW-5~~ LPMW-5

Personnel: Dylan Davis Weather: Windy, upper 60's, partly cloudy

Casing Diameter/Type: 4" / PVC Measuring Point Description: top of casing, north side

Well Depth: 50.05 Depth to Water: 21.85 21.77 after pump insertion Depth to Product: N/A

Screen: _____ Well Condition: Good, not damaged

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other: _____

Dedicated: Y (N)

_____ ft. water x __ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. (4" well = 0.653 gal./ft.) 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ] Start Time: 1445 Purge Rate (mls/pc) 0.043 gal/min Pump Depth: ~35'

Comments: _____

EVACUATION DATA

Time	pH 7.42	DO	Temp.	ORP	SC	Turbidity	DTW
1445	~~6.55~~	5.77	9.10	287.1	1592		22.00
1456	7.53	6.57	8.83	296.4	1559		22.15
1514	7.56	6.33	8.69	299.8	1528		22.20
1527	7.54	6.89	8.69	300.1	1487		22.28
1549	7.30	6.75	8.78	301.3	1459		22.57
1600	7.26	6.86	8.80	300.8	1449		22.60

Amount Purged: 2.5 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other: _____

Dedicated: Y (N)

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]	_____	_____	_____	

Laboratory: _____ Airbill#: _____ Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	042400 55101	9/16/19
SC	↓	9/16/19
DO		9/16/19
ORP		9/16/19

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments: _____

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9/16/19 Sample Time: 1700 Well ID: LPPZ-4

Personnel: Dylan Davis Weather:

Casing Diameter/Type: Measuring Point Description: top of casing, north side

Well Depth: 23.60 Depth to Water: 19.70 21.20 Depth to Product: N/A

Screen: Well Condition: Good

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [ ] SST Bailer [ ] Disp. Polyethylene Bailer [X] Other:

Dedicated: Y N

3.9 ft. water x __ gal./ft * = one casing volume 0.6357 gals. x 3 = purge volume 1.9071 gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time: Purge Rate (mls/pc) Pump Depth:

Comments:

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1654	7.25	6.75	10.93	192.5	526		
1658	7.24	4.03	7.55	194.3	555		
1700	7.24	4.58	7.49	193.8	556		21.20

Amount Purged: 2.5 gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [ ] SST Bailer [ ] Disp. Polyethylene Bailer [X] QED Low Flow [ ] Other:

Dedicated: Y N

Sample Type: [ ] Natural, [X] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	0424009551 01	9/16/19
SC	↓	↓
DO		
ORP		

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments:

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9/17/19 Sample Time: 1130 Well ID: SBB-91-29

Personnel: Dylan Davis Weather: Rainy/Fog, mid 50's, no wind

Casing Diameter/Type: 4" Measuring Point Description: top of casing, north side

Well Depth: _____ Depth to Water: ~~20.90~~ 11.90 Depth to Product: N/A

Screen: ~ 30' Well Condition: Metal casing exterior damage.

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other: _____

Dedicated: Y (N)

_____ ft. water x __ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [X] Start Time: _____ Purge Rate (mls/pc) _____ Pump Depth: 30'

Comments: Water clarity improved significantly after 10 min of purge

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1027	6.88	4.33 ↓	6.36	163.5	1161		12.00
1037	6.94	4.06	6.66	161.9	1178		11.95
1047	6.94	3.97	6.67	161.8	1168		11.95
1057	6.93	3.08	6.61	161.7	1152		11.97
1107	~~6.88~~ 6.93	4.59	6.38	161.4	1116		11.97
1117	6.92	5.13	6.32	161.3	1093		11.96
1126	6.92	4.82	6.42	161.2	1103		11.95

Amount Purged: _____ gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other: _____

Dedicated: Y (N)

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]	_____	_____	_____	

Laboratory: _____ Airbill#: _____ Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	04240055101	9/17/19
SC	↓	↓
DO	↓	↓
ORP	↓	↓

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments: _____

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9/17/19 Sample Time: 1315 Well ID: SBB-88-20

Personnel: Dylan Davis Weather: Rain, 49°

Casing Diameter/Type: 4"/PVC Measuring Point Description: top of casing, north side

Well Depth: 50.30 Depth to Water: 30.20 Depth to Product: N/A

Screen: 30-40 BGS Well Condition: Good. No apparent damage.

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:_____

Dedicated: Y [X]

_____ ft. water x __ gal./ft * = one casing volume _____ gals. x 3 = purge volume _____ gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time:_____ Purge Rate (mls/pc)_____ Pump Depth: 35 ft

Comments: _____

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1225	6.89	8.60	6.88	159.7	845		30.15
1235	6.69	6.87	6.62	165.7	857		30.12
1245	6.68	6.54	6.60	166.5	855		30.17
1255	6.67	6.49	6.58	167.0	850		30.17
1305	6.67	6.53	6.69	167.3	844		30.17

Amount Purged:_____ gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:_____

Dedicated: Y [X]

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]	_____	_____	_____	

Laboratory: _____ Airbill#:_____ Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	042400551101	9/17/19
SC	↓	↓
DO	↓	↓
ORP	↓	↓

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments: _____

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal KO Sample Date 9/17/19 Sample Time: 1615 Well ID: DW-10

Personnel: Dylan Davis Weather:

Casing Diameter/Type: PVC/4" Measuring Point Description: top of casing, north side

Well Depth: Depth to Water: 135.50 Depth to Product: N/A

Screen: Well Condition:

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y N

ft. water x gal./ft * = one casing volume gals. x 3 = purge volume gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ]
Start Time: Purge Rate (mls/pc) Pump Depth: 116

Comments: Check valve in pump appears to be weak, resulting in backflow thru air in flow cell when discharge cycle runs.

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1456	7.10	8.52	8.32	-62.1	743		135.40
1506	7.10	6.61	9.18	-20.1	725		135.50
1528	7.12	7.74	7.69	-89.5	744		135.70
1546	7.09	6.69	7.72	-90.9	747		135.85
1600	7.10	7.58	7.69	-84.8	762		135.90

Amount Purged: gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [ ] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y N

Sample Type: [ ] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	04248055101	9/17/19
SC	↓	↓
DO	↓	↓
ORP	↓	↓

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments:

TETRA TECH GROUNDWATER SAMPLING LOG

Project: Beal RO Sample Date 9/17/19 Sample Time: 1840 Well ID: OW-5

Personnel: Dylan Davis Weather: Rain, wind, upper 40's

Casing Diameter/Type: 4"/PVC Measuring Point Description: top of casing, north side

Well Depth: Depth to Water: 200.25 Depth to Product: N/A

Screen: ? Well Condition:

WELL EVACUATION

Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] Other:

Dedicated: Y (N)

ft. water x __ gal./ft * = one casing volume gals. x 3 = purge volume gals.

* 2" well = 0.163 gal./ft. 4" well = 0.653 gal./ft. 6" well = 1.469 gal./ft. 8" well = 2.611 gal./ft. Well C feet in diameter = 5.875 x C^2

QED Low Flow [ ] Start Time: 1738 Purge Rate (mls/pc) Pump Depth: 215

Comments: Flow back from poor seal in check valve creating air pressure in flow cell during sampling.

EVACUATION DATA

Time	pH	DO	Temp.	ORP	SC	Turbidity	DTW
1738	7.92	9.22	6.50	16.6	525		200.25
1748	7.98	7.86	6.33	20.9	534		200.25
1758	7.97	9.14	5.99	27.9	529		200.28
1808	7.98	9.04	5.98	34.4	530		200.28
1818	7.98	8.55	5.98	38.6	542		200.28
1828	7.98	9.60	5.98	39.1	538		200.29
1838	7.98	9.12	5.98	40.2	540		200.29

Amount Purged: gal

WELL SAMPLING

Sampling Method: Spigot [ ] Hand-Lift Pump [ ] Submersible Pump [X] SST Bailer [ ] Disp. Polyethylene Bailer [ ] QED Low Flow [ ] Other:

Dedicated: Y (N)

Sample Type: [X] Natural, [ ] Duplicate, [ ] Field Blank

	Parameter	Sample Container	Preservative	
[ ]	**BTEX (EPA 8021)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	**VPH (MT Method)**	**(3) 40 ml VOA**	**Hydrochloric acid**	
[ ]	EPH	(2) 1-liter amber glass	Hydrochloric acid/$Na_2S_2O_3$	
[ ]	MTBE	Extracted from VPH VOA	Hydrochloric acid	
[ ]	Nitrate	(1) 250 poly plastic	Sulfuric acid	
[ ]	HACH	(1) 1-liter poly plastic	None	
[ ]	Lead	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	PAHs	(2) 1-liter amber glass	None	
[ ]	Sulfate, CO2, Alkalinity	(1) 250 ml poly plastic	None	
[ ]	Total Ferrous Iron	(1) 125 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	VOC	(3) 40 ml VOA	Hydrochloric acid	
[ ]	Common Cations	(1) 250 ml poly plastic	Nitric acid	
[ ]	Dissolved Metals	(1) 250 ml poly plastic	Nitric acid	Filtered: [ ] Yes, [ ] No
[ ]	Common Anions	(1) 250 ml poly plastic	None	
[ ]				

Laboratory: Airbill#: Chain-of-Custody: [ ] Yes, [ ] No

Meter	Serial No.	Calibration Date
pH	0424006510	9/17/19
SC		
DO		
ORP		

Decontamination					
Potable Water:	Yes [ ]	No [ ]	10% Nitric Acid:	Yes [ ]	No [ ]
Liquinox:	Yes [X]	No [ ]	DI Water:	Yes [X]	No [ ]
10% Methanol:	Yes [ ]	No [ ]	Steam	Yes [ ]	No [ ]

Comments:

Beal Transducer Calibration Check

Date 5/9/19

Staff J. Mans

Revised: 9/2/2015

Station	MPE	DTW	GWE		Ducer Elev	Ducer Reading	Ducer GWE	Manual GWE - Ducuer GWE	Ducer Recalibrated
A	B	C	D=B-C		E	F	G=E+F	D-G	Yes/No
Sump -1	7545.6 (casing)	54.15	7491.45		7469.96	21.21	7491.17	Δ 0.28	N
Sump-3A	7573.45 (casing)	64.11	7509.34		7498.47*	65.55	7564	~~XX~~	~~X~~
LPMW-2	7510.07	~~5.28~~	~~7504.69~~		~~7465.08~~	~~23.63~~	~~7488.71~~		
SBB-88-25	7527.44	5.28	7522.16		7498.44	23.63	7522.07	Δ 0.09	N
LPMW-3	7539.22	7.81	7531.41		7498.05	33.41	7531.46	Δ 0.06	N
LPPZ-5	7542.97	11.53	7531.44		7519.97	11.41	7531.38	Δ 0.06	N
LPPZ-4	7560.82	14.40	7546.42		7538.38	8.06	7546.44	Δ 0.02	N
LPPZ-1	7554.86	4.19 ~~22.25~~	7550.67		7528.38	22.25	7550.63	Δ 0.04	N
LPPZ-3	7562.65	7.58	7555.07		7536.2	18.85	7555.05	Δ 0.02	N
LPMW-5	7568.19	21.18	7547.01		7524.08	23.04	7547.12	Δ 0.11	N
LPMW-6	7555.16				7509.94				

Notes:

5/18/2016 - Revised Sump-3A casing elevation and ducer elevation due to install of repaired ducer. * - Casing elevation+1.33 stickup of ducer sounding tube- 76.31 measured from top of logger to transducer.

9/2/2015 - Revised LPPZ-4 ducer elevation based on manual measurement of cable length.

Beal Transducer Calibration Check

Date 8-2-19

Staff J. Mans

Revised: 9/2/2015

Station	MPE	DTW	GWE		Ducer Elev	Ducer Reading	Ducer GWE	Manual GWE - Ducuer GWE	Ducer Recalibrated
A	B	C	D=B-C		E	F	G=E+F	D-G	Yes/No
Sump -1	7545.6 (casing)	56.74	7488.86		7469.96	18.53	7488.49	Δ0.37	
Sump-3A	7573.45 (casing)	60.45	7513.00		~~7498.47*~~ 7499.12	13.88	7513.00	Δ0.00	
LPMW-2	7510.07				7465.08				
SBB-88-25	7527.44				7498.44				
LPMW-3	7539.22				7498.05				
LPPZ-5	7542.97				7519.97				
LPPZ-4	7560.82				7538.38				
LPPZ-1	7554.86				7528.38				
LPPZ-3	7562.65				7536.2				
LPMW-5	7568.19				7524.08				
LPMW-6	7555.16				7509.94				

RO down since 7/1/19 ~1400

Notes:

5/18/2016 - Revised Sump-3A casing elevation and ducer elevation due to install of repaired ducer. * - Casing elevation+1.33 stickup of ducer sounding tube- 76.31 measured from top of logger to transducer.

9/2/2015 - Revised LPPZ-4 ducer elevation based on manual measurement of cable length.

** install repaired ducer +1.33 to 1.35' stick up of ducer sounding tube - 75.66' from rim to ducer sensor.

Sump-3A TOC = 7573.45 + 1.33' stickup - 75.66 = Ducer elev = 7499.12

Beal Transducer Calibration Check

Date 9/16/19

Staff

Revised: 9/2/2015

Station	MPE	DTW	GWE		Ducer Elev	Ducer Reading	Ducer GWE	Manual GWE - Ducuer GWE	Ducer Recalibrated
A	B	C	D=B-C		E	F	G=E+F	D-G	Yes/No
Sump -1	7545.6 (casing)	60.73	7484.87		7469.96	14.60	7484.56	Δ0.31 Pump Running	
Sump-3A	7573.45 (casing)	—	—		~~7498.47*~~ 7499.12	14.60	7513.72	—	
LPMW-2	7510.07	—	—		7465.08	—	—	—	
SBB-88-25	7527.44	16.05	7511.39		7498.44	12.96	7511.4	Δ0.01	
LPMW-3	7539.22	13.39	7525.83		7498.05	27.82	7525.87	Δ0.04	
LPPZ-5	7542.97	16.64	7526.33		7519.97	6.40	7526.37	Δ0.04	
LPPZ-4	7560.82	19.71	7541.11		7538.38	2.66	7541.04	Δ0.07	
LPPZ-1	7554.86	12.92	7541.94		7528.38	13.58	7541.96	Δ0.02	
LPPZ-3	7562.65	14.62	7548.03		7536.2	11.94	7548.14	Δ0.11	
LPMW-5	7568.19	21.82	7546.37		7524.08	22.44	7546.52	Δ0.15	
LPMW-6	7555.16	19.21	7535.95		7509.94	25.88	7535.82	Δ0.13	

Notes:

5/18/2016 - Revised Sump-3A casing elevation and ducer elevation due to install of repaired ducer. * - Casing elevation+1.33 stickup of ducer sounding tube- 76.31 measured from top of logger to transducer.

9/2/2015 - Revised LPPZ-4 ducer elevation based on manual measurement of cable length.

Beal Transducer Calibration Check

Date ~~10~~ 9-24-19

Staff Mans

Revised: 10/24/2019

Station	MPE	DTW	GWE		Ducer Elev	Ducer Reading	Ducer GWE	Manual GWE - Ducuer GWE	Ducer Recalibrated
A	B	C	D=B-C		E	F	G=E+F	D-G	Yes/No
SBB-88-20	7222.93	30.11	7192.82		7171.71	20.98	7192.69	Δ0.13	
OW-5	7514.27	201.61	7312.66		7287.01	25.65	7512.66	0.00	
DW-10	7509.24	135.57	7373.67		7357.09	-?-(16.57)	(7373.66)	(Δ0.01)	
Sump -1	7545.6 (casing)				7469.96				
Sump-3A	7573.45 (casing)				7499.12**				
SBB-88-25	7527.44				7498.44				
LPMW-3	7539.22				7498.05				
LPPZ-5	7542.97				7519.97				
LPPZ-4	7560.82				7538.38				
LPPZ-1	7554.86				7528.38				
LPPZ-3	7562.65				7536.2				
LPMW-5	7568.19				7524.08				
LPMW-6	7555.16				7509.94				

Notes:

8/2/2019 - Revised Sump-3A casing elevations and ducer elevation due to install of repaired ducer. * - Casing elevation+1.33 stickup of ducer sounding tube- 76.31 measured from top of logger to transducer.

9/2/2015 - Revised LPPZ-4 ducer elevation based on manual measurement of cable length.

8/2/2019 - Revised Sump-3A ducer elevation due to install of repaired ducer. ** - Casing elevation+1.33 stickup of ducer sounding tube- 75.66 measured from top of logger to transducer.

Beal Transducer Calibration Check

Date 10-25-19

Staff Mauis

Revised: 10/24/2019

Station	MPE	DTW	GWE		Ducer Elev	Ducer Reading	Ducer GWE	Manual GWE - Ducuer GWE	Ducer Recalibrated
A	B	C	D=B-C		E	F	G=E+F	D-G	Yes/No
SBB-88-20	7222.93	30.74	7192.19		7171.71	20.48	7192.19	Δ0.00	OK
OW-5	7514.27	179.81	7334.46		7287.01	47.47	7334.48	Δ0.02	OK
DW-10	7509.24	137.02	7372.22		7357.09	14.98	7372.07	Δ0.15	OK
Sump -1	7545.6 (casing)	61.65	7483.95		7469.96	13.76	~~7483.72~~	Δ0.23	
Sump-3A	7573.45 (casing)	63.59	7509.86		7499.12**	10.82	7509.94	Δ0.08	OK
SBB-88-25	7527.44	16.92	7510.52		7498.44	12.17	7510.61	Δ0.09	OK
LPMW-3	7539.22	13.07	7526.15		7498.05	28.16	7526.21	Δ0.06	OK
LPPZ-5	7542.97	16.33	7526.64		7519.97	6.73	7526.70	Δ0.06	OK
LPPZ-4	7560.82	18.23	7542.59		7538.38	4.26	7542.64	Δ0.05	OK
LPPZ-1	7554.86	10.82	7544.04		7528.38	15.73	7544.11	Δ0.07	OK
LPPZ-3	7562.65	14.94	7547.71		7536.1	11.67	~~7547.27~~ 7547.87	Δ0.16 Δ0.06	Re calibrate
LPMW-5	7568.19	20.41	7547.78		7524.08	23.79	7547.87	Δ0.09	ok
LPMW-6	7555.16	19.08	7536.08		7509.94	26.04	7535.98	Δ0.1	ok

Notes:

8/2/2019 - Revised Sump-3A casing elevations and ducer elevation due to install of repaired ducer. * - Casing elevation+1.33 stickup of ducer sounding tube- 76.31 measured from top of logger to transducer.

9/2/2015 - Revised LPPZ-4 ducer elevation based on manual measurement of cable length.

8/2/2019 - Revised Sump-3A ducer elevation due to install of repaired ducer. ** - Casing elevation+1.33 stickup of ducer sounding tube- 75.66 measured from top of logger to transducer.

APPENDIX C. 2019 LABORATORY ANALYTICAL REPORTS

See Enclosed CD

ANALYTICAL SUMMARY REPORT

July 03, 2019

Tetra Tech Inc
825 West Custer Ave
Helena, MT 59602-0226

Work Order: H19060181

Project Name: Beal Mtn Site Wide

Energy Laboratories Inc Helena MT received the following 16 samples for Tetra Tech Inc on 6/6/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H19060181-001	Dup-1	06/04/19 6:00	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Free Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19060181-002	STA-2	06/04/19 8:10	06/06/19	Aqueous	Same As Above
H19060181-003	STA-3B	06/04/19 8:40	06/06/19	Aqueous	Same As Above
H19060181-004	STA-3A	06/04/19 9:00	06/06/19	Aqueous	Same As Above
H19060181-005	SPR-3	06/04/19 9:25	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Total Manual Distillation Cyanide, Free Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19060181-006	SPR-5	06/04/19 9:40	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Anions by Ion Chromatography Metals Digestion by E200.2
H19060181-007	SPR-10A	06/04/19 9:50	06/06/19	Aqueous	Same As Above
H19060181-008	SPR-2	06/04/19 11:15	06/06/19	Aqueous	Cyanide, Total Manual Distillation Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable
H19060181-009	Toe Drain	06/04/19 10:05	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Anions by Ion Chromatography Metals Digestion by E200.2
H19060181-010	SPR-18	06/04/19 12:05	06/06/19	Aqueous	Cyanide, Total Manual Distillation Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable
H19060181-011	SPR-D2	06/04/19 12:55	06/06/19	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

H19060181-012	SPR-BCD	06/04/19 14:50	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Total Manual Distillation Cyanide, Free Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19060181-013	BCD	06/04/19 15:10	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Free Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19060181-014	BCD-Barren	06/06/19 8:25	06/06/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Total Manual Distillation Cyanide, Free Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19060181-015	Barren Drain	06/06/19 9:50	06/06/19	Aqueous	Same As Above
H19060181-016	BCD-A	06/06/19 10:45	06/06/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Tetra Tech Inc
Project: Beal Mtn Site Wide
Work Order: H19060181

Report Date: 07/03/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

During review of the analytical data, the Cyanide reporting limit was 0.005 mg/L, as indicated on the client provided parameter tables. Based on historical reports for this project, the client was contacted regarding the reporting limit to verify the 0.005 mg/L reporting limit, or to determine if a reporting limit of 0.004 mg/L was required for this project. Per J. Maus, use the reporting limit of 0.004 mg/L. The Cyanide results were reviewed to determine if the reporting limit could be lowered to 0.004 for all samples. The reporting limit was lowered from the existing analytical data for all samples with the exception of H19060181-005 and H19060181-012, which required re-analysis. These samples were re-analyzed with the lower reporting limit and H qualified as they were outside the method recommended holding time.

Comments imported for SUBBED Workorder: B19060955
Prep Comments for Sample H19060181-005D, Test CN-W-T-PR: The prep hold time was exceeded by 8.15 days.
Prep Comments for Sample H19060181-012D, Test CN-W-T-PR: The prep hold time was exceeded by 7.92 days.
End of comments imported for SUBBED Workorder: B19060955

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: Dup-1
Lab ID: H19060181-001
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 06:00
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:14 / lgm		L24 (14410200)_190607B	18	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	06/12/19 14:37 / eli-b		SUB-B322076	16	B_R322076
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	25	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 09:59 / eli-b		SUB-B322030	8	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:44 / kmd		FIA203-HE_190610C	50	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.003	mg/L		0.001		E200.8	06/12/19 07:26 / sld	06/10/19 08:05	ICPMS205-H_190611A	540	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-2
Lab ID: H19060181-002
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 08:10
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:16 / lgm		L24 (14410200)_190607B	19	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	06/12/19 14:40 / eli-b		SUB-B322076	17	B_R322076
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	26	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:01 / eli-b		SUB-B322030	9	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:46 / kmd		FIA203-HE_190610C	51	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.002	mg/L		0.001		E200.8	06/12/19 07:28 / sld	06/10/19 08:05	ICPMS205-H_190611A	541	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-3B
Lab ID: H19060181-003
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 08:40
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:16 / lgm		L24 (14410200)_190607B	20	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	06/12/19 14:43 / eli-b		SUB-B322076	18	B_R322076
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	27	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:04 / eli-b		SUB-B322030	10	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:47 / kmd		FIA203-HE_190610C	52	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.009	mg/L		0.001		E200.8	06/12/19 07:30 / sld	06/10/19 08:05	ICPMS205-H_190611A	542	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-3A
Lab ID: H19060181-004
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 09:00
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:16 / lgm		L24 (14410200)_190607B	21	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	06/12/19 14:46 / eli-b		SUB-B322076	19	B_R322076
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	28	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:07 / eli-b		SUB-B322030	11	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:48 / kmd		FIA203-HE_190610C	53	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.003	mg/L		0.001		E200.8	06/12/19 07:32 / sld	06/10/19 08:05	ICPMS205-H_190611A	543	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-3
Lab ID: H19060181-005
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 09:25
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:17 / lgm		L24 (14410200)_190607B	: 22	TSS190607A
INORGANICS											
Cyanide, Total	0.007	mg/L	H	0.004		E335.4	06/27/19 16:30 / eli-b	06/26/19 12:57	SUB-B323061	: 3	B_134459
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	: 29	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:10 / eli-b		SUB-B322030	: 12	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:49 / kmd		FIA203-HE_190610C	: 54	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.007	mg/L		0.001		E200.8	06/12/19 07:34 / sld	06/10/19 08:05	ICPMS205-H_190611A	: 544	46041

Report Definitions:
RL - Analyte reporting limit.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-5
Lab ID: H19060181-006
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 09:40
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	66	mg/L		4		A2320 B	06/07/19 12:01 / SR		PHSC_101-H_190607A	69	R144860
Sulfate	935	mg/L		1		E300.0	06/08/19 09:24 / SR		C METROHM_190605A	264	R144833
METALS, TOTAL RECOVERABLE											
Selenium	0.057	mg/L		0.001		E200.8	06/12/19 07:49 / sld	06/10/19 08:05	ICPMS205-H_190611A	551	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-10A
Lab ID: H19060181-007
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 09:50
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	120	mg/L		4		A2320 B	06/07/19 12:11 / SR		PHSC_101-H_190607A	73	R144860
Sulfate	180	mg/L		1		E300.0	06/08/19 09:38 / SR		C METROHM_190605A	265	R144833
METALS, TOTAL RECOVERABLE											
Selenium	0.030	mg/L		0.001		E200.8	06/12/19 07:51 / sld	06/10/19 08:05	ICPMS205-H_190611A	552	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-2
Lab ID: H19060181-008
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 11:15
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.004	mg/L		0.004		E335.4	06/14/19 13:51 / eli-b	06/13/19 08:09	SUB-B322226 : 7		B_133979
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:12 / eli-b		SUB-B322030 : 13		B_R322030

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: Toe Drain
Lab ID: H19060181-009
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 10:05
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	51	mg/L		4		A2320 B	06/07/19 12:19 / SR		PHSC_101-H_190607A	75	R144860
Sulfate	1050	mg/L		1		E300.0	06/08/19 09:53 / SR		C METROHM_190605A	266	R144833
METALS, TOTAL RECOVERABLE											
Selenium	0.072	mg/L		0.001		E200.8	06/12/19 07:53 / sld	06/10/19 08:05	ICPMS205-H_190611A	553	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-18
Lab ID: H19060181-010
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 12:05
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.004	mg/L		0.004		E335.4	06/14/19 13:54 / eli-b	06/13/19 08:09	SUB-B322226 : 8		B_133979
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:15 / eli-b		SUB-B322030 : 14		B_R322030

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-D2
Lab ID: H19060181-011
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 12:55
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.042	mg/L		0.004		E335.4	06/14/19 13:58 / eli-b	06/13/19 08:09	SUB-B322226 : 9		B_133979
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:18 / eli-b		SUB-B322030 : 15		B_R322030

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-BCD
Lab ID: H19060181-012
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 14:50
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:17 / lgm		L24 (14410200)_190607B	: 23	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L	H	0.004		E335.4	06/27/19 16:38 / eli-b	06/26/19 12:57	SUB-B323061	: 4	B_134459
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	: 30	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:20 / eli-b		SUB-B322030	: 16	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:54 / kmd		FIA203-HE_190610C	: 58	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.010	mg/L		0.001		E200.8	06/12/19 07:55 / sld	06/10/19 08:05	ICPMS205-H_190611A	: 554	46041

Report Definitions:
RL - Analyte reporting limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD
Lab ID: H19060181-013
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/04/19 15:10
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:19 / lgm		L24 (14410200)_190607B	25	TSS190607A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	06/12/19 15:18 / eli-b		SUB-B322076	27	B_R322076
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	31	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:42 / eli-b		SUB-B322030	19	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:55 / kmd		FIA203-HE_190610C	59	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.041	mg/L		0.001		E200.8	06/12/19 07:57 / sld	06/10/19 08:05	ICPMS205-H_190611A	555	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD-Barren
Lab ID: H19060181-014
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/06/19 08:25
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:20 / lgm		L24 (14410200)_190607B	27	TSS190607A
INORGANICS											
Cyanide, Total	0.106	mg/L		0.004		E335.4	06/14/19 13:59 / eli-b	06/13/19 08:09	SUB-B322226	10	B_133979
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	32	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:50 / eli-b		SUB-B322030	22	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 14:59 / kmd		FIA203-HE_190610C	62	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.008	mg/L		0.001		E200.8	06/12/19 08:00 / sld	06/10/19 08:05	ICPMS205-H_190611A	556	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: Barren Drain
Lab ID: H19060181-015
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/06/19 09:50
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:21 / lgm		L24 (14410200)_190607B	29	TSS190607A
INORGANICS											
Cyanide, Total	0.108	mg/L		0.004		E335.4	06/14/19 14:00 / eli-b	06/13/19 08:09	SUB-B322226	11	B_133979
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	33	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:53 / eli-b		SUB-B322030	23	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 15:00 / kmd		FIA203-HE_190610C	63	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.007	mg/L		0.001		E200.8	06/12/19 08:02 / sld	06/10/19 08:05	ICPMS205-H_190611A	557	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD-A
Lab ID: H19060181-016
Matrix: Aqueous

Project: Beal Mtn Site Wide
Collection Date: 06/06/19 10:45
DateReceived: 06/06/19
Report Date: 07/03/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	06/07/19 14:21 / lgm		L24 (14410200)_190607B	: 30	TSS190607A
INORGANICS											
Cyanide, Total	0.063	mg/L		0.004		E335.4	06/14/19 14:01 / eli-b	06/13/19 08:09	SUB-B322226	: 12	B_133979
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/12/19 11:50 / eli-b		SUB-B322030	: 34	B_R322030
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/12/19 10:56 / eli-b		SUB-B322030	: 24	B_R322030
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.05		E350.1	06/10/19 15:01 / kmd		FIA203-HE_190610C	: 64	R144938
METALS, TOTAL RECOVERABLE											
Selenium	0.012	mg/L		0.001		E200.8	06/12/19 08:04 / sld	06/10/19 08:05	ICPMS205-H_190611A	: 558	46041

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: 46041** — **Date:** *03-Jul-19*

Run ID :Run Order: **ICPMS205-H_190611A: 524** SampType: **Method Blank** Lab ID: **MB-46041** Method: **E200.8**

Analysis Date: **06/12/19 06:52** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	5E-05									

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Run ID :Run Order: **ICPMS205-H_190611A: 531** SampType: **Laboratory Control Sample** Lab ID: **LCS-46041** Method: **E200.8**

Analysis Date: **06/12/19 07:07** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.469	0.0010	0.5	0	94	85	115				

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Run ID :Run Order: **ICPMS205-H_190611A: 545** SampType: **Sample Matrix Spike** Lab ID: **H19060181-005BMS3** Method: **E200.8**

Analysis Date: **06/12/19 07:36** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.490	0.0010	0.5	0.007124	96	70	130				

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Run ID :Run Order: **ICPMS205-H_190611A: 546** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-005BMSD3** Method: **E200.8**

Analysis Date: **06/12/19 07:39** Units: **mg/L** **Prep Info:** Prep Date: **6/10/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.481	0.0010	0.5	0.007124	95	70	130	0.4896	1.8	20	

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limit; N - Analyte concentration was not sufficiently high to calculate RPD; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits; A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: B_133979

Date: *03-Jul-19*

Run ID :Run Order: **SUB-B322226: 2** SampType: **Method Blank** Lab ID: **MB-133979** Method: **E335.4**

Analysis Date: **06/14/19 13:47** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	ND	0.002									

Associated samples: **H19060181-008A, H19060181-010A, H19060181-011A, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322226: 3** SampType: **Laboratory Control Sample** Lab ID: **LCS-133979** Method: **E335.4**

Analysis Date: **06/14/19 13:48** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	**103**	90	110	0			

Associated samples: **H19060181-008A, H19060181-010A, H19060181-011A, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322226: 5** SampType: **Sample Matrix Spike** Lab ID: **H19060181-010A** Method: **E335.4**

Analysis Date: **06/14/19 13:55** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.110	0.0050	0.1	0.004294	**106**	90	110	0			

Associated samples: **H19060181-008A, H19060181-010A, H19060181-011A, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322226: 6** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-010A** Method: **E335.4**

Analysis Date: **06/14/19 13:57** Units: **mg/L** **Prep Info:** Prep Date: **6/13/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.108	0.0050	0.1	0.004294	**104**	90	110	0.11	**1.4**	10	

Associated samples: **H19060181-008A, H19060181-010A, H19060181-011A, H19060181-014D, H19060181-015D, H19060181-016D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: B_134459

Date: *03-Jul-19*

Run ID :Run Order: **SUB-B323061: 1** SampType: **Method Blank** Lab ID: **MB-134459** Method: **E335.4**

Analysis Date: **06/27/19 16:24** Units: **mg/L** **Prep Info:** Prep Date: **6/26/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	ND	0.003									

Associated samples: **H19060181-005D, H19060181-012D**

Run ID :Run Order: **SUB-B323061: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-134459** Method: **E335.4**

Analysis Date: **06/27/19 16:27** Units: **mg/L** **Prep Info:** Prep Date: **6/26/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0953	0.0050	0.1	0	**95**	90	110	0			

Associated samples: **H19060181-005D, H19060181-012D**

Run ID :Run Order: **SUB-B323061: 5** SampType: **Sample Matrix Spike** Lab ID: **H19060181-012D** Method: **E335.4**

Analysis Date: **06/27/19 16:41** Units: **mg/L** **Prep Info:** Prep Date: **6/26/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.106	0.0050	0.1	0	**106**	90	110	0			

Associated samples: **H19060181-005D, H19060181-012D**

Run ID :Run Order: **SUB-B323061: 6** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-012D** Method: **E335.4**

Analysis Date: **06/27/19 16:44** Units: **mg/L** **Prep Info:** Prep Date: **6/26/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.104	0.0050	0.1	0	**104**	90	110	0.1061	**1.7**	10	

Associated samples: **H19060181-005D, H19060181-012D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: B_R322030** — **Date:** *03-Jul-19*

Run ID :Run Order: **SUB-B322030: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **Kelada-01**

Analysis Date: **06/12/19 09:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.102	0.0050	0.1	0	102	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **Kelada-01**

Analysis Date: **06/12/19 09:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	ND	0.004									

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 3** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **Kelada-01**

Analysis Date: **06/12/19 09:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0914	0.0050	0.1	0	91	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 4** SampType: **Laboratory Control Sample** Lab ID: **LCS1-ZnCN2** Method: **Kelada-01**

Analysis Date: **06/12/19 09:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.106	0.0050	0.1	0	106	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 6** SampType: **Sample Matrix Spike** Lab ID: **B19060954-001GMS** Method: **Kelada-01**

Analysis Date: **06/12/19 09:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0943	0.0050	0.1	0.0044	90	80	120	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: B_R322030** — **Date:** *03-Jul-19*

Run ID :Run Order: **SUB-B322030: 6** SampType: **Sample Matrix Spike** Lab ID: **B19060954-001GMS** Method: **Kelada-01**

Analysis Date: **06/12/19 09:53** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 7** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19060954-001GMSD** Method: **Kelada-01**

Analysis Date: **06/12/19 09:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0927	0.0050	0.1	0.0044	88	80	120	0.0943	1.7	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 17** SampType: **Sample Matrix Spike** Lab ID: **H19060181-012D** Method: **Kelada-01**

Analysis Date: **06/12/19 10:23** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0924	0.0050	0.1	0	92	80	120	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 18** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-012D** Method: **Kelada-01**

Analysis Date: **06/12/19 10:26** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0925	0.0050	0.1	0	93	80	120	0.0924	0.1	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Run ID :Run Order: **SUB-B322030: 20** SampType: **Sample Matrix Spike** Lab ID: **H19060181-013D** Method: **Kelada-01**

Analysis Date: **06/12/19 10:45** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0945	0.0050	0.1	0	95	80	120	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: B_R322030

Date: *03-Jul-19*

Run ID :Run Order: **SUB-B322030: 21** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-013D** Method: **Kelada-01**

Analysis Date: **06/12/19 10:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0935	0.0050	0.1	0	**94**	80	120	0.0945	**1.1**	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-005D, H19060181-008A, H19060181-010A, H19060181-011A, H19060181-012D, H19060181-013D, H19060181-014D, H19060181-015D, H19060181-016D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: B_R322076

Date: *03-Jul-19*

Run ID :Run Order: **SUB-B322076: 2** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **Kelada-01**

Analysis Date: **06/12/19 13:25** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0973	0.0050	0.1	0	97	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 3** SampType: **Method Blank** Lab ID: **ICB** Method: **Kelada-01**

Analysis Date: **06/12/19 13:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	ND	0.002									

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **Kelada-01**

Analysis Date: **06/12/19 13:30** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0992	0.0050	0.1	0	99	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 5** SampType: **Laboratory Control Sample** Lab ID: **LCS1-K4Fe(CN)6** Method: **Kelada-01**

Analysis Date: **06/12/19 13:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.204	0.0050	0.2	0	102	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 6** SampType: **Sample Matrix Spike** Lab ID: **B19060810-001DMS** Method: **Kelada-01**

Analysis Date: **06/12/19 13:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	103	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc
Prepared by Helena, MT Branch
Work Order: H19060181
BatchID: B_R322076
Date: *03-Jul-19*

Run ID :Run Order: **SUB-B322076: 7** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19060810-001DMSD** Method: **Kelada-01**
Analysis Date: **06/12/19 13:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0972	0.0050	0.1	0	97	90	110	0.1031	5.9	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 13** SampType: **Sample Matrix Spike** Lab ID: **B19060953-005DMS** Method: **Kelada-01**
Analysis Date: **06/12/19 14:29** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	103	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 14** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19060953-005DMSD** Method: **Kelada-01**
Analysis Date: **06/12/19 14:32** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0971	0.0050	0.1	0	97	90	110	0.1028	5.7	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 25** SampType: **Sample Matrix Spike** Lab ID: **H19060181-012D** Method: **Kelada-01**
Analysis Date: **06/12/19 15:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.107	0.0050	0.1	0.004	103	90	110	0			

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Run ID :Run Order: **SUB-B322076: 26** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-012D** Method: **Kelada-01**
Analysis Date: **06/12/19 15:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.106	0.0050	0.1	0.004	102	90	110	0.1067	0.3	10	

Associated samples: **H19060181-001D, H19060181-002D, H19060181-003D, H19060181-004D, H19060181-013D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: B_R322226

Date: *03-Jul-19*

Run ID :Run Order: **SUB-B322226: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E335.4**

Analysis Date: **06/14/19 13:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.101	0.0050	0.1	0	101	90	110	0			

Associated samples: **H19060181-008A, H19060181-010A, H19060181-011A, H19060181-014D, H19060181-015D, H19060181-016D**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc
Prepared by Helena, MT Branch
Work Order: H19060181
BatchID: R144833
Date: *03-Jul-19*

Run ID :Run Order: **IC METROHM_190605A: 12** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**
Analysis Date: **06/05/19 15:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	418	1.0	400	0	104	90	110				

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **IC METROHM_190605A: 13** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**
Analysis Date: **06/05/19 16:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.08									

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **IC METROHM_190605A: 14** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**
Analysis Date: **06/05/19 16:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	104	1.0	100	0	104	90	110				

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **IC METROHM_190605A: 256** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**
Analysis Date: **06/08/19 07:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	202	1.0	200	0	101	90	110				

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **IC METROHM_190605A: 268** SampType: **Sample Matrix Spike** Lab ID: **H19060182-002BMS** Method: **E300.0**
Analysis Date: **06/08/19 10:22** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	538	1.0	500	43.13	99	90	110				

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: R144833

Date: *03-Jul-19*

Run ID :Run Order: **IC METROHM_190605A: 269** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060182-002BMSD** Method: **E300.0**

Analysis Date: **06/08/19 10:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	542	1.0	500	43.13	**100**	90	110	538.1	**0.6**	20	

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: R144860** — **Date:** *03-Jul-19*

Run ID :Run Order: **PHSC_101-H_190607A: 43** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **06/07/19 10:28** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **PHSC_101-H_190607A: 44** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **06/07/19 10:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	590	4.0	600	0	**98**	90	110				

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **PHSC_101-H_190607A: 47** SampType: **Sample Duplicate** Lab ID: **H19060010-003ADUP** Method: **A2320 B**

Analysis Date: **06/07/19 10:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	40	4.0		0				39.1	**1.3**	10	

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Run ID :Run Order: **PHSC_101-H_190607A: 71** SampType: **Sample Duplicate** Lab ID: **H19060181-006ADUP** Method: **A2320 B**

Analysis Date: **06/07/19 12:06** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	67	4.0		0				66.45	**0.6**	10	

Associated samples: **H19060181-006A, H19060181-007A, H19060181-009A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: R144938** — **Date:** *03-Jul-19*

Run ID :Run Order: **FIA203-HE_190610C: 8** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**

Analysis Date: **06/10/19 13:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.04	0.050	1	0	104	90	110				

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 9** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**

Analysis Date: **06/10/19 13:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 11** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**

Analysis Date: **06/10/19 13:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	1.00	0.050	1	0	100	90	110				

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 41** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **06/10/19 14:34** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.488	0.050	0.5	0	98	90	110				

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 47** SampType: **Sample Matrix Spike** Lab ID: **H19060100-016DMS** Method: **E350.1**

Analysis Date: **06/10/19 14:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.938	0.050	1	0	94	80	120				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: R144938** — **Date:** *03-Jul-19*

Run ID :Run Order: **FIA203-HE_190610C: 47** SampType: **Sample Matrix Spike** Lab ID: **H19060100-016DMS** Method: **E350.1**

Analysis Date: **06/10/19 14:41** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 48** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060100-016DMSD** Method: **E350.1**

Analysis Date: **06/10/19 14:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.933	0.050	1	0	93	80	120	0.9382	0.5	10	

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 55** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **06/10/19 14:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.489	0.050	0.5	0	98	90	110				

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 60** SampType: **Sample Matrix Spike** Lab ID: **H19060181-013CMS** Method: **E350.1**

Analysis Date: **06/10/19 14:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.816	0.050	1	0	82	80	120				

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Run ID :Run Order: **FIA203-HE_190610C: 61** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060181-013CMSD** Method: **E350.1**

Analysis Date: **06/10/19 14:57** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.748	0.050	1	0	75	80	120	0.8155	8.6	10	S

Associated samples: **H19060181-001C, H19060181-002C, H19060181-003C, H19060181-004C, H19060181-005C, H19060181-012C, H19060181-013C, H19060181-014C, H19060181-015C, H19060181-016C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060181

BatchID: R144952

Date: *03-Jul-19*

Run ID :Run Order: **ICPMS205-H_190611A: 473** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **06/12/19 05:05** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.0609	0.0050	0.06	0	102	90	110				

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Run ID :Run Order: **ICPMS205-H_190611A: 474** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **06/12/19 05:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	7.02E-05	0.0050		0							

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Run ID :Run Order: **ICPMS205-H_190611A: 475** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **06/12/19 05:09** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.00981	0.0050	0.01	0	98	70	130				

Associated samples: **H19060181-001B, H19060181-002B, H19060181-003B, H19060181-004B, H19060181-005B, H19060181-006B, H19060181-007B, H19060181-009B, H19060181-012B, H19060181-013B, H19060181-014B, H19060181-015B, H19060181-016B**

Qualifiers: ND - Not Detected at the Reporting Limit; S - Spike Recovery outside accepted recovery limit; N - Analyte concentration was not sufficiently high to calculate RPD; J - Analyte detected below quantitation limits; R - RPD outside accepted recovery limits; A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19060181 — **BatchID: TSS190607A** — **Date:** *03-Jul-19*

Run ID :Run Order: **ACCU-124 (14410200)_190607B: 2** SampType: **Method Blank** Lab ID: **MB-25_190607A** Method: **A2540 D**

Analysis Date: **06/07/19 14:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.3									

Associated samples: **H19060181-001A, H19060181-002A, H19060181-003A, H19060181-004A, H19060181-005A, H19060181-012A, H19060181-013A, H19060181-014A, H19060181-015A, H19060181-016A**

Run ID :Run Order: **ACCU-124 (14410200)_190607B: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-26_190607A** Method: **A2540 D**

Analysis Date: **06/07/19 14:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	89.0	10	100	0	89	80	120				

Associated samples: **H19060181-001A, H19060181-002A, H19060181-003A, H19060181-004A, H19060181-005A, H19060181-012A, H19060181-013A, H19060181-014A, H19060181-015A, H19060181-016A**

Run ID :Run Order: **ACCU-124 (14410200)_190607B: 2** SampType: **Sample Duplicate** Lab ID: **H19060181-014ADUP** Method: **A2540 D**

Analysis Date: **06/07/19 14:20** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	10		0				0		5	

Associated samples: **H19060181-001A, H19060181-002A, H19060181-003A, H19060181-004A, H19060181-005A, H19060181-012A, H19060181-013A, H19060181-014A, H19060181-015A, H19060181-016A**

- Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

Run ID :Run Order: **ACCU-124 (14410200)_190607B: 3** SampType: **Sample Duplicate** Lab ID: **H19060195-001ADUP** Method: **A2540 D**

Analysis Date: **06/07/19 14:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	6.83	10		0				6.833		5	

Associated samples: **H19060181-001A, H19060181-002A, H19060181-003A, H19060181-004A, H19060181-005A, H19060181-012A, H19060181-013A, H19060181-014A, H19060181-015A, H19060181-016A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

Work Order Receipt Checklist

Tetra Tech Inc

H19060181

Login completed by: Wanda Johnson

Date Received: 6/6/2019

Reviewed by: BL2000\rtooke

Received by: wjj

Reviewed Date: 6/11/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	°C See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Received an unmarked Cyanide sample container. However, SPR-2 was not on any of the bottles, labeled the unmarked Cyanide container SPR-2. Sample time on BCD-A bottle states 10:45, COC states 10:50. Client contacted. wj 6/6/19 Use sample time from bottle per A. Anderson. wj 6/7/19

ENERGY LABORATORIES
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Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Tetra Tech Inc.
Contact	Jim Maus
Phone	406-459-4164
Mailing Address	825 west Custer Ave.
City, State, Zip	Helena, MT 59602
Email	james.maus@tetratech.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	
Bottle Order	30585

Report Information (if different than Account Information)

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Beal Mtn Sitewide
Sampler Name	Jim Maus
Sampler Phone	459-4164
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☒ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Table 5 Attached	Total Cyanide WAD Cyanide	Attached Table 4							See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
C2 1	Dup-1	6-4-19	0600	4	W			X									H190601 81
C2 2	STA-2		0810	↓	↓			X									
C2 3	STA-3B		0840					X									
C2 4	STA-3A		0900					X									
C2 5	SPR-3		0925					X									
C2 6	SPR-5		0940	2	W	X											
C2 7	SPR-10A		0950	2	W	X											
8	SPR-2		1115	1	W		X										
C2 9	Toe Drain		1005	2	W	X											
C2 10	SPR-18		1205	1	W		X										

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Jim Maus	6/6/19 1535	Jim Maus			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Wanda Johnson	6-6-19 15 33	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand del	Y	Y (N) C B	Y N	C1-0.7°C C2-0.3	(Y) N	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ENERGY LABORATORIES
Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Page 2 of 2

Account Information (Billing information)

Company/Name	Tetra Tech Inc
Contact	Jim Mans
Phone	406-459-4164
Mailing Address	825 West Custer Ave.
City, State, Zip	Helena, MT 59602
Email	james.mans@tetratech.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	
Bottle Order	30585

Report Information (if different than Account Information)

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other_____

Comments

Project Information

Project Name, PWSID, Permit, etc.	Beal Mtn Site wide
Sampler Name	Jim Mans
Sampler Phone	459-4164
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☒ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Analysis Requested

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	Table 5	Total Cyanide WAD Cyanide	Attached Table 4							See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
C1 1	SPR-D2	6-4-19	1255	1	W		X										1H19060181
C1 2	SPR-BCD	6-4-19	1450	4	W			X									
C1 3	~~SP~~ BCD	6-4-19	1510	4	W			X									
C1 4	BCD-Barren	6-6-19	0825	4	W			X									
C1 5	Barren Drain	6-6-19	0950	4	W			X									
C1 6	BCD-A	6-6-19	1050	4	W			X									
7																	
8																	
9																	
10																	

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Jim Mans	6/6/19 1535	[signature]			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Wandasom	6-6-19 1533	[signature]

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
hand del		Y (N) C B	Y N	C1-0.7°C C2-0.3	(Y) N	(Y) N	CC Cash Check_____	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

2019 Lab analyses

TABLE 4 (10 bottle sets) SURFACE WATER AND SPRING ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Suspended Solids	5.0	E160.2	7 Days
Metals			
Selenium, Total Recoverable	0.001	E200.8	6 Months
Inorganics(4)			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.005	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.005	SM 4500	14 Days
Nutrients			
Ammonia (low level)	0.1	SM4500 NH3	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L)

TABLE 5 (4 bottle sets) WASTEROCK DUMP ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Alkalinity, total[2]	4.0	A2320B	14 Days
Metals			
Selenium, Total Recoverable	0.001	E200.8	6 Months
Nutrients			
Sulfate[2]	1.0	E300.0	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L).
2 Alkalinity and sulfate to be analyzed only at locations SPR-5, SPR-10A, and Toe Drain.

TABLE 9 (5 bottle sets) LEACH PAD AREA GROUNDWATER ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Dissolved Solids	10	A2540C	7 Days
Inorganics			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.004	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.004	SM 4500	14 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L).

ANALYTICAL SUMMARY REPORT

July 09, 2019

Tetra Tech Inc
825 West Custer Ave
Helena, MT 59602-0226

Work Order: H19060570

Project Name: Beal Sitewide 2019

Energy Laboratories Inc Helena MT received the following 4 samples for Tetra Tech Inc on 6/24/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H19060570-001	SBB-91-29	06/20/19 9:00	06/24/19	Aqueous	Cyanide, Total Manual Distillation Cyanide, Free Total Cyanide Distillation E335.4 Cyanide, Weak Acid Dissociable Solids, Total Dissolved
H19060570-002	LPPZ-4	06/20/19 9:45	06/24/19	Aqueous	Same As Above
H19060570-003	LPMW-6	06/20/19 12:20	06/24/19	Aqueous	Same As Above
H19060570-004	LPMW-5	06/20/19 13:35	06/24/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Tetra Tech Inc
Project: Beal Sitewide 2019
Work Order: H19060570

Report Date: 07/09/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SBB-91-29
Lab ID: H19060570-001
Matrix: Aqueous

Project: Beal Sitewide 2019
Collection Date: 06/20/19 09:00
DateReceived: 06/24/19
Report Date: 07/09/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	993	mg/L		10		A2540 C	06/25/19 11:04 / cm		L24 (14410200)_190625B	19	TDS190625A
INORGANICS											
Cyanide, Total	0.174	mg/L		0.004		E335.4	06/28/19 15:24 / eli-b	06/28/19 08:03	SUB-B323156	6	B_134530
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/28/19 15:24 / eli-b		SUB-B323061	11	B_R323061
Cyanide, Weak Acid Dissociable	0.004	mg/L		0.004		Kelada-01	06/27/19 09:44 / eli-b		SUB-B322999	7	B_R322999

- The Total Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPPZ-4
Lab ID: H19060570-002
Matrix: Aqueous

Project: Beal Sitewide 2019
Collection Date: 06/20/19 09:45
DateReceived: 06/24/19
Report Date: 07/09/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	490	mg/L		10		A2540 C	06/25/19 11:05 / cm		L24 (14410200)_190625B	20	TDS190625A
INORGANICS											
Cyanide, Total	0.084	mg/L		0.004		E335.4	06/28/19 15:25 / eli-b	06/28/19 08:03	SUB-B323156	7	B_134530
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/28/19 15:25 / eli-b		SUB-B323061	12	B_R323061
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/27/19 09:52 / eli-b		SUB-B322999	10	B_R322999

- The Total Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPMW-6
Lab ID: H19060570-003
Matrix: Aqueous

Project: Beal Sitewide 2019
Collection Date: 06/20/19 12:20
DateReceived: 06/24/19
Report Date: 07/09/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	373	mg/L		10		A2540 C	06/25/19 11:05 / cm		L24 (14410200)_190625B	21	TDS190625A
INORGANICS											
Cyanide, Total	0.033	mg/L		0.004		E335.4	06/28/19 15:26 / eli-b	06/28/19 08:03	SUB-B323156	8	B_134530
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/28/19 05:26 / eli-b		SUB-B323061	13	B_R323061
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/27/19 09:55 / eli-b		SUB-B322999	11	B_R322999

- The Total Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPMW-5
Lab ID: H19060570-004
Matrix: Aqueous

Project: Beal Sitewide 2019
Collection Date: 06/20/19 13:35
DateReceived: 06/24/19
Report Date: 07/09/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	1370	mg/L		10		A2540 C	06/25/19 11:05 / cm		L24 (14410200)_190625B	22	TDS190625A
INORGANICS											
Cyanide, Total	0.098	mg/L		0.004		E335.4	06/28/19 15:27 / eli-b	06/28/19 08:03	SUB-B323156	9	B_134530
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	06/28/19 15:27 / eli-b		SUB-B323061	14	B_R323061
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	06/27/19 09:57 / eli-b		SUB-B322999	12	B_R322999

- The Total Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: B_134530

Date: *09-Jul-19*

Run ID :Run Order: **SUB-B323156: 2** SampType: **Method Blank** Lab ID: **MB-134530** Method: **E335.4**

Analysis Date: **06/28/19 15:13** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	ND	0.002									

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B323156: 3** SampType: **Laboratory Control Sample** Lab ID: **LCS-134530** Method: **E335.4**

Analysis Date: **06/28/19 15:14** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.105	0.0050	0.1	0	**105**	90	110	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B323156: 4** SampType: **Sample Matrix Spike** Lab ID: **B19062436-001EMS** Method: **E335.4**

Analysis Date: **06/28/19 15:22** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0855	0.0050	0.1	0	**86**	90	110	0			S

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B323156: 5** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19062436-001EMSD** Method: **E335.4**

Analysis Date: **06/28/19 15:23** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0830	0.0050	0.1	0	**83**	90	110	0.0855	**3.0**	10	S

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B323156: 10** SampType: **Sample Matrix Spike** Lab ID: **B19062487-001FMS** Method: **E335.4**

Analysis Date: **06/28/19 15:30** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0795	0.0050	0.1	0	**80**	90	110	0			S

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: B_134530

Date: *09-Jul-19*

Run ID :Run Order: **SUB-B323156: 11** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19062487-001FMSD** Method: **E335.4**

Analysis Date: **06/28/19 15:31** Units: **mg/L** **Prep Info:** Prep Date: **6/28/2019** Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0815	0.0050	0.1	0	82	90	110	0.0795	2.5	10	S

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: B_R322999

Date: *09-Jul-19*

Run ID :Run Order: **SUB-B322999: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **Kelada-01**

Analysis Date: **06/27/19 09:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0963	0.0050	0.1	0	96	90	110	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **Kelada-01**

Analysis Date: **06/27/19 09:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	ND	0.004									

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 3** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **Kelada-01**

Analysis Date: **06/27/19 09:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0916	0.0050	0.1	0	92	90	110	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 4** SampType: **Laboratory Control Sample** Lab ID: **LCS1-ZnCN2** Method: **Kelada-01**

Analysis Date: **06/27/19 09:21** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0968	0.0050	0.1	0	97	90	110	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 5** SampType: **Laboratory Control Sample** Lab ID: **LCS2-K3Fe(CN)6** Method: **Kelada-01**

Analysis Date: **06/27/19 09:24** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	ND	0.0050	0.2	0	0	0	5	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: B_R322999

Date: *09-Jul-19*

Run ID :Run Order: **SUB-B322999: 6** SampType: **Laboratory Control Sample** Lab ID: **LCS3-K4Fe(CN)6** Method: **Kelada-01**

Analysis Date: **06/27/19 09:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	ND	0.0050	0.2	0	0	0	5	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 8** SampType: **Sample Matrix Spike** Lab ID: **H19060570-001B** Method: **Kelada-01**

Analysis Date: **06/27/19 09:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0919	0.0050	0.1	0.004	88	80	120	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 9** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060570-001B** Method: **Kelada-01**

Analysis Date: **06/27/19 09:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0945	0.0050	0.1	0.004	90	80	120	0.0919	2.8	10	

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 13** SampType: **Sample Matrix Spike** Lab ID: **H19060570-004B** Method: **Kelada-01**

Analysis Date: **06/27/19 10:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0992	0.0050	0.1	0	99	80	120	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Run ID :Run Order: **SUB-B322999: 14** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19060570-004B** Method: **Kelada-01**

Analysis Date: **06/27/19 10:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0990	0.0050	0.1	0	99	80	120	0.0992	0.2	10	

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: B_R323156

Date: *09-Jul-19*

Run ID :Run Order: **SUB-B323156: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E335.4**

Analysis Date: **06/28/19 14:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.100	0.0050	0.1	0	**100**	90	110	0			

Associated samples: **H19060570-001B, H19060570-002B, H19060570-003B, H19060570-004B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19060570

BatchID: TDS190625A

Date: *09-Jul-19*

Run ID :Run Order: **ACCU-124 (14410200)_190625B: 1** SampType: **Method Blank** Lab ID: **MB-1_190625A** Method: **A2540 C**

Analysis Date: **06/25/19 11:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	ND	10									

Associated samples: **H19060570-001A, H19060570-002A, H19060570-003A, H19060570-004A**

Run ID :Run Order: **ACCU-124 (14410200)_190625B: 2** SampType: **Laboratory Control Sample** Lab ID: **LCS-2_190625A** Method: **A2540 C**

Analysis Date: **06/25/19 11:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1870	20	2000	0	**94**	90	110				

Associated samples: **H19060570-001A, H19060570-002A, H19060570-003A, H19060570-004A**

Run ID :Run Order: **ACCU-124 (14410200)_190625B: 4** SampType: **Sample Duplicate** Lab ID: **H19060562-001A DUP** Method: **A2540 C**

Analysis Date: **06/25/19 11:02** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	185	10		0				187	**1.1**	5	

Associated samples: **H19060570-001A, H19060570-002A, H19060570-003A, H19060570-004A**

Run ID :Run Order: **ACCU-124 (14410200)_190625B: 1** SampType: **Sample Duplicate** Lab ID: **H19060562-011A DUP** Method: **A2540 C**

Analysis Date: **06/25/19 11:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	202	10		0				202	**0.0**	5	

Associated samples: **H19060570-001A, H19060570-002A, H19060570-003A, H19060570-004A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

Work Order Receipt Checklist

Tetra Tech Inc

H19060570

Login completed by: Jessica C. Smith

Date Received: 6/24/2019

Reviewed by: BL2000\rtooke

Received by: JCS

Reviewed Date: 7/8/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	4.0°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

www.energylab.com

Account Information (Billing information)

Company/Name	Tetra Tech
Contact	Jim Mans
Phone	459-4164
Mailing Address	825 W. Custer Ave
City, State, Zip	Helena MT 59602
Email	James.Mans@tetratech.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	
Bottle Order	30585

Report Information (if different than Account Information)

Company/Name	SAME
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☐Email
Special Report/Formats:	☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

Project Information

Project Name, PWSID, Permit, etc.	Beal Sitewide 2019
Sampler Name	J. Mans
Sampler Phone	459-4164
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☒ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Analysis Requested

Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Table 9	See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
1 SBB-91-29	6-20-19	0900	2	W	X	X		H19060570
2 LPPZ-4	6-20-19	0945	2	W				
3 LPMW-6	6-20-19	1220	2	W				
4 LPMW-5	6-20-19	1335	2	W	X			
5								
6								
7								
8								
9								
10								

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Jim Mans	6-20-19 1845		Jessica Cook	6/24/19 14:51	
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Jessica Smith	6-24-19 1451	

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
HAND	Y.S	Y (N) C B	Y N	4.0 °C	(Y) N	Y (N)	CC Cash Check	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

2019 Lab analyses

TABLE 4 (10 bottle sets) SURFACE WATER AND SPRING ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Suspended Solids	5.0	E160.2	7 Days
Metals			
Selenium, Total Recoverable	0.001	E200.8	6 Months
Inorganics(4)			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.005	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.005	SM 4500	14 Days
Nutrients			
Ammonia (low level)	0.1	SM4500 NH3	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L)

TABLE 5 (4 bottle sets) WASTEROCK DUMP ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Alkalinity, total[2]	4.0	A2320B	14 Days
Metals			
Selenium, Total Recoverable	0.001	E200.8	6 Months
Nutrients			
Sulfate[2]	1.0	E300.0	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L).
2 Alkalinity and sulfate to be analyzed only at locations SPR-5, SPR-10A, and Toe Drain.

TABLE 9 (5 bottle sets) LEACH PAD AREA GROUNDWATER ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Dissolved Solids	10	A2540C	7 Days
Inorganics			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.004	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.004	SM 4500	14 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L).

ANALYTICAL SUMMARY REPORT

October 01, 2019

Tetra Tech Inc
825 West Custer Ave
Helena, MT 59602-0226

Work Order: H19090493

Project Name: Beal 2018/2019 Sitewide

Energy Laboratories Inc Helena MT received the following 22 samples for Tetra Tech Inc on 9/19/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H19090493-001	STA-2	09/16/19 14:00	09/19/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Free Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19090493-002	STA-3B	09/16/19 14:20	09/19/19	Aqueous	Same As Above
H19090493-003	STA-3A	09/16/19 14:35	09/19/19	Aqueous	Same As Above
H19090493-004	SPR-3	09/16/19 14:50	09/19/19	Aqueous	Same As Above
H19090493-005	DUP-2	09/16/19 12:00	09/19/19	Aqueous	Same As Above
H19090493-006	SPR-2	09/17/19 10:15	09/19/19	Aqueous	Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable
H19090493-007	SPR-18	09/17/19 10:40	09/19/19	Aqueous	Same As Above
H19090493-008	SPR-D2	09/17/19 11:30	09/19/19	Aqueous	Same As Above
H19090493-009	SPR-5	09/17/19 12:45	09/19/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Alkalinity Conductivity Anions by Ion Chromatography Metals Digestion by E200.2
H19090493-010	SPR-10A	09/17/19 13:00	09/19/19	Aqueous	Same As Above
H19090493-011	Toe Drain	09/17/19 13:10	09/19/19	Aqueous	Same As Above
H19090493-012	BCD-A	09/18/19 15:20	09/19/19	Aqueous	Metals by ICP/ICPMS, Tot. Rec. Cyanide, Free Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable Nitrogen, Ammonia Metals Digestion by E200.2 Solids, Total Suspended
H19090493-013	BCD-Barren	09/18/19 15:45	09/19/19	Aqueous	Same As Above
H19090493-014	BCD	09/18/19 16:00	09/19/19	Aqueous	Same As Above
H19090493-015	LPMW-6	09/16/19 14:00	09/19/19	Aqueous	Cyanide, Free Cyanide, Total Manual Distillation Cyanide, Weak Acid Dissociable Solids, Total Dissolved
H19090493-016	LPMW-5	09/16/19 16:00	09/19/19	Aqueous	Same As Above
H19090493-017	LPPZ-4	09/16/19 17:00	09/19/19	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

H19090493-018	Duplicate	09/16/19 12:00	09/19/19	Aqueous	Same As Above
H19090493-019	SBB-91-29	09/17/19 11:30	09/19/19	Aqueous	Same As Above
H19090493-020	SBB-88-20	09/17/19 13:15	09/19/19	Aqueous	Same As Above
H19090493-021	DW-10	09/17/19 16:15	09/19/19	Aqueous	Same As Above
H19090493-022	DW-5	09/17/19 18:40	09/19/19	Aqueous	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

CLIENT: Tetra Tech Inc
Project: Beal 2018/2019 Sitewide
Work Order: H19090493

Report Date: 10/01/19

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-2
Lab ID: H19090493-001
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 14:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:14 / SR		L24 (14410200)_190920A	44	TSS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 15:29 / eli-b		SUB-B327848	12	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	32	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:14 / eli-b		SUB-B327906	5	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:34 / cm		FIA203-HE_190923C	34	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.002	mg/L		0.001		E200.8	09/24/19 11:13 / sld	09/20/19 08:52	ICPMS205-H_190923A	137	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-3B
Lab ID: H19090493-002
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 14:20
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:14 / SR		L24 (14410200)_190920A	45	TSS190920A
INORGANICS											
Cyanide, Total	0.004	mg/L		0.004		Kelada-01	09/20/19 15:32 / eli-b		SUB-B327848	13	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	33	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:22 / eli-b		SUB-B327906	8	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:38 / cm		FIA203-HE_190923C	37	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.006	mg/L		0.001		E200.8	09/24/19 11:15 / sld	09/20/19 08:52	ICPMS205-H_190923A	138	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: STA-3A
Lab ID: H19090493-003
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 14:35
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:15 / SR		L24 (14410200)_190920A	46	TSS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 15:34 / eli-b		SUB-B327848	14	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	34	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:24 / eli-b		SUB-B327906	9	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:39 / cm		FIA203-HE_190923C	38	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.004	mg/L		0.001		E200.8	09/24/19 11:17 / sld	09/20/19 08:52	ICPMS205-H_190923A	139	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-3
Lab ID: H19090493-004
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 14:50
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:15 / SR		L24 (14410200)_190920A	47	TSS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 15:37 / eli-b		SUB-B327848	15	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	35	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:27 / eli-b		SUB-B327906	10	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:40 / cm		FIA203-HE_190923C	39	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.001	mg/L		0.001		E200.8	09/24/19 11:36 / sld	09/20/19 08:52	ICPMS205-H_190923A	147	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: DUP-2
Lab ID: H19090493-005
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 12:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:15 / SR		L24 (14410200)_190920A	48	TSS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 15:40 / eli-b		SUB-B327848	16	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	36	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:30 / eli-b		SUB-B327906	11	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:41 / cm		FIA203-HE_190923C	40	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.004	mg/L		0.001		E200.8	09/24/19 11:39 / sld	09/20/19 08:52	ICPMS205-H_190923A	148	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-2
Lab ID: H19090493-006
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 10:15
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.022	mg/L		0.004		Kelada-01	09/20/19 15:42 / eli-b		SUB-B327848 : 17		B_R327848
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:33 / eli-b		SUB-B327906 : 12		B_R327906

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-18
Lab ID: H19090493-007
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 10:40
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.012	mg/L		0.004		Kelada-01	09/20/19 15:45 / eli-b		SUB-B327848 : 18		B_R327848
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:35 / eli-b		SUB-B327906 : 13		B_R327906

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-D2
Lab ID: H19090493-008
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 11:30
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Cyanide, Total	0.040	mg/L		0.004		Kelada-01	09/20/19 15:48 / eli-b		SUB-B327848 : 19		B_R327848
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:38 / eli-b		SUB-B327906 : 14		B_R327906

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-5
Lab ID: H19090493-009
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 12:45
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	78	mg/L		4		A2320 B	09/23/19 13:27 / SR		PHSC_101-H_190923A	79	R148013
Sulfate	954	mg/L		1		E300.0	09/20/19 23:41 / SR		IC METROHM_190920A	55	R148004
METALS, TOTAL RECOVERABLE											
Selenium	0.033	mg/L		0.001		E200.8	09/24/19 11:41 / sld	09/20/19 08:52	ICPMS205-H_190923A	149	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SPR-10A
Lab ID: H19090493-010
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 13:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	150	mg/L		4		A2320 B	09/23/19 13:32 / SR		PHSC_101-H_190923A	81	R148013
Sulfate	330	mg/L		1		E300.0	09/20/19 23:56 / SR		IC METROHM_190920A	56	R148004
METALS, TOTAL RECOVERABLE											
Selenium	0.064	mg/L		0.001		E200.8	09/24/19 11:44 / sld	09/20/19 08:52	ICPMS205-H_190923A	150	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: Toe Drain
Lab ID: H19090493-011
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 13:10
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
INORGANICS											
Alkalinity, Total as CaCO3	79	mg/L		4		A2320 B	09/23/19 13:38 / SR		PHSC_101-H_190923A	83	R148013
Sulfate	966	mg/L		1		E300.0	09/21/19 00:10 / SR		IC METROHM_190920A	57	R148004
METALS, TOTAL RECOVERABLE											
Selenium	0.055	mg/L		0.001		E200.8	09/24/19 11:46 / sld	09/20/19 08:52	ICPMS205-H_190923A	151	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD-A
Lab ID: H19090493-012
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/18/19 15:20
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:16 / SR		L24 (14410200)_190920A	51	TSS190920A
INORGANICS											
Cyanide, Total	0.086	mg/L		0.004		Kelada-01	09/20/19 15:51 / eli-b		SUB-B327848	20	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	37	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:41 / eli-b		SUB-B327906	15	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:43 / cm		FIA203-HE_190923C	41	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.009	mg/L		0.001		E200.8	09/24/19 11:48 / sld	09/20/19 08:52	ICPMS205-H_190923A	152	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD-Barren
Lab ID: H19090493-013
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/18/19 15:45
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:16 / SR		L24 (14410200)_190920A	53	TSS190920A
INORGANICS											
Cyanide, Total	0.297	mg/L		0.004		Kelada-01	09/20/19 15:53 / eli-b		SUB-B327848	21	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	38	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 15:43 / eli-b		SUB-B327906	16	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:46 / cm		FIA203-HE_190923C	44	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.018	mg/L		0.001		E200.8	09/24/19 11:51 / sld	09/20/19 08:52	ICPMS205-H_190923A	153	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: BCD
Lab ID: H19090493-014
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/18/19 16:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Suspended TSS @ 105 C	ND	mg/L		5		A2540 D	09/20/19 16:16 / SR		L24 (14410200)_190920A	54	TSS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 16:09 / eli-b		SUB-B327848	22	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	39	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:05 / eli-b		SUB-B327906	19	B_R327906
- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.											
NUTRIENTS											
Nitrogen, Ammonia as N	ND	mg/L		0.1		E350.1	09/23/19 14:47 / cm		FIA203-HE_190923C	45	R148037
METALS, TOTAL RECOVERABLE											
Selenium	0.046	mg/L		0.001		E200.8	09/24/19 11:53 / sld	09/20/19 08:52	ICPMS205-H_190923A	154	47903

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPMW-6
Lab ID: H19090493-015
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 14:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	390	mg/L		10		A2540 C	09/20/19 15:49 / SR		L24 (14410200)_190920B	58	TDS190920A
INORGANICS											
Cyanide, Total	0.049	mg/L		0.004		Kelada-01	09/20/19 16:18 / eli-b		SUB-B327848	25	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	40	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:13 / eli-b		SUB-B327906	22	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPMW-5
Lab ID: H19090493-016
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 16:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	1370	mg/L		10		A2540 C	09/20/19 15:49 / SR		L24 (14410200)_190920B	59	TDS190920A
INORGANICS											
Cyanide, Total	0.103	mg/L		0.004		Kelada-01	09/20/19 16:20 / eli-b		SUB-B327848	26	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	41	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:16 / eli-b		SUB-B327906	23	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: LPPZ-4
Lab ID: H19090493-017
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 17:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	435	mg/L	D	50		A2540 C	09/20/19 15:49 / SR		L24 (14410200)_190920B	60	TDS190920A
INORGANICS											
Cyanide, Total	0.058	mg/L		0.004		Kelada-01	09/20/19 16:23 / eli-b		SUB-B327848	27	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	42	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:19 / eli-b		SUB-B327906	24	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions:
RL - Analyte reporting limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: Duplicate
Lab ID: H19090493-018
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/16/19 12:00
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	385	mg/L	D	50		A2540 C	09/20/19 15:50 / SR		L24 (14410200)_190920B	61	TDS190920A
INORGANICS											
Cyanide, Total	0.065	mg/L		0.004		Kelada-01	09/20/19 16:26 / eli-b		SUB-B327848	28	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	43	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:21 / eli-b		SUB-B327906	25	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions:
RL - Analyte reporting limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SBB-91-29
Lab ID: H19090493-019
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 11:30
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	1020	mg/L	D	20		A2540 C	09/20/19 15:50 / SR		L24 (14410200)_190920B	62	TDS190920A
INORGANICS											
Cyanide, Total	0.123	mg/L		0.004		Kelada-01	09/20/19 16:28 / eli-b		SUB-B327848	29	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	44	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:24 / eli-b		SUB-B327906	26	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions:
RL - Analyte reporting limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: SBB-88-20
Lab ID: H19090493-020
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 13:15
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	691	mg/L		10		A2540 C	09/20/19 15:50 / SR		L24 (14410200)_190920B	64	TDS190920A
INORGANICS											
Cyanide, Total	0.011	mg/L		0.004		Kelada-01	09/20/19 16:31 / eli-b		SUB-B327848	30	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	45	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:27 / eli-b		SUB-B327906	27	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: DW-10
Lab ID: H19090493-021
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 16:15
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	350	mg/L	D	50		A2540 C	09/20/19 15:50 / SR		L24 (14410200)_190920B	65	TDS190920A
INORGANICS											
Cyanide, Total	ND	mg/L		0.004		Kelada-01	09/20/19 16:34 / eli-b		SUB-B327848	31	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	46	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:29 / eli-b		SUB-B327906	28	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions:
RL - Analyte reporting limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Tetra Tech Inc
Client Sample ID: DW-5
Lab ID: H19090493-022
Matrix: Aqueous

Project: Beal 2018/2019 Sitewide
Collection Date: 09/17/19 18:40
DateReceived: 09/19/19
Report Date: 10/01/19

Analyses	Result	Units	Qualifiers	RL	MDL	Method	Analysis Date / By	Prep Date	RunID	Run Order	BatchID
PHYSICAL PROPERTIES											
Solids, Total Dissolved TDS @ 180 C	849	mg/L		10		A2540 C	09/20/19 15:51 / SR		L24 (14410200)_190920B	66	TDS190920A
INORGANICS											
Cyanide, Total	0.004	mg/L		0.004		Kelada-01	09/20/19 16:36 / eli-b		SUB-B327848	32	B_R327848
Cyanide, Free	NA	mg/L		0.20		A4500-CN-F	09/23/19 16:45 / eli-b		SUB-B327906	47	B_R327906
Cyanide, Weak Acid Dissociable	ND	mg/L		0.004		Kelada-01	09/23/19 16:32 / eli-b		SUB-B327906	29	B_R327906

- The Weak Acid Dissociable (WAD) Cyanide was analyzed, and was <0.2 mg/L, the detection limit for Free Cyanide. Free Cyanide was not analyzed.

Report Definitions: RL - Analyte reporting limit. MCL - Maximum contaminant level. ND - Not detected at the reporting limit.

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: 47903** — **Date:** *01-Oct-19*

Run ID :Run Order: **ICPMS205-H_190923A: 131** SampType: **Method Blank** Lab ID: **MB-47903** Method: **E200.8**

Analysis Date: **09/24/19 10:58** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	ND	5E-05									

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 140** SampType: **Laboratory Control Sample** Lab ID: **LCS-47903** Method: **E200.8**

Analysis Date: **09/24/19 11:20** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.484	0.0010	0.5	0	97	85	115				

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 141** SampType: **Sample Matrix Spike** Lab ID: **H19090491-001CMS3** Method: **E200.8**

Analysis Date: **09/24/19 11:22** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.475	0.0010	0.5	0.00006436	95	70	130				

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 142** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090491-001CMSD3** Method: **E200.8**

Analysis Date: **09/24/19 11:25** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.478	0.0010	0.5	0.00006436	96	70	130	0.4746	0.7	20	

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 155** SampType: **Sample Matrix Spike** Lab ID: **H19090493-005CMS3** Method: **E200.8**

Analysis Date: **09/24/19 11:55** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.480	0.0010	0.5	0.003889	95	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: 47903

Date: *01-Oct-19*

Run ID :Run Order: **ICPMS205-H_190923A: 155** SampType: **Sample Matrix Spike** Lab ID: **H19090493-005CMS3** Method: **E200.8**

Analysis Date: **09/24/19 11:55** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 156** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-005CMSD3** Method: **E200.8**

Analysis Date: **09/24/19 11:58** Units: **mg/L** **Prep Info:** Prep Date: **9/20/2019** Prep Method: **E200.2**

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.480	0.0010	0.5	0.003889	**95**	70	130	0.4799	**0.0**	20	

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID:** **B_R327848** — **Date:** *01-Oct-19*

Run ID :Run Order: **SUB-B327848: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **Kelada-01**

Analysis Date: **09/20/19 13:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0927	0.0050	0.1	0	93	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **Kelada-01**

Analysis Date: **09/20/19 13:13** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.003	0.002									

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 3** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **Kelada-01**

Analysis Date: **09/20/19 13:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.100	0.0050	0.1	0	100	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 4** SampType: **Laboratory Control Sample** Lab ID: **LCS1-K4Fe(CN)6** Method: **Kelada-01**

Analysis Date: **09/20/19 13:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.202	0.0050	0.2	0	101	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: B_R327848

Date: *01-Oct-19*

Run ID :Run Order: **SUB-B327848: 8** SampType: **Sample Matrix Spike** Lab ID: **H19090491-005E** Method: **Kelada-01**

Analysis Date: **09/20/19 18:00** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0941	0.0050	0.1	0	**94**	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 9** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090491-005E** Method: **Kelada-01**

Analysis Date: **09/20/19 18:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.103	0.0050	0.1	0	**103**	90	110	0.0941	**8.6**	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 10** SampType: **Sample Matrix Spike** Lab ID: **B19091954-001BMS** Method: **Kelada-01**

Analysis Date: **09/20/19 14:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0971	0.0050	0.1	0.0036	**94**	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 11** SampType: **Sample Matrix Spike Duplicate** Lab ID: **B19091954-001BMSD** Method: **Kelada-01**

Analysis Date: **09/20/19 14:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.101	0.0050	0.1	0.0036	**98**	90	110	0.0971	**4.4**	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: B_R327848

Date: *01-Oct-19*

Run ID :Run Order: **SUB-B327848: 23** SampType: **Sample Matrix Spike** Lab ID: **H19090493-014D** Method: **Kelada-01**

Analysis Date: **09/20/19 16:12** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.0959	0.0050	0.1	0.0032	93	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 24** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-014D** Method: **Kelada-01**

Analysis Date: **09/20/19 16:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.104	0.0050	0.1	0.0032	101	90	110	0.0959	8.2	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 33** SampType: **Sample Matrix Spike** Lab ID: **H19090493-022B** Method: **Kelada-01**

Analysis Date: **09/20/19 16:39** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.107	0.0050	0.1	0.0042	102	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327848: 34** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-022B** Method: **Kelada-01**

Analysis Date: **09/20/19 16:42** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Total	0.112	0.0050	0.1	0.0042	108	90	110	0.1066	5.1	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID:** **B_R327906** — **Date:** *01-Oct-19*

Run ID :Run Order: **SUB-B327906: 1** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **Kelada-01**

Analysis Date: **09/23/19 13:11** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0946	0.0050	0.1	0	95	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **Kelada-01**

Analysis Date: **09/23/19 13:14** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	ND	0.004									

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 3** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **Kelada-01**

Analysis Date: **09/23/19 13:17** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0924	0.0050	0.1	0	92	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 4** SampType: **Laboratory Control Sample** Lab ID: **LCS1-ZnCN2** Method: **Kelada-01**

Analysis Date: **09/23/19 13:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.100	0.0050	0.1	0	100	90	110	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID:** **B_R327906** — **Date:** *01-Oct-19*

Run ID :Run Order: **SUB-B327906: 6** SampType: **Sample Matrix Spike** Lab ID: **H19090493-001D** Method: **Kelada-01**

Analysis Date: **09/23/19 15:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0913	0.0050	0.1	0	91	80	120	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 7** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-001D** Method: **Kelada-01**

Analysis Date: **09/23/19 15:19** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0955	0.0050	0.1	0	96	80	120	0.0913	4.5	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 17** SampType: **Sample Matrix Spike** Lab ID: **H19090493-013D** Method: **Kelada-01**

Analysis Date: **09/23/19 15:46** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.107	0.0050	0.1	0.0038	103	80	120	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 18** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-013D** Method: **Kelada-01**

Analysis Date: **09/23/19 15:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.109	0.0050	0.1	0.0038	105	80	120	0.1069	1.9	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: **B_R327906**

Date: *01-Oct-19*

Run ID :Run Order: **SUB-B327906: 20** SampType: **Sample Matrix Spike** Lab ID: **H19090493-014D** Method: **Kelada-01**

Analysis Date: **09/23/19 16:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.108	0.0050	0.1	0	108	80	120	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 21** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-014D** Method: **Kelada-01**

Analysis Date: **09/23/19 16:10** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.117	0.0050	0.1	0	117	80	120	0.1081	7.9	10	

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 30** SampType: **Sample Matrix Spike** Lab ID: **H19090493-022B** Method: **Kelada-01**

Analysis Date: **09/23/19 16:35** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.0943	0.0050	0.1	0.0037	91	80	120	0			

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Run ID :Run Order: **SUB-B327906: 31** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-022B** Method: **Kelada-01**

Analysis Date: **09/23/19 16:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cyanide, Weak Acid Dissociable	0.111	0.0050	0.1	0.0037	107	80	120	0.0943	16	10	R

Associated samples: **H19090493-001D, H19090493-002D, H19090493-003D, H19090493-004D, H19090493-005D, H19090493-006A, H19090493-007A, H19090493-008A, H19090493-012D, H19090493-013D, H19090493-014D, H19090493-015B, H19090493-016B, H19090493-017B, H19090493-018B, H19090493-019B, H19090493-020B, H19090493-021B, H19090493-022B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: R148004** — **Date:** *01-Oct-19*

Run ID :Run Order: **IC METROHM_190920A: 2** SampType: **Method Blank** Lab ID: **ICB** Method: **E300.0**

Analysis Date: **09/20/19 09:40** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	ND	0.08									

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **IC METROHM_190920A: 3** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E300.0**

Analysis Date: **09/20/19 09:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	376	1.0	400	0	94	90	110				

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **IC METROHM_190920A: 4** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E300.0**

Analysis Date: **09/20/19 10:09** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	96.5	1.0	100	0	96	90	110				

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **IC METROHM_190920A: 48** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E300.0**

Analysis Date: **09/20/19 21:31** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	189	1.0	200	0	95	90	110				

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **IC METROHM_190920A: 60** SampType: **Sample Matrix Spike** Lab ID: **H19090497-001AMS** Method: **E300.0**

Analysis Date: **09/21/19 00:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	129	1.0	100	18.56	110	90	110				

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: R148004

Date: *01-Oct-19*

Run ID :Run Order: **IC METROHM_190920A: 61** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090497-001AMSD** Method: **E300.0**

Analysis Date: **09/21/19 01:08** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Sulfate	127	1.0	100	18.56	**109**	90	110	128.9	**1.4**	20	

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: R148013

Date: *01-Oct-19*

Run ID :Run Order: **PHSC_101-H_190923A: 57** SampType: **Method Blank** Lab ID: **MBLK** Method: **A2320 B**

Analysis Date: **09/23/19 11:55** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	ND	2									

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **PHSC_101-H_190923A: 58** SampType: **Laboratory Control Sample** Lab ID: **LCS** Method: **A2320 B**

Analysis Date: **09/23/19 12:01** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	590	4.0	600	0	**98**	90	110				

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **PHSC_101-H_190923A: 61** SampType: **Sample Duplicate** Lab ID: **H19090443-005ADUP** Method: **A2320 B**

Analysis Date: **09/23/19 12:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	67	4.0		0				66	**1.4**	10	

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Run ID :Run Order: **PHSC_101-H_190923A: 101** SampType: **Sample Duplicate** Lab ID: **H19090512-007BDUP** Method: **A2320 B**

Analysis Date: **09/23/19 14:33** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Alkalinity, Total as CaCO3	140	4.0		0				141.4	**0.8**	10	

Associated samples: **H19090493-009A, H19090493-010A, H19090493-011A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: R148033** — **Date:** *01-Oct-19*

Run ID :Run Order: **ICPMS205-H_190923A: 10** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E200.8**

Analysis Date: **09/23/19 11:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.0613	0.0050	0.06	0	102	90	110				

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 11** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **09/23/19 11:54** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.53E-05	0.0050		0							

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 12** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **09/23/19 11:56** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.00969	0.0050	0.01	0	97	70	130				

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 98** SampType: **Interference Check Sample A** Lab ID: **ICSA** Method: **E200.8**

Analysis Date: **09/24/19 08:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.000176	0.0050		0							

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Run ID :Run Order: **ICPMS205-H_190923A: 99** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **09/24/19 08:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	0.00955	0.0050	0.01	0	95	70	130				

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: R148033

Date: *01-Oct-19*

Run ID :Run Order: **ICPMS205-H_190923A: 99** SampType: **Interference Check Sample AB** Lab ID: **ICSAB** Method: **E200.8**

Analysis Date: **09/24/19 08:49** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Associated samples: **H19090493-001C, H19090493-002C, H19090493-003C, H19090493-004C, H19090493-005C, H19090493-009B, H19090493-010B, H19090493-011B, H19090493-012C, H19090493-013C, H19090493-014C**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: R148037** — **Date:** *01-Oct-19*

Run ID :Run Order: **FIA203-HE_190923C: 8** SampType: **Initial Calibration Verification Standard** Lab ID: **ICV** Method: **E350.1**

Analysis Date: **09/23/19 14:03** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.935	0.050	1	0	94	90	110				

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 9** SampType: **Method Blank** Lab ID: **MBLK** Method: **E350.1**

Analysis Date: **09/23/19 14:04** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	ND	0.03									

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 11** SampType: **Laboratory Fortified Blank** Lab ID: **LFB** Method: **E350.1**

Analysis Date: **09/23/19 14:07** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.990	0.050	1	0	99	90	110				

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 28** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **09/23/19 14:27** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.473	0.050	0.5	0	95	90	110				

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 35** SampType: **Sample Matrix Spike** Lab ID: **H19090493-001BMS** Method: **E350.1**

Analysis Date: **09/23/19 14:36** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.878	0.050	1	0	88	80	120				

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: R148037** — **Date:** *01-Oct-19*

Run ID :Run Order: **FIA203-HE_190923C: 36** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090493-001BMSD** Method: **E350.1**

Analysis Date: **09/23/19 14:37** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.886	0.050	1	0	**89**	80	120	0.8778	**0.9**	10	

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 42** SampType: **Continuing Calibration Verification Standar** Lab ID: **CCV** Method: **E350.1**

Analysis Date: **09/23/19 14:44** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.480	0.050	0.5	0	**96**	90	110				

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 48** SampType: **Sample Matrix Spike** Lab ID: **H19090507-001GMS** Method: **E350.1**

Analysis Date: **09/23/19 14:51** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.800	0.050	1	0.0581	**74**	80	120				S

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Run ID :Run Order: **FIA203-HE_190923C: 49** SampType: **Sample Matrix Spike Duplicate** Lab ID: **H19090507-001GMSD** Method: **E350.1**

Analysis Date: **09/23/19 14:52** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrogen, Ammonia as N	0.790	0.050	1	0.0581	**73**	80	120	0.7997	**1.2**	10	S

Associated samples: **H19090493-001B, H19090493-002B, H19090493-003B, H19090493-004B, H19090493-005B, H19090493-012B, H19090493-013B, H19090493-014B**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc — Prepared by Helena, MT Branch

Work Order: H19090493 — **BatchID: TDS190920A** — **Date:** *01-Oct-19*

Run ID :Run Order: **ACCU-124 (14410200)_190920B: 4** SampType: **Method Blank** Lab ID: **MB-49_190920A** Method: **A2540 C**

Analysis Date: **09/20/19 15:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	ND	10									

Associated samples: **H19090493-015A, H19090493-016A, H19090493-017A, H19090493-018A, H19090493-019A, H19090493-020A, H19090493-021A, H19090493-022A**

Run ID :Run Order: **ACCU-124 (14410200)_190920B: 5** SampType: **Laboratory Control Sample** Lab ID: **LCS-50_190920A** Method: **A2540 C**

Analysis Date: **09/20/19 15:47** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1990	20	2000	0	**100**	90	110				

Associated samples: **H19090493-015A, H19090493-016A, H19090493-017A, H19090493-018A, H19090493-019A, H19090493-020A, H19090493-021A, H19090493-022A**

Run ID :Run Order: **ACCU-124 (14410200)_190920B: 5** SampType: **Sample Duplicate** Lab ID: **H19090458-003A DUP** Method: **A2540 C**

Analysis Date: **09/20/19 15:48** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	6610	100		0				6640	**0.5**	5	

Associated samples: **H19090493-015A, H19090493-016A, H19090493-017A, H19090493-018A, H19090493-019A, H19090493-020A, H19090493-021A, H19090493-022A**

Run ID :Run Order: **ACCU-124 (14410200)_190920B: 6** SampType: **Sample Duplicate** Lab ID: **H19090493-019A DUP** Method: **A2540 C**

Analysis Date: **09/20/19 15:50** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Dissolved TDS @ 180 C	1030	20		0				1024	**0.8**	5	

Associated samples: **H19090493-015A, H19090493-016A, H19090493-017A, H19090493-018A, H19090493-019A, H19090493-020A, H19090493-021A, H19090493-022A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

ANALYTICAL QC SUMMARY REPORT

Client: Tetra Tech Inc

Prepared by Helena, MT Branch

Work Order: H19090493

BatchID: TSS190920A

Date: *01-Oct-19*

Run ID :Run Order: **ACCU-124 (14410200)_190920A: 4** SampType: **Method Blank** Lab ID: **MB-49_190920A** Method: **A2540 D**

Analysis Date: **09/20/19 16:15** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	0.3									

Associated samples: **H19090493-001A, H19090493-002A, H19090493-003A, H19090493-004A, H19090493-005A, H19090493-012A, H19090493-013A, H19090493-014A**

Run ID :Run Order: **ACCU-124 (14410200)_190920A: 5** SampType: **Laboratory Control Sample** Lab ID: **LCS-50_190920A** Method: **A2540 D**

Analysis Date: **09/20/19 16:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	91.0	10	100	0	**91**	80	120				

Associated samples: **H19090493-001A, H19090493-002A, H19090493-003A, H19090493-004A, H19090493-005A, H19090493-012A, H19090493-013A, H19090493-014A**

Run ID :Run Order: **ACCU-124 (14410200)_190920A: 5** SampType: **Sample Duplicate** Lab ID: **H19090493-012ADUP** Method: **A2540 D**

Analysis Date: **09/20/19 16:16** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	10		0				0		5	

Associated samples: **H19090493-001A, H19090493-002A, H19090493-003A, H19090493-004A, H19090493-005A, H19090493-012A, H19090493-013A, H19090493-014A**

- Since the difference between the analytical result for the sample and its duplicate is less than the reporting limit, the RPD variance is not considered significant.

Run ID :Run Order: **ACCU-124 (14410200)_190920A: 6** SampType: **Sample Duplicate** Lab ID: **H19090514-006ADUP** Method: **A2540 D**

Analysis Date: **09/20/19 16:18** Units: **mg/L** **Prep Info:** Prep Date: Prep Method:

Analytes 1	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Solids, Total Suspended TSS @ 105 C	ND	10		0				0		5	

Associated samples: **H19090493-001A, H19090493-002A, H19090493-003A, H19090493-004A, H19090493-005A, H19090493-012A, H19090493-013A, H19090493-014A**

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limit
R - RPD outside accepted recovery limits
N - Analyte concentration was not sufficiently high to calculate RPD
A - Analyte concentration greater than four times the spike amount

Work Order Receipt Checklist

Tetra Tech Inc

H19090493

Login completed by: Jessica C. Smith

Date Received: 9/19/2019

Reviewed by: BL2000\acarlson

Received by: TLL

Reviewed Date: 10/1/2019

Carrier name: Hand Del

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☐	No ☑	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	°C See Comments		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Cooler 1 was received at 3.3 °C, Cooler 2 at 3.0 °C, and Cooler 3 at 1.2 °C. On Ice. The temperature in coolers 1 and 2 were taken from a client sample, and the temperature from cooler 3 was taken from the temperature blank. Time on sample Toe Drain is 14:10 -Time on COC is 13:10. Emailed client regarding time. JCS 09/19/19

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Chain of Custody & Analytical Request Record

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Page 1 of 3

Account Information (Billing information)

Company/Name	Tetra Tech
Contact	Jim Maus
Phone	459-4164
Mailing Address	825 West Custer Ave
City, State, Zip	Helena MT 59602
Email	james.maus@tetratech.com
Receive Invoice	☐Hard Copy ☒Email
Receive Report	☐Hard Copy ☒Email
Purchase Order	
Quote	
Bottle Order	31605

Report Information (if different than Account Information)

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐Hard Copy ☒Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

C1 = 3.3
C2 = 3.0 } No TB
C3 = 1.2 TB

Project Information

Project Name, PWSID, Permit, etc.	Beal 2018/2019 Sitewide
Sampler Name	Jim Maus
Sampler Phone	
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☒ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

Analysis Requested

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Attached Table 4	See Attached Table 5	Total Cyanide ONLY SM 4500 (Table 4)	WAD Cyanide ONLY SM 4500 (Table 4)						See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
C2	1 STA-2	9-16-19	1400	4	W	X									X		H19090493
C3	2 STA-3B	↓	1420	4	W	↓									↓		
C3	3 STA-3A	↓	1435	4	W	↓									↓		
C3	4 SPR-3	↓	1450	4	W	↓									↓		
C2	5 Dup-2	↓	1200	4	W	↓									↓		
C1	6 SPR-2	9-17-19	1015	1	W			X	X								
C1	7 SPR-18		1040	1	W			X	X								
C1	8 SPR-D2		1130	1	W			X	X								
C1	9 SPR-5		1245	2	W		X								X		
C2	10 SPR-10A		1300	2	W		X								X		

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Jim Maus	9-19-19 1238	[signature]			
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Tracy Carad	9/19/18 12:38	[signature]

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
Hand	Y	Y (N) C B	Y N	See Comments C3 C1 & 2 °C	(Y) N	(Y) N	CC Cash Check	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

ELI-COC-12/16 v.1

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Chain of Custody & Analytical Request Record

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Page 2 of 3

Account Information (Billing information)

Company/Name: Tetra Tech
Contact: Jim Maus
Phone: 459-4164
Mailing Address: 825 West Custer Ave
City, State, Zip: Helena, MT 59602
Email: James.maus@tetratech.com
Receive Invoice: ☐ Hard Copy ☒ Email
Receive Report: ☐ Hard Copy ☒ Email
Purchase Order:
Quote:
Bottle Order: 31605

Report Information (if different than Account Information)

Company/Name: Same
Contact:
Phone:
Mailing Address:
City, State, Zip:
Email:
Receive Report: ☐ Hard Copy ☒ Email
Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

C1 = 3.3
C2 = 3.0 } No TB
C3 = 1.2 TB

Project Information

Project Name, PWSID, Permit, etc.: Beal 2018/2019 Site Wide
Sampler Name: Jim Maus
Sampler Phone:
Sample Origin State:
EPA/State Compliance: ☐ Yes ☒ No
MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Attached Table 5	See Attached Table 4								See Attached	RUSH TAT	ELI LAB ID (Laboratory Use Only)
C1	1 Toe Drain	9-17-19	1310	2	W	X									X		H19090493
C2	2 BCD-A	9-18-19	1520	4	W		X								X		
C3	3 BCD-Barren	9-18-19	1545	4	W		X								X		
C3	4 BCD	9-18-19	1600	4	W		X								X		
	5																
	6																
	7																
	8																
	9																
	10																

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Jim Maus	9-19-19 1238	Jim Maus	Tracy Carol		
	Relinquished by (print)	Date/Time	Signature	Received by Laboratory (print)	Date/Time	Signature
				Tracy	9/19/19 12:35	Tracy Ward

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
Hand	1	Y N C B	Y N	See Comments °C	Y N	Y N	CC Cash Check	$	

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

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Chain of Custody & Analytical Request Record

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Page 3 of 3

Account Information (Billing information)

Company/Name	Tetra tech
Contact	Jim Maus
Phone	459-4164
Mailing Address	825 West Custer Ave
City, State, Zip	Helena, MT 59602
Email	james.maus@tetratech.com
Receive Invoice	☐ Hard Copy ☒ Email
Receive Report	☐ Hard Copy ☒ Email
Purchase Order	
Quote	
Bottle Order	~~30585~~ 31605 Jm

Report Information (if different than Account Information)

Company/Name	Same
Contact	
Phone	
Mailing Address	
City, State, Zip	
Email	
Receive Report	☐ Hard Copy ☒ Email

Special Report/Formats: ☐ LEVEL IV ☐ NELAC ☐ EDD/EDT (contact laboratory) ☐ Other

Comments

C1 = 3.3
C2 = 3.0 } No tb
C3 = 1.2 TB

Project Information

Project Name, PWSID, Permit, etc.	Beal 2018/2019 Site Wide
Sampler Name	Dylan Davis
Sampler Phone	
Sample Origin State	MT
EPA/State Compliance	☐ Yes ☒ No

MINING CLIENTS, please indicate sample type.
*If ore has been processed or refined, call before sending.
☐ Byproduct 11 (e)2 material ☐ Unprocessed ore (NOT ground or refined)*

Matrix Codes
A - Air
W - Water
S - Soils/Solids
V - Vegetation
B - Bioassay
O - Other
DW - Drinking Water

Analysis Requested

All turnaround times are standard unless marked as RUSH.
Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling – See Instructions Page

	Sample Identification (Name, Location, Interval, etc.)	Collection Date	Collection Time	Number of Containers	Matrix (See Codes Above)	See Attached Table 9	See Attached	RUSH TAT	ELI LAB ID Laboratory Use Only
C2	1 LPMW-6	9/16/19	1400	2	W		X		H19090493
C1	2 LPMW-5	9/16/19	1600	2	W				
C2	3 LPPZ-4	9/16/19	1700	2	W				
C1	4 Duplicate	9/16/19	1200	2	W				
C1	5 SBB-91-29	9/17/19	1130	2	W				
C1	6 SBB-88-20	9/17/19	1315	2	W				
C1	7 DW-10	9/17/19	1615	2	W				
C1	8 OW-5	9/17/19	1840	2	W				
	9								
	10	9/17/19	1930						

Custody Record MUST be signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Dylan Davis	~~9/16/19~~ 1737 DD	Dyn Davis	Jim Maus	9-17-19 1930	[signature]
	Jim Maus	9-19-19 1238	Jim Maus	Received by Laboratory (print) Tracy Corrad	9/19/19 12:38	Tracy Corrad

LABORATORY USE ONLY

Shipped By	Cooler ID(s)	Custody Seals	Intact	Receipt Temp	Temp Blank	On Ice	Payment Type	Amount	Receipt Number (cash/check only)
Hand	Y	Y N C B	Y N	50 °C	Y N	Y N	CC Cash Check	$	

Comments C3 C1+2

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Fall 2019 Lab analyses

TABLE 4 (12 bottle sets) SURFACE WATER AND SPRING ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Suspended Solids	5.0	E160.2	7 Days
Metals			
Selenium, Total Recoverable	0.00[illegible]	E200.8	6 Months
Inorganics(4)			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.004	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.004	SM 4500	14 Days
Nutrients			
Ammonia (low level)	0.1	SM4500 NH3	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L)

TABLE 5 (3 bottle sets) WASTE ROCK DUMP ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Alkalinity, total[2]	4.0	A2320B	14 Days
Metals			
Selenium, Total Recoverable	0.001	E200.8	6 Months
Nutrients			
Sulfate[2]	1.0	E300.0	28 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L)
2 Alkalinity and Sulfate to be analyzed only at locations SPR-5, SPR-10A, and Toe Drain.

TABLE 9 (8 bottle sets) LEACH PAD AREA GROUNDWATER ANALYTICAL REQUIREMENTS			
Parameter	**MDL (mg/L)(1)**	**Method No.**	**Max. Holding Time**
Physicochemical			
Total Dissolved Solids	10	A2540C	7 Days
Inorganics			
Cyanide, free	0.2	SM4500 CN F	14 Days
Cyanide, total	0.004	SM4500 CN / 335.4	14 Days
Cyanide, weak acid dissociable (WAD)	0.004	SM 4500	14 Days

1 MDL = Method Detection Limit in milligrams per liter (mg/L).

APPENDIX D. 2019 MICROSOFT ACCESS PROJECT DATABASE

See Enclosed CD