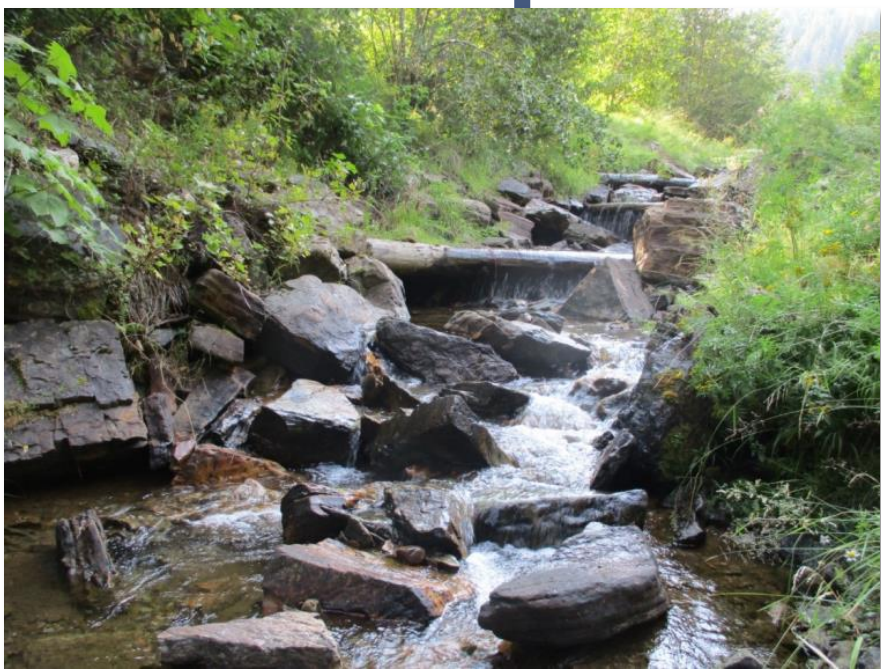


Gold Creek Area Mines Preliminary Assessment and Site Inspection

Bonner County



State of Idaho Department of
Environmental Quality
and
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April 2019



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Abbreviations, Acronyms, and Symbols

Alta	Alta Science & Engineering, Inc.
DEQ	Idaho Department of Environmental Quality
EPA	United States Environmental Protection Agency
kg	kilogram
lb	pound
Maxim	Maxim Technologies, Inc.
MCL	maximum contaminant level
mg	milligram
oz	ounce
PA	preliminary assessment
PWS	public water system
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RA	remedial action
RSL	regional screening level
SAP	sampling analysis plan
SI	site inspection
SOP	standard operating procedure
SVL	SVL Analytical, Inc.
TDL	target distance limit
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
Weston	Roy F. Weston, Inc.
WRCC	Western Regional Climate Center

1 Introduction

This report presents preliminary assessment and site inspection (PA/SI) results for the Gold Creek Area Mines in Bonner County, Idaho. Under a cooperative agreement with the US Environmental Protection Agency (EPA), Region 10, the Idaho Department of Environmental Quality (DEQ) provides technical support for performing the PA/SI process at various mine and industrial sites located on private, state, or mixed ownership (public and private) lands. Additional information about DEQ's PA program is found at <http://www.deq.idaho.gov/preliminary-assessments>.

DEQ initiated the PA program in February 2002 to prioritize and assess potentially contaminated sites. Due to accessibility and funding considerations, priority is given to sites where potential contamination poses the most substantial threat to human health or the environment. Recently, DEQ focused efforts in areas where residential and recreational developments are encroaching on historic mining districts. Priority is also given to mining districts where groups or clusters of sites can be cost-effectively assessed on a watershed basis.

This PA/SI assesses the threat posed to human health and the environment and determines the need for additional investigation. The PA/SI work in the Gold Creek Area Mines focused on accessing upstream and downstream areas of groups or clusters of mine sites in a watershed. This focus helped to assess changes since past investigations and remediation work at specific mine sites so DEQ can prioritize future actions.

2 Site Background

The Gold Creek Area Mines are located in Bonner County, Idaho, on the southeastern tip of Lake Pend Oreille within the Lakeview mining district approximately 21 miles north-northeast of Coeur d'Alene (Figure 1). The sites are located on a mix of private property and US Forest Service (USFS) land.

2.1 Site Location

Site Name:	Gold Creek Area Mines
Location:	Immediately south of Lakeview, Idaho. Can be accessed via Lakeview Road and Bunco Road (332) as well as numerous forest service roads.
County:	Bonner
Latitude/Longitude:	47°55'59.08"N, 116°26'29.94"W

The Gold Creek Area Mines site includes 14 mines, one mill site, and a waste repository located within an approximate 5- x 6.5-mile mountainous area near the small community of Lakeview, Idaho, on the south end of Lake Pend Oreille (Figure 1). The elevation of the mapped area ranges from 2,063 feet at lake level to 5,146 feet on Green Mountain. Most slopes are steep with an estimated average gradient of 30 degrees, varying from 10 degrees and less on the tops of ridges

to over 60 degrees on the lakeshore cliffs. The drainage consists of deeply entrenched streams, some of which show marked control by joints and faults.

Gold Creek is a small 12,465-acre tributary watershed to the southern end of Lake Pend Oreille, and is an important Bull Char (Bull Trout) spawning stream of the Lake Pend Oreille tributaries (DEQ 2003).

2.2 Ownership History

Ownership of property around Gold Creek Area Mines is a mix of private and federal lands (Figure 1).

2.3 Climatology

Climate information is based on a summary for the Avery Ranger Station 2, Idaho (Station 100528), located northwest of the Gold Creek Mines, obtained from the Western Regional Climate Center (WRCC 2019). Based on data collected from 1968 to 2005, total annual precipitation averages 37.63 inches with a total annual snowfall average of 77.6 inches. The driest months of the year are July and August. The average annual high temperature is 56.0°F, and the average annual low temperature is 35.2°F. August is the hottest month with an average high temperature of 83.8°F. January is the coldest month with an average low temperature of 20.7°F.

2.4 Operations and Waste Characteristics

The geology and history of past mining activities help to understand the levels of production, commodities, and potential waste types at the site. This information documents the importance of historic mining districts and operations when reevaluated from an economics, multiple land use, human health risks, and ecological risks perspective. Historical research identifies the potential contaminants of concern, estimates the magnitude of waste at the site, locates potentially dangerous physical hazards such as open adits and shafts, and identifies historical land uses that coincide with mining. Numerous sources were researched before visiting the site and conducting the PA/SI.

2.4.1 Historical Site Operations

Table 1 summarizes the commodities and production for each mine (IGS 2018). Key documents containing geology and history of past mining activities include the following:

- *History of Selected Mines in the Lakeview Mining District, Bonner County, Idaho* (Mitchell 2000)
- *Geology and Mineral Resources of the Lakeview Mining District, Idaho* (Kun 1974)
- *Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest: Volume II: Gold Creek Drainage* (Bennett and Mitchell 2003)

Table 1. Commodities and production (IGS 2018).

Mine	Commodities (Production)
Conjecture Mine	Antimony, barium, copper (10,001–50,000 lb), gold (101–500 oz), lead (50,001–100,000 lb), silver (50,001–100,000 oz), tungsten, zinc (50,001–100,000 lb)
Weber Mine (alias: Rainbow, New Rainbow Mine, Webber)	Antimony, copper (5,001–10,000 lb), gold (1,001–5,000 oz), lead (500,001–2,000,000 lb), silver (500,001–2,000,000 oz), zinc (10,001–50,000 lb)
Keep Cool Mine	Copper (10,001–50,000 lb), gold (101–500 oz), lead (100,001–500,000 lb), silver (10,001–50,000 oz), zinc (500,001–2,000,000 lb)
Idaho Lakeview Mine (alias: Idaho-Hewer Mine, Venezuela [various spellings], Hewer, Western Adventure)	Copper (10,000–50,000 lb), gold (101–500 oz), lead (100,001–500,000 lb), silver (100,001–500,000 oz), zinc (50,001–100,000 lb)
Perry Mine	Silver
Silver Leaf Group Prospect	Gold (0–50 oz), lead (1,001–5,000 lb), silver (501–1,000 oz), zinc
New Rainbow Mine (alias: Rainbow, Silver Bell, Silver Bull)	Gold (0–50 oz), lead (10,001–50,000 lb), silver (5,001–10,000 oz), zinc
Mine	Commodities (Production)
Bloody Shirt Prospect (alias: Max Dunn Prospect)	Silver
Wieberg (alias: Wiberg)	Lead, silver
Long Hand Mine (alias: Princess Panama, Shooneah Mining Co. Ltd., Swastika)	Copper, gold, lead, silver
Grafter Mine (alias: Hidden Treasure Mine)	Antimony, lead (101–500 lb), silver (1,001–5,000 oz)
Gold Creek Iron Deposit	Iron
Lakeview Limestone Quarries	Dolomite
Rennie Prospect (alias: Comet)	Lead (501–1,000 lb), silver (101–500 oz)

Notes: oz = ounce, lb = pound

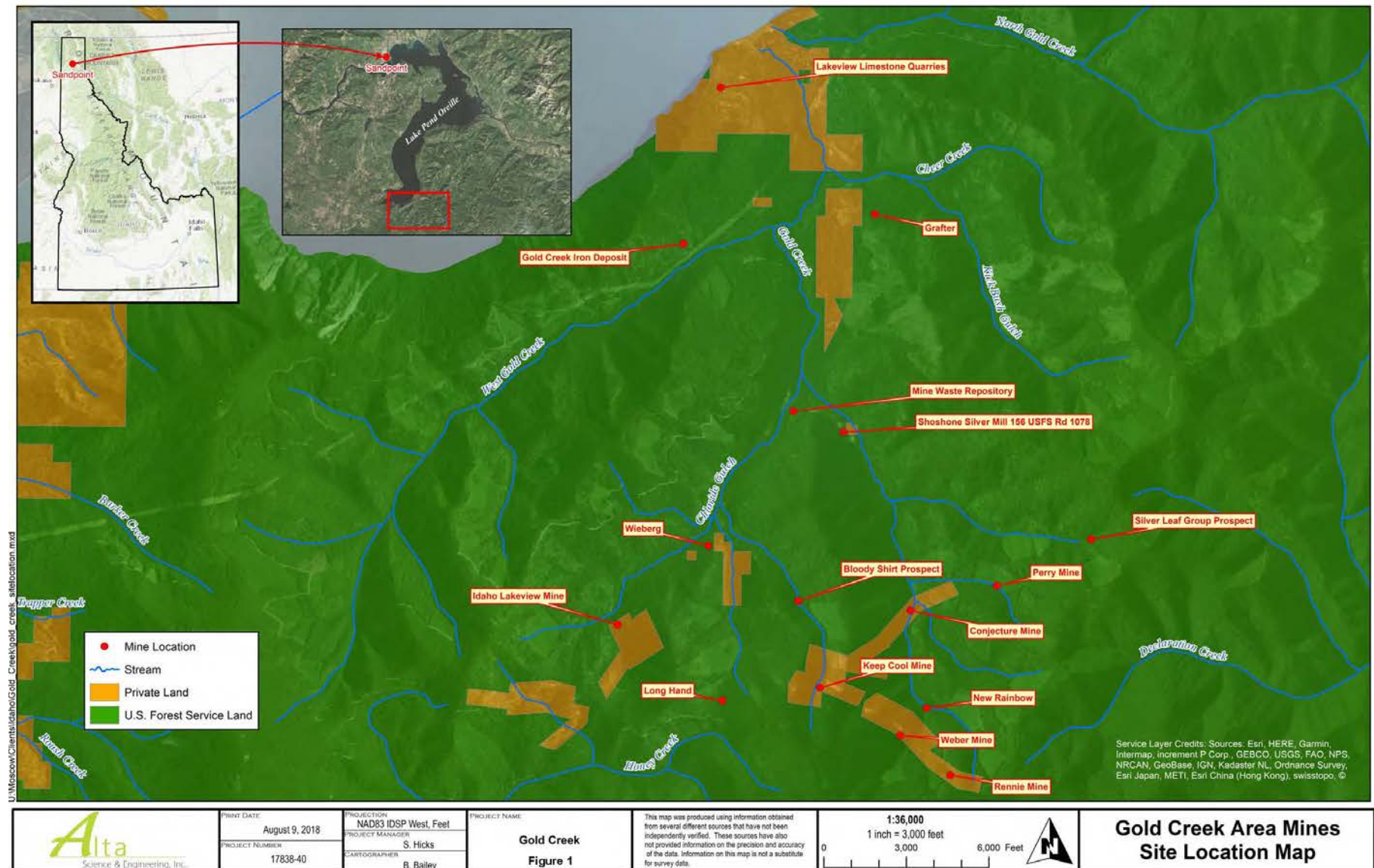


Figure 1. Site location map.

Other areas of interest include the Shoshone Silver Mill and the waste repository located on USFS property.

The Shoshone Silver Mill is located on Gold Creek downstream of the Conjecture Mine and upstream of the confluence with Chloride Gulch. The mill was built in 1980, operated intermittently in the 1980s, and, although still considered an active facility, was last operated in 1992 (Mitchell 2000; Weston 2002). The mill received ore from Weber Mine, Keep Cool Mine, and Idaho Lakeview Mine (Weston 2002). Potential sources on the site include a tailing pond and two ore stockpiles (Weston 2002).

The mine waste repository is located on USFS land above the confluence of Gold Creek and Chloride Gulch. The repository received contaminated material from the Idaho Lakeview Mine and Conjecture Mine sites and contains approximately 97,705 cubic yards of mine waste materials. The repository is covered with a protective barrier.

2.4.2 Sources

Based on information from previous site investigations, sources in the Gold Creek drainage include nine adits with seepage or flowing water; sixteen waste dumps; two sites with tailings; multiple ore piles at the Shoshone Silver Mill; open pits and trenches at select sites; residual and/or capped waste remaining from remedial actions at two sites; and a covered mine waste repository.

The contaminants of concern are metals and inorganic compounds associated with historical mining activities, primarily arsenic, lead, and manganese. Other contaminants of concern include antimony, beryllium, cadmium, chromium, cobalt, copper, cyanide, mercury, nickel, selenium, silver, and zinc, which were above background soil values (Weston 2002).

2.5 Previous Investigations

Information on previous investigations conducted at Gold Creek Area Mines is presented below.

2.5.1 Gold Creek Shoshone Silver Mill PA/SI Report

In April 2002, EPA and Roy F. Weston, Inc. (Weston) completed a PA/SI for the Gold Creek Shoshone Silver Mill. The PA/SI determined if the site had the potential to release hazardous substances that pose a threat to human health or the environment, identified waste sources at the site, evaluated the threat posed by migration of or exposure to hazardous substances from the site, collected information for EPA's Hazard Ranking System, and determined if further site investigations were warranted (Weston 2002).

In July and August 2001, 15 source samples (ore and soil), 31 sediment samples, and 5 surface soil samples were collected. Source characterization samples were collected from soils located by aboveground storage tanks, tailings pond, ore piles, and surface soils surrounding various drums, burn pile, scrap metal pile, and former landfill. Additional soil samples were collected from overland flow paths and background sample locations. Sediment samples were collected in Gold Creek downstream of the mill site, in Gold Creek's delta to Lake Pend Oreille, and from background sample locations.

Metals results from source locations above the background sample results include antimony (17.4–641 milligrams per kilogram [mg/kg]), arsenic (254–55,500 mg/kg), beryllium (1.5 mg/kg), cadmium (1.2–33.3 mg/kg), chromium (13.9 mg/kg), cobalt (46.5 mg/kg), copper (74.2–915 mg/kg), lead (161–9,550 mg/kg), manganese (3,840–8,440 mg/kg), mercury (0.12–3.6 mg/kg), nickel (51.6 mg/kg), selenium (1.2–2.4 mg/kg), silver (3.2–236 mg/kg), zinc (407.33–14,700 mg/kg), and cyanide (2.8 mg/kg). Metals from Gold Creek sediments downstream of the mill site above the background sample results include arsenic, cadmium, copper, lead, silver, and zinc. No metals were above background sample results in the Gold Creek delta sediment samples.

2.5.2 Mine Waste Characterization and Repository Evaluation of Various Mines in the Gold Creek Drainage, Lakeview Mining District

In June 2002, the US Department of Agriculture Forest Service and Maxim Technologies, Inc. (Maxim) completed a site investigation and characterization for six mine waste sites in the Gold Creek drainage (Conjecture Mine, New Rainbow Mine, Weber Mine, Keep Cool Mine, Idaho Lakeview Mine, and Chloride Gulch). The site investigation and characterization obtained additional information on the nature, extent, and magnitude of mine waste in support of potential remedial actions (Maxim 2002).

As part of the site investigation, mine waste, sediment, and soil samples were collected at the sites and submitted to analytical laboratories for total and leachable metals, acid/base accounting, and physical properties testing. Approximately 220,000 cubic yards of mine waste at 19 waste areas was identified at the six source sites. Total metals results were compared to cleanup guidelines, and leachable metals results were compared to aquatic standards.

Total metals that exceeded cleanup guidelines included antimony, arsenic, cadmium, lead, and manganese. Leachable metals exceeding aquatic life standards include arsenic, cadmium, copper, lead, mercury, and zinc.

2.5.3 Site Inspection Report for the Abandoned and Inactive Mines in Idaho on USFS Lands (Region 1), Idaho Panhandle National Forest: Volume II: Gold Creek Drainage

In 2003, the Idaho Geological Survey, under a participation agreement with the USFS, completed a site inspection of abandoned and inactive mines located in the Gold Creek drainage within the Idaho Panhandle National Forest. The site investigation identified all mines with possible human health, environmental, and/or safety issues on USFS land (Bennett and Mitchell 2003).

Site investigation and sampling was conducted at 22 mining properties. Sampling included grab and composite soil samples as well as surface water samples at sites identified with potential problems. Water sample results were compared to maximum contaminant levels (MCLs) and aquatic life standards. Soil sample results were compared to median values of metals in rock from the Belt Supergroup and to background limits established by the EPA for the Clark Fork Superfund site.

Results from mill waste samples exceeded the Clark Fork Superfund background levels for arsenic, copper, lead, and zinc, and leach test results showed arsenic, cadmium, and lead are leachable from tailings. Total metals that exceeded MCLs or aquatic life standards in one or more surface water sample include aluminum, arsenic, cadmium, copper, iron, lead, manganese, mercury, and zinc. Sites with potential environmental hazards based on soil and water results include Bloody Shirt Prospect, Wieberg, Silver Leaf Group Prospect, Conjecture Mine, Idaho Lakeview Mine, Keep Cool Mine, New Rainbow Mine, and Shoshone Mill.

2.6 2018 Site Investigation Activities

Under contract with DEQ, Alta Science and Engineering, Inc. (Alta) personnel visited the Gold Creek Area Mines and collected sediment and surface water samples from August 27–30, 2018. Sample collection information, field parameters, stream discharge, and analytical results are presented in this section.

Sampling and laboratory analysis was conducted according to the *Gold Creek Area Mines Site Investigation Sampling and Analysis (SAP)/Quality Assurance Project Plan (QAPP)* (Alta 2018a). All samples were collected, handled, and stored following the SAP/QAPP requirements. Surface water samples and sediment samples were submitted to SVL Analytical, Inc. (SVL) laboratory for analysis.

Site photographs are included in Appendix A. Laboratory data reports are included in Appendix B. Review and discussion of QA/QC samples is presented in the “QA/QC Review of the 2018 Gold Creek Area Mines Site Investigation Sampling” memorandum (Alta 2018b) in Appendix C.

2.6.1 Sediment Sampling

Sediment samples were collected using dedicated plastic scoops, and collected material was placed into 8-ounce glass jars. Materials, such as rocks and vegetation, were removed during sampling. Per QA/QC requirements, duplicate samples were collected; no rinsate blanks were collected because dedicated sampling equipment was used. Samples were delivered by Alta to SVL for analysis of total metals (antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc) by method EPA 3050B and 6010B/D and total cyanide by method SW 846 9012B (EPA 1996a; EPA 1996b; EPA 2018; EPA 2004).

A total of 33 sediment samples (excluding QA/QC samples) were collected: 10 samples from dry streams and 23 samples collocated with surface water samples (Figure 2). Sediment sample location descriptions and laboratory analytical results are presented in Table 2.

2.6.2 Surface Water Sampling

Surface water samples were collected using the dip sampling method from the *Techniques of Water-Resources Investigations (TWRI), Book 9, Chapter A4, Collection of Water Samples* (USGS 2006) and described in the project QAPP (Alta 2018a). QA/QC samples included duplicates, field blanks, and rinsate blanks. Samples were delivered to SVL for analysis of total metals (antimony, arsenic, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, and zinc) by EPA SW-846 test methods 3050B,

6010B/D, and 6020B, and total cyanide by SW-846 method 9012B (EPA 1996a; EPA 1996b; EPA 2018; EPA 2014; EPA 2004).

A total of 23 surface water samples (excluding QA/QC samples) were collected from locations downstream and upstream of source areas (Figure 2). Surface water sample location descriptions, laboratory analytical results, and water quality parameters are presented in Table 3.

3 Migration/Exposure Pathways

This section discusses the 2018 PA/SI surface water and sediment sampling results for the overland migration pathways.

3.1 Surface Water Migration Pathway

The overland or surface water migration pathway target distance limit (TDL) begins at the probable point of entry (PPE) of surface water runoff from the site to a surface water body and extends downstream for 15 miles. Fourteen mine and/or mill sites with potential sources to surface water are located on Gold Creek and its tributaries. In all cases, the 15-mile TDL is completed in Lake Pend Oreille.

During the site visit in August 2018, no surface water was observed at 10 sample locations; however, sediment samples were collected from the dry streams. The presence of a surface water pathway may be seasonal (e.g., during snow melt) or only present during high precipitation events at these locations.

Flowing water was observed within the 15-mile TDL on Gold Creek, West Gold Creek, North Gold Creek, Chloride Gulch, and many of the tributaries to these creeks. Surface water and collocated sediment samples were collected at all sample sites with flowing water. Sample locations are shown in Figure 2.

3.1.1 Overland Route and Target Distance Limit

Waste sources at Gold Creek Area Mines are located in mountainous terrain. The majority of surface water flowing through the site originates in Gold Creek and its tributaries. Gold Creek originates approximately 5 miles south-southeast of Lakeview, Idaho, on the southern end of Lake Pend Oreille. Gold Creek flows generally north to its confluence with Lake Pend Oreille. Tributaries to Gold Creek include West Gold Creek, Chloride Gulch, and Kick Bush Gulch as well as numerous smaller, unnamed tributaries.

Surface water and collocated sediment samples were collected from instream locations upstream and downstream of source areas (Figure 2).

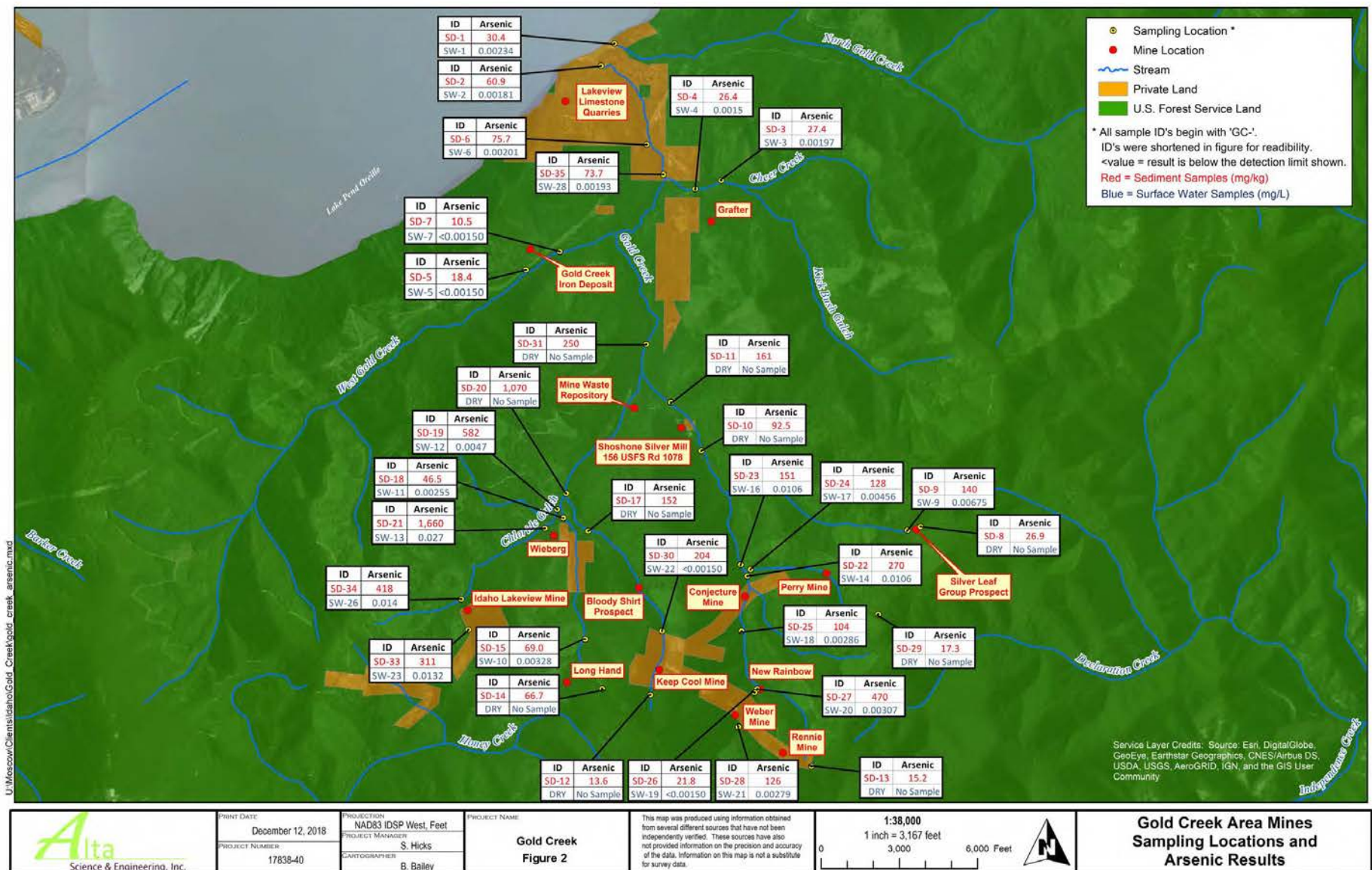


Figure 2. Sample locations and arsenic results.

Table 2. Sediment sample analytical results.

Location Description	Sample ID	Date	Analyte (mg/kg)															
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc	Cyanide
West Gold Creek																		
Upstream of Gold Creek Iron Deposit	GC-SD-5	8/27/2018	<2.0	18.4	0.59	<0.20	4.69	7.81	8.08	13,800	5.8	599	<0.033	7.91	<4.0	<0.50	21.0	<0.10
Downstream of Gold Creek Iron Deposit	GC-SD-7	8/27/2018	<2.0	10.5	0.30	<0.20	3.81	2.35	5.38	8,570	5.0	90.1	<0.033	5.14	<4.0	<0.50	17.7	<0.10
Chloride Gulch and Tributaries																		
Chloride Gulch																		
Background, upstream of Idaho Lakeview Mine	GC-SD-34	8/30/2018	8.0	418	0.55	<0.20	6.31	5.53	38.3	15,700	104	507	<0.033	10.7	<4.0	1.64	168	0.33
Downstream of Idaho Lakeview Mine/upstream of Wieberg	GC-SD-33	8/30/2018	15.1	311	0.40	0.28	3.75	6.49	32.2	11,300	77.0	1,130	0.037	8.15	<4.0	1.71	298	0.31
Downstream of Wieberg/upstream of Unnamed Tributary #1 to Chloride Gulch	GC-SD-21	8/28/2018	65.5	1,660	0.92	1.38	8.46	12.9	110	24,800	618	3,430	0.128	18.8	<4.0	21.8	1,150	0.54
Downstream of Unnamed Tributary #1 to Chloride Gulch/upstream of Unnamed Tributary #2 to Chloride Gulch	GC-SD-19	8/28/2018	14.3	582	1.06	1.97	12.3	8.24	43.9	16,700	274	1,100	0.093	12.6	<4.0	3.17	611	0.54
Downstream of Unnamed Tributary #2 to Chloride Gulch/upstream of mine waste repository and Gold Creek confluence	GC-SD-20	8/28/2018	25.4	1,070	0.64	3.36	5.82	8.31	51.1	19,600	402	1,710	<0.033	12.8	<4.0	6.69	988	0.47
Unnamed Tributary #1 to Chloride Gulch																		
Background, upstream of Long Hand Mine	GC-SD-14	8/28/2018	4.1	66.7	0.59	<0.20	6.98	13.5	29.4	21,400	190	1,090	0.043	12.7	<4.0	<0.50	129	0.31
Downstream of Long Hand Mine/upstream of Wieberg	GC-SD-15	8/28/2018	<2.0	69.0	0.95	0.48	21.9	8.98	35.0	25,900	37.5	1,050	0.052	19.4	<4.0	<0.50	278	0.27
Downstream of Wieberg/upstream of confluence with Chloride Gulch	GC-SD-18	8/28/2018	2.9	46.5	0.47	0.22	8.46	3.94	10.4	12,000	27.0	344	0.043	6.59	<4.0	<0.50	144	0.17
Unnamed Tributary #2 to Chloride Gulch																		
Background, upstream of Keep Cool Mine	GC-SD-12	8/28/2018	<2.0	13.6	0.53	1.43	9.51	6.25	23.8	15,000	43.5	1,360	0.166	10.1	<4.0	0.92	174	1.13
Downstream of Keep Cool Mine/upstream of Bloody Shirt Prospect	GC-SD-30	8/29/2018	19.8	204	1.56	25.1	17.3	18.7	712	34,900	3,030	5,390	0.187	25.5	<4.0	19.3	9,050	1.42
Chloride Gulch and Tributaries																		
Unnamed Tributary #2 to Chloride Gulch																		
Downstream of Bloody Shirt Prospect/upstream of confluence with Chloride Gulch	GC-SD-17	8/28/2018	10.3	152	0.58	7.83	11.0	10.5	120	19,300	416	1,280	0.113	13.8	<4.0	3.45	3,630	0.60

Location Description	Sample ID	Date	Analyte (mg/kg)															
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc	Cyanide
Gold Creek and Tributaries																		
Gold Creek																		
Background, upstream of Rennie Mine	GC-SD-13	8/28/2018	4.8	15.2	0.88	0.48	9.47	12.3	125	23,600	31.1	2,810	0.119	17.8	<4.0	<0.50	91.8	0.53
Downstream of Rennie/upstream of New Rainbow	GC-SD-26	8/29/2018	2.6	21.8	0.36	0.56	11.5	4.69	14.3	18,800	17.9	611	0.033	10.4	<4.0	<0.50	126	0.26
Downstream of New Rainbow/upstream Conjecture Mine	GC-SD-25	8/29/2018	181	104	0.45	2.38	18.5	5.88	59.4	18,500	567	1,040	0.051	22.3	<4.0	23.6	937	0.20
Downstream of Conjecture/upstream of Unnamed Tributary #1	GC-SD-22	8/29/2018	198	270	0.89	2.13	19.7	6.35	83.0	19,700	618	1,960	0.058	19.7	<4.0	16.1	1,180	0.13
Downstream of Unnamed Tributary #1	GC-SD-23	8/29/2018	78.0	151	0.60	3.85	17.5	10.2	148	22,300	757	2,330	0.061	21.7	<4.0	16.2	1,570	0.12
Downstream of Unnamed Tributary #2/upstream of Shoshone Silver Mill	GC-SD-10	8/28/2018	41.0	92.5	0.86	1.84	10.8	6.87	44.0	18,600	167	776	0.052	15.4	<4.0	4.81	609	0.26
Downstream of Shoshone Silver Mill	GC-SD-11	8/28/2018	33.6	161	0.55	2.13	10.3	7.10	32.1	20,000	155	1,780	<0.033	18.3	<4.0	4.31	743	0.69
Downstream of confluence with Chloride Gulch and mine waste repository	GC-SD-31	8/29/2018	14.6	250	0.67	1.32	10.7	5.56	26.6	18,400	108	948	<0.033	13.4	<4.0	2.91	538	0.18
Downstream of confluence with West Gold Creek	GC-SD-35	8/30/2018	5.8	73.7	0.58	0.27	15.1	6.39	15.1	18,700	49.5	430	<0.033	15.8	<4.0	1.47	214	0.12
Downstream of confluence with Kick Bush Creek/upstream of Lakeview Limestone Quarries	GC-SD-6	8/27/2018	4.9	75.7	0.50	0.44	9.92	6.21	17.5	18,300	53.2	489	<0.033	13.3	<4.0	2.73	225	<0.10
Unnamed Tributary #1 to Gold Creek																		
Background, upstream of Perry Mine		8/29/2018	2.1	17.3	0.84	0.62	8.92	7.25	16.1	22,400	20.6	1,960	0.077	15.3	<4.0	<0.50	61.8	0.49
Downstream of Perry Mine/upstream of confluence with Gold Creek		8/29/2018	3.3	128	0.61	0.36	11.2	11.9	18.8	23,700	50.3	586	0.060	12.0	<4.0	1.65	192	0.30
Gold Creek and Tributaries																		
Unnamed Tributary #2 to Gold Creek																		
Background, upstream of Silver Leaf Group Prospect	GC-SD-8	8/28/2018	<2.0	26.9	0.64	<0.20	7.29	11.0	12.5	22,900	13.9	473	0.042	12.8	<4.0	<0.50	53.1	0.31
Downstream of Silver Leaf Group Prospect	GC-SD-9	8/29/2018	2.8	140	0.71	0.42	6.73	8.73	19.9	20,600	83.7	1,130	0.130	12.4	<4.0	1.54	235	0.21
Unnamed Tributary #3 to Gold Creek																		
Background, upstream of Weber Mine	GC-SD-28	8/29/2018	40.6	126	0.53	1.11	15.3	5.54	76.1	22,200	200	852	0.037	15.8	<4.0	6.23	524	0.24
Downstream of Weber Mine/upstream of confluence with Gold Creek	GC-SD-27	8/29/2018	221	470	0.59	4.62	25.3	11.0	137	24,100	2,000	3,020	0.099	34.5	<4.0	53.7	2,370	0.13

Location Description	Sample ID	Date	Analyte (mg/kg)															
			Antimony	Arsenic	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc	Cyanide
Kick Bush Creek (Tributary to Gold Creek)																		
Background, upstream of Grafter Mine	GC-SD-3	8/27/2018	<2.0	27.4	0.49	<0.20	8.21	8.24	14.0	18,300	13.3	334	0.035	11.5	<4.0	<0.50	35.3	<0.10
Downstream of Grafter Mine/upstream of confluence with Gold Creek	GC-SD-4	8/27/2018	<2.0	26.4	0.52	<0.20	11.5	7.25	13.2	18,600	14.0	307	<0.033	11.6	<4.0	<0.50	38.1	0.15
Lake Pend Oreille																		
Mouth of Gold Creek/downstream sample for Gold Creek drainage and Lakeview Limestone Quarries	GC-SD-2	8/27/2018	5.1	60.9	0.48	0.35	12.6	5.02	16.6	19,000	37.7	413	<0.033	10.7	<4.0	1.30	202	<0.10
Mouth of North Gold Creek/downstream sample for the North Gold Creek drainage	GC-SD-1	8/27/2018	<2.0	30.4	0.42	<0.20	10.6	6.64	10.8	17,800	15.9	234	<0.033	11.1	<4.0	<0.50	66.8	<0.10
EPA RSL for Residential Soil ^a (mg/kg)			31	0.68	160	71	NA	23	3,100	55,000	400	1,800	11	820	390	390	23,000	23
EPA RSL for Industrial Soil ^a (mg/kg)			470	3	2,300	980	NA	350	47,000	820,000	800	26,000	46	11,000	5,800	5,800	350,000	150

Notes:

Gray shaded values exceed regional screening levels (RSLs) for residential soils.

Orange shaded values exceed RSLs for both residential and industrial soils.

Bold = Three times greater than background concentrations when comparing the sediment sample to the respective background value for each drainage. Where the background value is not detected, the limit of detection was used as the background value for calculation purposes.

^aBased on a target hazard quotient of 1.0. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (November 2018)

mg/kg = milligram per kilogram

<value = result is below the detection limit shown

NA = not available

Table 3. Surface water analytical results.

Location Description	Sample ID	Date	Analyte (mg/L)																Parameter							
			Sb	As	e	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Zn	CN	Temp °C	pH (su)	ORP (mV)	SC (µS/cm)	Turbidity (NTU)	DO (mg/L)	Discharge (cfs)	
West Gold Creek																										
Upstream of Gold Creek Iron Deposit	GC-SW-5	8/27/2018	<0.00300	<0.00150	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	12.58	8.25	107.3	155.09	0.30	9.88	1.50	
Downstream of Gold Creek Iron Deposit	GC-SW-7	8/27/2018	<0.00300	<0.00150	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	12.10	8.09	79.0	159.96	0.71	9.90	2.04	
Chloride Gulch and Tributaries																										
Chloride Gulch																										
Background and upstream of Idaho Lakeview Mine	GC-SW-26	8/30/2018	<0.00300	0.0140	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.013	<0.0100	8.01	6.32	121.1	27.29	0.61	10.51	0.02	
Downstream of Idaho Lakeview Mine/upstream of Wieberg	GC-SW-23	8/30/2018	<0.00300	0.0132	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.172	<0.0100	10.26	6.22	113.9	78.03	0.06	9.61	0.13	
Downstream of Wieberg/upstream of Unnamed Tributary #1 to Chloride Gulch	GC-SW-13	8/28/2018	0.00638	0.0270	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.105	<0.0100	12.15	7.50	130.5	74.15	0.12	9.62	0.02	
Downstream of Unnamed Tributary #1 to Chloride Gulch/upstream of Unnamed Tributary #2 to Chloride Gulch	GC-SW-12	8/28/2018	<0.00300	0.00470	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	11.49	7.71	116.4	98.37	0.21	9.84	0.14	
Unnamed Tributary #1 to Chloride Gulch																										
Downstream of Long Hand Mine/upstream of Wieberg	GC-SW-10	8/28/2018	<0.00300	0.00328	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	9.61	7.50	149.6	89.98	0.79	10.33	0.20	
Downstream of Wieberg/upstream of confluence with Chloride Gulch	GC-SW-11	8/28/2018	<0.00300	0.00255	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	11.41	7.75	123.5	97.21	0.69	10.00	0.22	
Unnamed Tributary #2 to Chloride Gulch																										
Downstream of Keep Cool Mine/upstream of Bloody Shirt Prospect	GC-SW-22	8/29/2018	<0.00300	<0.00150	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.708	<0.0100	10.32	7.37	161.3	131.81	0.22	9.60	0.03	
Gold Creek and Tributaries																										
Gold Creek																										
Downstream of Rennie Mine/upstream of New Rainbow Mine	GC-SW-19	8/29/2018	<0.00300	<0.00150	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	9.13	7.71	146.3	98.58	0.12	10.11	0.07	
Downstream of New Rainbow Mine/upstream Conjecture Mine	GC-SW-18	8/29/2018	0.00756	0.00286	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.034	<0.0100	9.33	7.92	124.1	108.58	0.24	10.22	0.47	

Location Description	Sample ID	Date	Analyte (mg/L)																Parameter							
			Sb	As	e	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Zn	CN	Temp °C	pH (su)	ORP (mV)	SC (µS/cm)	Turbidity (NTU)	DO (mg/L)	Discharge (cfs)	
Downstream of Conjecture/upstream of Unnamed Tributary #1	GC-SW-14	8/29/2018	0.00656	0.0106	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.036	<0.0100	9.92	7.58	129.8	124.23	0.29	10.03	0.65	
Downstream of Unnamed Tributary #1/upstream of Unnamed Tributary #2	GC-SW-16	8/29/2018	0.00668	0.0106	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.041	<0.0100	10.01	7.80	118.8	124.18	0.66	10.14	0.69	
Downstream of confluence with West Gold Creek/upstream of confluence with Kick Bush Creek	GC-SW-28	8/30/2018	<0.00300	0.00193	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	8.81	8.10	96.2	158.07	0.20	11.12	7.56	
Downstream of confluence with Kick Bush Creek/upstream of Lakeview Limestone Quarries	GC-SW-6	8/27/2018	<0.00300	0.00201	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	9.16	8.21	49.9	172.60	0.10	10.92	9.81	
Unnamed Tributary #1 to Gold Creek																										
Downstream of Perry Mine/upstream of confluence with Gold Creek	GC-SW-17	8/28/2018	<0.00300	0.00456	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	10.62	7.92	115.8	129.29	1.52	9.88	0.06	
Unnamed Tributary #2 to Gold Creek																										
Downstream of Silver Leaf Group Prospect/upstream of confluence with Gold Creek	GC-SW-9	8/28/2018	<0.00300	0.00675	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	7.77	7.48	207.6	203.57	71.40	10.52	0.01	
Gold Creek and Tributaries																										
Unnamed Tributary #3 to Gold Creek																										
Background, upstream of Weber Mine	GC-SW-21	8/29/2018	<0.00300	0.00279	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.030	<0.0100	7.92	7.77	153.3	79.92	0.13	10.34	0.11	
Downstream of Weber Mine/upstream of confluence with Gold Creek	GC-SW-20	8/29/2018	0.0121	0.00307	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	0.072	<0.0100	9.24	7.81	144.1	100.33	0.22	10.22	0.15	
Kick Bush Creek (Tributary to Gold Creek)																										
Background, upstream of Grafter Mine	GC-SW-3	8/27/2018	<0.00300	0.00197	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	12.28	8.25	117.8	321.58	0.41	9.56	0.15	
Downstream of Grafter Mine/upstream of confluence with Gold Creek	GC-SW-4	8/27/2018	<0.00300	0.00150	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	12.20	8.20	109.7	333.28	0.26	9.68	0.02	
Lake Pend Oreille																										
Mouth of Gold Creek/downstream sample for Gold Creek drainage and Lakeview Limestone Quarries	GC-SW-2	8/27/2018	<0.00300	0.00181	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	9.31	8.18	114.0	179.66	0.27	10.91	lake	

Location Description	Sample ID	Date	Analyte (mg/L)																Parameter						
			Sb	As	e	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Ni	Se	Ag	Zn	CN	Temp °C	pH (su)	ORP (mV)	SC (µS/cm)	Turbidity (NTU)	DO (mg/L)	Discharge (cfs)
Mouth of North Gold Creek/downstream sample for North Gold Creek drainage	GC-SW-1	8/27/2018	<0.00300	0.00234	<0.0020	<0.0020	<0.0060	<0.0060	<0.0100	<0.100	<0.0075	<0.0080	<0.00020	<0.0100	<0.040	<0.0050	<0.010	<0.0100	12.03	7.82	107.8	167.19	0.23	9.93	lake
EPA: Drinking Water Standard MCL			0.006	0.01	0.004	0.005	0.1	NA	1.3	NA	0.015	NA	0.002	NA	0.05	NA	NA	0.2	NA	6.5-8.5 ^a	NA	NA	NA	NA	NA
EPA: RSL for Tap water			0.0078	0.000052	0.025	0.0092	NA	0.006	0.8	14	0.015	0.43	0.00063	0.22	0.1	0.094	6	0.0015	NA	NA	NA	NA	NA	NA	NA

Notes:
Shaded values exceed the RSL for tap water.
Values in **red text** exceed the MCL for drinking water.
Bold = Three times greater than background concentrations when comparing: the surface water sample to the respective background value for each drainage. Where the background value is not detected, the limit of detection was used as the background value for calculation purposes.
MCL = maximum contaminant level; RSL = regional screening level. Based on a target hazard quotient of 1.0. <https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables> (November 2018).
Sb = antimony, As = arsenic, Be = beryllium, Cd = cadmium, Cr = chromium, Co = cobalt, Cu = copper, Fe = iron, Pb = lead, Mn = manganese, Hg = mercury, Ni = nickel, Se = selenium, Ag = silver, Zn = zinc, CN = cyanide
^aSecondary Standard MCL - nonenforceable guideline.
mg/L = milligram per liter, su = standard unit, mV = millivolt, µS/cm = microsiemen per centimeter, NTU = nephelometric turbidity unit, °C = degree Celsius, ppm = part per million
ORP = oxidation-reduction potential; SC = specific conductivity; DO = dissolved oxygen; cfs = cubic feet per second
NA = not available
<value = result is below the detection limit shown

Upstream/Background Locations

Nine sample locations were identified upstream of all source areas. Of the nine identified sites, five were dry and only sediment samples were collected; four had flowing water where both sediment and surface water samples were collected. These locations establish background values for streams within the 15-mile TDL (Figure 2):

- West Gold Creek upstream of the Gold Creek Iron Deposit.
- Chloride Gulch upstream of the Idaho Lakeview Mine.
- Unnamed tributary to Chloride Gulch upstream of Long Hand Mine.
- Unnamed tributary to Chloride Gulch upstream of the Keep Cool Mine.
- Gold Creek upstream of the Rennie Mine (near the headwaters).
- Unnamed tributary to Gold Creek upstream of the Perry Mine.
- Unnamed tributary to Gold Creek upstream of the Silver Leaf Group Prospect.
- Unnamed tributary to Gold Creek upstream of the Weber Mine.
- Kick Bush Creek below the confluence with Cheer Creek and upstream of the Grafton Mine.

Downstream Locations

Twenty-four sample locations were identified downstream of source areas and confluences of streams with upstream source areas. Of the 24 identified sites, 19 sites had flowing water where surface water and collocated sediment samples were collected; sediment samples were collected from five dry locations. These locations were evaluated for potential impacts to surface water and sediment from historic mining practices in streams within the 15-mile TDL.

Because some streams contain multiple source locations, many downstream sample locations also serve as upstream sample locations for additional downstream source sites and/or confluences of side drainages that also contain source sites (Figure 2):

- West Gold Creek
 - One sample downstream of the Gold Creek Iron Deposit and upstream of the confluence with Gold Creek.
- Chloride Gulch
 - One sample downstream of the Idaho Lakeview Mine and upstream of Wieberg.
 - One sample downstream of Wieberg and upstream of the confluence with unnamed tributaries.
 - One sample downstream of the unnamed tributary where Wieberg is located and upstream of the unnamed tributary where the Bloody Shirt Prospect is located.
 - One sample below the confluence with an unnamed tributary where the Keep Cool Mine and Bloody Shirt Prospect are located. This sample is upstream of the mine waste repository at the confluence of Chloride Gulch and Gold Creek.
- Chloride Gulch Unnamed Tributaries
 - One sample downstream of the Long Hand Mine and upstream of Wieberg.
 - One sample downstream of Wieberg and upstream of the confluence with Chloride Gulch.
 - One sample downstream of the Keep Cool Mine and upstream of the Bloody Shirt Prospect.

- One sample downstream of the Bloody Shirt Prospect.
- Gold Creek
 - One sample downstream of the Rennie Mine and upstream of the New Rainbow Mine.
 - One sample downstream of the New Rainbow Mine and upstream of the Conjecture Mine.
 - One sample downstream of the Conjecture Mine and upstream of an unnamed tributary where the Perry Mine is located.
 - One sample downstream of the unnamed tributary where the Perry Mine is located and upstream of the unnamed tributary where the Silver Leaf Group Prospect is located.
 - One sample downstream of the unnamed tributary where the Silver Leaf Group Prospect is located and upstream of the Shoshone Silver Mill.
 - One sample downstream of the Shoshone Silver Mill and upstream of the confluence of Gold Creek with Chloride Gulch.
 - One sample downstream of the confluence of Chloride Gulch and Gold Creek. This sample is also downstream of the mine waste repository.
 - One sample downstream of the confluence of West Gold Creek and Gold Creek.
 - One sample downstream of Kick Bush Creek and Gold Creek. This sample is upstream of the Lakeview Limestone Quarries.
- Gold Creek Unnamed Tributaries:
 - One sample downstream of the Perry Mine and upstream of the confluence with Gold Creek.
 - One sample downstream of the Silver Leaf Group Prospect and upstream of the confluence with Gold Creek.
 - One sample downstream of the Weber Mine and upstream of the confluence with Gold Creek.
- Kick Bush Creek (tributary to Gold Creek):
 - One sample downstream of the Grafter Mine and upstream of the confluence with Gold Creek.
- Lake Pend Oreille:
 - One sample in Lake Pend Oreille below the mouth of Gold Creek.
 - One sample in Lake Pend Oreille below the mouth of North Gold Creek. This location serves as a downstream sample for the North Gold Creek drainage, which contains a number of mine sites. Sites on North Gold Creek are not part of this PA/SI, and the single sample should determine if mines in the North Gold Creek drainage are also potentially impacting water quality near the lake.

Sediment samples are compared to EPA Regional Screening Levels (RSLs) for residential and industrial soils. Surface water samples are compared to EPA MCLs for drinking water and RSLs for tap water. Results are discussed below. Sediment sample results are shown in Table 2, surface water results are shown in Table 3, and arsenic results are presented on Figure 2.

3.1.1.1 Gold Creek

Sediment Sample Results

Arsenic concentrations in sediment samples from Gold Creek exceed the EPA RSL for both residential soil (0.68 mg/kg) and industrial soil (3 mg/kg) at all Gold Creek sample locations (Table 2). Antimony concentrations exceed the EPA RSL for residential soil (31 mg/kg) at five downstream locations; lead concentrations exceed the EPA RSL for residential soil (400 mg/kg) at three downstream locations; and manganese exceeds the EPA RSL for residential soil (1,800 mg/kg) at two downstream locations and in the background sample. Analytes greater than three times the corresponding background sample at some locations include antimony, arsenic, cadmium, lead, silver, and zinc.

A review of analytes with concentrations greater than three times the background sample from upstream to downstream, comparing each concentration to the previous upstream sample, shows the following (Table 2):

- Antimony increases below New Rainbow and Conjecture Mines.
- Arsenic increases below New Rainbow Mine, Conjecture Mine, Shoshone Silver Mill, Chloride Gulch, and the mine waste repository.
- Cadmium increases below New Rainbow Mine, the unnamed tributary where the Perry Mine is located, and the Shoshone Silver Mill.
- Lead increases below New Rainbow Mine, Conjecture Mine, and the unnamed tributary where the Perry Mine is located.
- Silver increases below New Rainbow Mine and the unnamed tributary where the Perry Mine is located.
- Zinc increases below New Rainbow Mine, Conjecture Mine, the unnamed tributary where the Perry Mine is located, and the Shoshone Silver Mill.

Surface Water Sample Results

Arsenic, antimony, and zinc were detected in surface water samples from Gold Creek. Arsenic concentrations exceeded the EPA RSL for tap water (0.000052 milligram per liter [mg/L]) in all detected samples and the EPA MCL for drinking water (0.01 mg/L) in two samples. Antimony concentrations exceeded the EPA MCL (0.006 mg/L) for all three detected samples (Table 3). The background sample location for Gold Creek was dry. At the furthest upstream sample (GC-SW-19) location with flowing water (upstream of all other sample locations), arsenic and antimony were not detected. GC-SW-19 serves as an alternate background sample for Gold Creek. Arsenic concentrations in surface water are more than three times the corresponding background sample at two sample locations downstream of the Conjecture Mine.

3.1.1.2 Gold Creek Unnamed Tributaries

Sediment Sample Results

Arsenic concentrations in sediment samples from unnamed tributaries to Gold Creek exceed the EPA RSL for both residential and industrial soil at all sample locations (Table 2). Antimony concentrations exceed the EPA RSL for residential soil at both sample locations on the unnamed tributary where the Weber Mine is located. Lead concentrations exceed the EPA RSL for both

residential and industrial soil at the downstream location on the unnamed tributary where the Weber Mine is located. Manganese exceeds the EPA RSL for residential soil at the downstream location on the unnamed tributary where the Weber Mine is located. Analytes greater than three times the corresponding background sample at some locations include antimony, arsenic, cadmium, lead, manganese, mercury, silver, and zinc.

A review of analytes with concentrations greater than three times the background sample from upstream to downstream, comparing each concentration to the previous upstream sample, shows the following (Table 2):

- Antimony, cadmium, and manganese increase below the Weber Mine.
- Arsenic, silver, and zinc increase below the Perry Mine, Silver Leaf Group Prospect, and Weber Mine.
- Lead increases below the Silver Leaf Group Prospect and Weber Mine.
- Mercury increases below the Silver Leaf Group Prospect.

Surface Water Sample Results

All samples on Gold Creek unnamed tributaries where flowing water was present exceeded the EPA RSL for arsenic in tap water, and one sample exceeded the EPA RSL for antimony in tap water (0.0078 mg/L) and the EPA MCL for antimony (Table 3). The background sample locations on two of three unnamed tributaries were dry. On the flowing unnamed tributary to Gold Creek where the Weber Mine is located, the downstream sample from the Weber Mine has an antimony concentration greater than three times the corresponding background sample (Table 3, Figure 2).

3.1.1.3 Kick Bush Creek

Sediment Sample Results

Arsenic concentrations in sediment samples from Kick Bush Creek, a tributary to Gold Creek, exceed the EPA RSL for both residential and industrial soil for both sample locations (Table 2). No other analytes exceed EPA RSLs, and no analytes were greater than three times the corresponding background sample.

Surface Water Sample Results

Arsenic concentrations in surface water in Kick Bush Creek exceeded the EPA RSL for tap water (Table 3). The background sample (GC-SW-3) arsenic concentration was slightly higher than the downstream sample below the Gafter Mine.

3.1.1.4 Chloride Gulch

Sediment Sample Results

Arsenic concentrations in sediment samples from Chloride Gulch, a major tributary to Gold Creek, exceed the EPA RSL for both residential and industrial soil for all sample locations (Table 2). Antimony concentrations exceed the EPA RSL for residential soil at one downstream sample location; lead concentrations exceed the EPA RSL for residential soil at two downstream sample locations; and manganese exceeds the EPA RSL for residential soil at one downstream

location. Analytes greater than three times the corresponding background sample include antimony, arsenic, cadmium, lead, manganese, mercury, silver, and zinc.

A review of analytes with concentrations greater than three times the background sample from upstream to downstream, comparing each concentration to the previous upstream sample, show the following (Table 2):

- Antimony, lead, manganese, silver, and zinc increase below Wieberg and the unnamed tributary where the Keep Cool Mine and Bloody Shirt Prospect are located.
- Arsenic and mercury increase below Wieberg.
- Cadmium increases below Wieberg, the unnamed tributary where the Long Hand Mine and Wieberg are located, and the unnamed tributary where the Keep Cool Mine and Bloody Shirt Prospect are located.

Surface Water Sample Results

Detected analytes on Chloride Gulch surface water samples include antimony in one of four samples, arsenic in all four samples, and zinc in three of four samples (Table 3). The detected antimony concentration exceeds the EPA MCL. Arsenic concentrations exceed the EPA MCL in three of four samples and the EPA RSL for tap water in all four samples. The most downstream sample on Chloride Gulch, upstream of the mine waste repository and the confluence of Gold Creek, was dry.

3.1.1.5 Chloride Gulch Unnamed Tributaries

Sediment Sample Results

Arsenic concentrations in sediment samples from unnamed tributaries to Chloride Gulch exceed the EPA RSL for both residential and industrial soil at all sample locations (Table 2). Lead concentrations exceed the EPA RSL for residential soil at two downstream sample locations and the EPA RSL for industrial soil at one downstream location. Manganese exceeds the EPA RSL for residential soil at one downstream location. Analytes greater than three times the corresponding background sample location include antimony, arsenic, cadmium, chromium, copper, lead, manganese, silver, and zinc.

A review of analytes with concentrations greater than three times the background sample from upstream to downstream, comparing each concentration to the previous upstream sample, shows antimony, arsenic, cadmium, copper, lead, manganese, silver, and zinc increasing below the Keep Cool Mine, and chromium increasing below the Long Hand Mine.

Surface Water Sample Results

Arsenic concentrations exceed the EPA RSL for tap water in two of three samples from Chloride Gulch unnamed tributaries (Table 3). The background sample locations for both unnamed tributaries were dry.

3.1.1.6 West Gold Creek

Sediment Sample Results

Arsenic concentrations in sediment samples from West Gold Creek, a major tributary to Gold Creek, exceed the EPA RSL for both residential and industrial soil for both sample locations (Table 2). No other analytes exceed EPA RSLs, and no analytes were greater than three times the corresponding background sample.

Surface Water Sample Results

Surface water samples from West Gold Creek had no detects for total metals or total cyanide.

3.1.1.7 Lake Pend Oreille

Sediment Sample Results

Arsenic concentrations in both sediment samples (from the mouths of Gold Creek and North Gold Creek in Lake Pend Oreille) exceed the EPA RSLs for both residential and industrial soil. No other analytes exceed EPA RSLs. Arsenic at the mouth of Gold Creek is greater than three times the corresponding background sample (Table 2).

Surface Water Sample Results

Arsenic was detected in surface water at the mouth of North Gold Creek to Lake Pend Oreille and exceeds the EPA RSL for tap water (Table 3). No upstream/background sample was collected for North Fork Gold Creek. Arsenic from the mouth of Gold Creek to Lake Pend Oreille exceeds the EPA RSL for tap water but is not significantly greater than the corresponding background sample. No other analytes were detected in Lake Pend Oreille surface water samples.

3.1.2 Drinking Water Targets

Three public water system (PWS) sources are located within the Gold Creek Area Mines. A surface water intake (T1090074S1) for the Lakeview Townsite Improvement Association (PWS #ID1090074) is located on a spring to North Gold Creek east of Lakeview. The source water delineation showing the area of contribution to this intake is depicted on Figure 3. This PWS serves approximately 50 people through 36 connections (DEQ 2018).

Well E0005609 for the Gold Creek Lodge (PWS #ID1090048) is located near Gold Creek south of Lakeview. Figure 4 shows the source water delineation and the area of contribution to this intake. This PWS serves approximately 25 people through 9 connections (DEQ 2018).

Well E0005610 for the Lakeview Resort (PWS #ID1090076) is located near North Gold Creek just north of Lakeview. Figure 5 shows the location of this intake. An assessment for this PWS has not been conducted (DEQ 2018).

Surface water quality upstream of the PWS intakes for the Lakeview Townsite Improvement Association and Lakeview Resort are located on North Gold Creek and were not evaluated during this PA/SI. The section of Gold Creek immediately upstream of the PWS for the Gold Creek Lodge was dry, and surface water quality could not be evaluated.

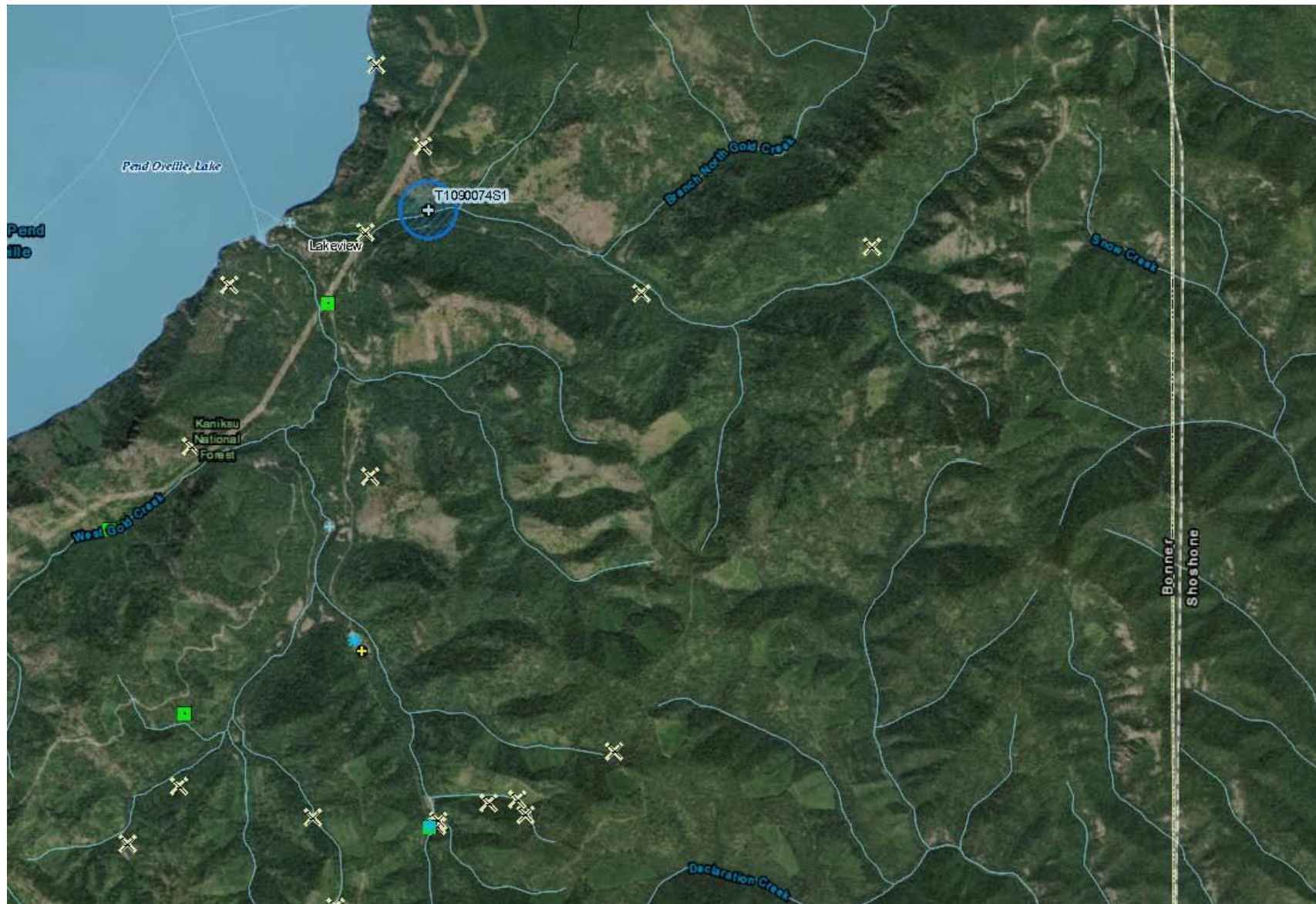


Figure 3. Lakeview Townsite Improvement Association PWS.

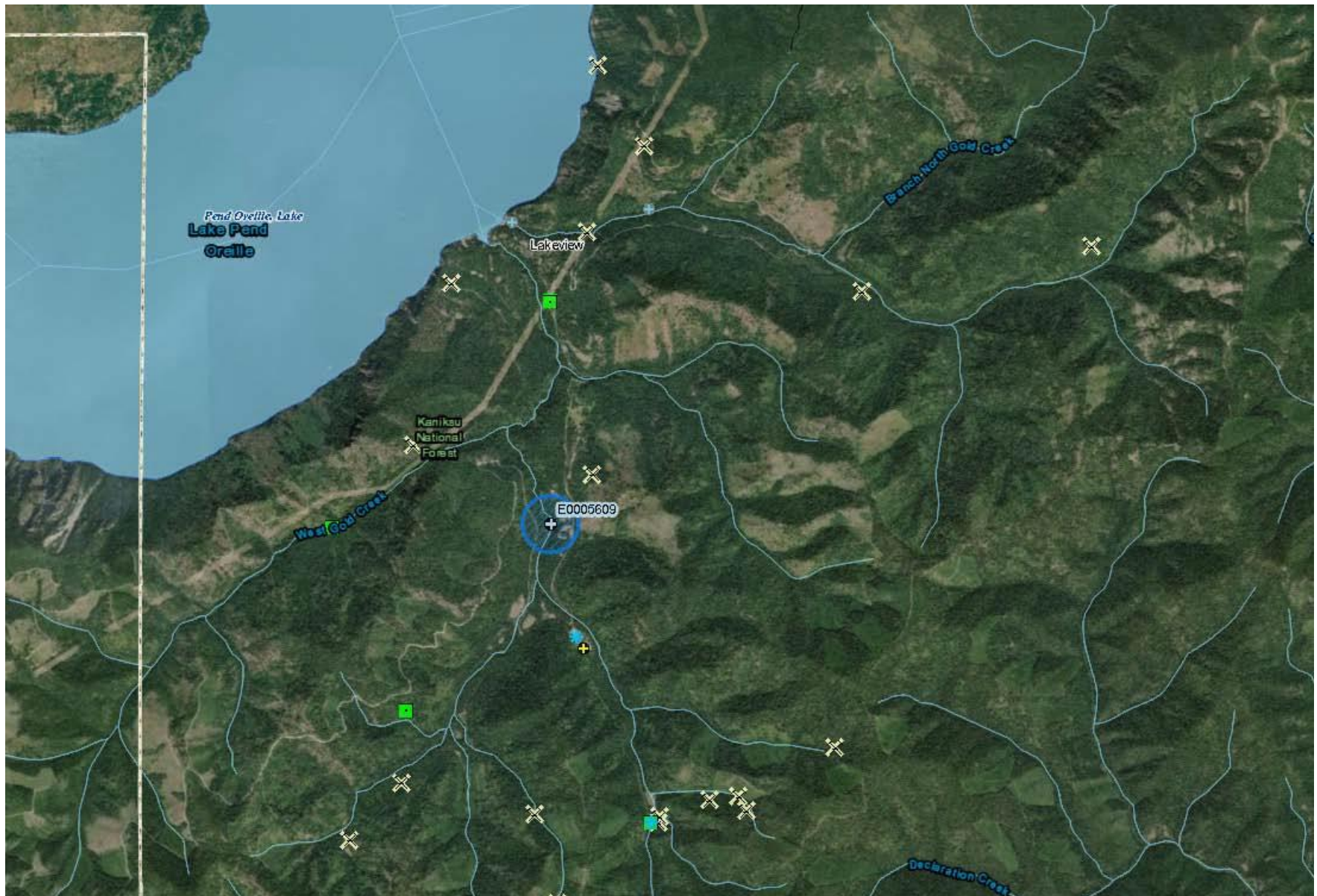


Figure 4. Gold Creek Lodge PWS.

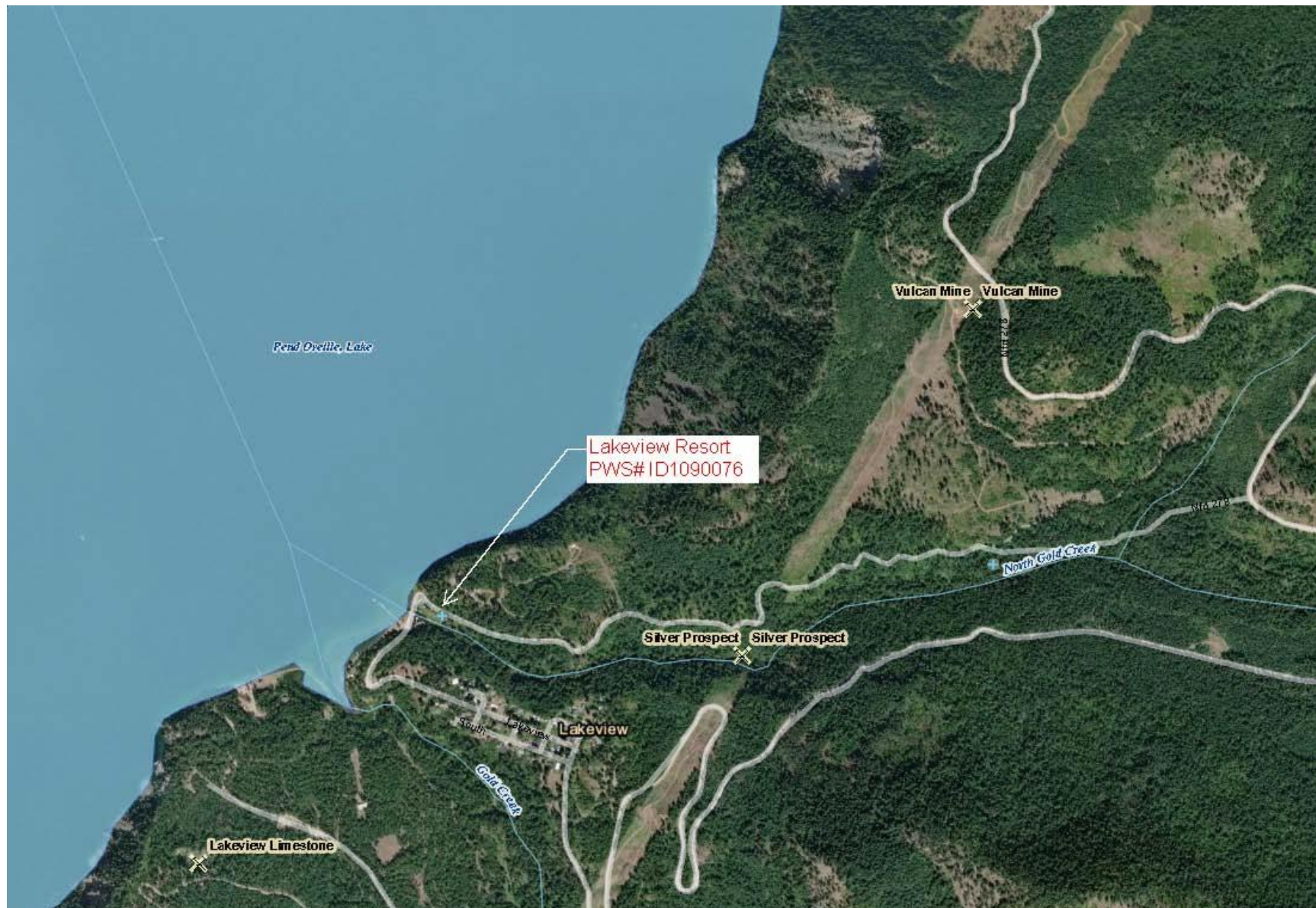


Figure 5. Lakeview Resort PWS.

3.1.3 Human Food Chain Targets

Fishing is not permitted on Gold Creek and its tributaries and within a 100-yard radius into Lake Pend Oreille from the mouth of Gold Creek. Outside of the closure area at the mouth of Gold Creek, Lake Pend Oreille is open to fishing; however, fish catch statistics could not be located. Game fish species in Lake Pend Oreille include Bluegill, Brown Trout, Bull Trout, Bullhead Catfish, Crappie, Cutthroat Trout, Kokanee, Lake Trout, Largemouth Bass, Mountain Whitefish, Northern Pike, Rainbow Trout, Smallmouth Bass, Walleye, and Yellow Perch (IDFG 2018).

Idaho Department of Health and Welfare (IDHW) issued fish consumption advisories for Lake Pend Oreille for Lake Trout, Whitefish, and Bass (IDHW 2018).

3.1.4 Environmental Targets

Sensitive species can have large habitat ranges that overlap the vicinity of the Gold Creek Area Mines. The resource list obtained during a search of the Information and Planning Conservation System (USFWS 2018a), identified the following species in the Gold Creek Area Mines and the 15-mile TDL corridor:

- Mammals: Canada Lynx, *Lynx Canadensis*, threatened species and North American Wolverine, *Gulo gulo luscus*, proposed threatened species.
- Fishes: Bull Trout, *Salvelinus confluentus*, threatened species and threatened species-designated critical habitat.

Wetlands are present along the 15-mile TDL (USFWS 2018b). A freshwater emergent wetland, freshwater pond, and number of freshwater forested/shrub wetlands are present within the project area. Gold Creek drains directly to a lake habitat (Figure 6).

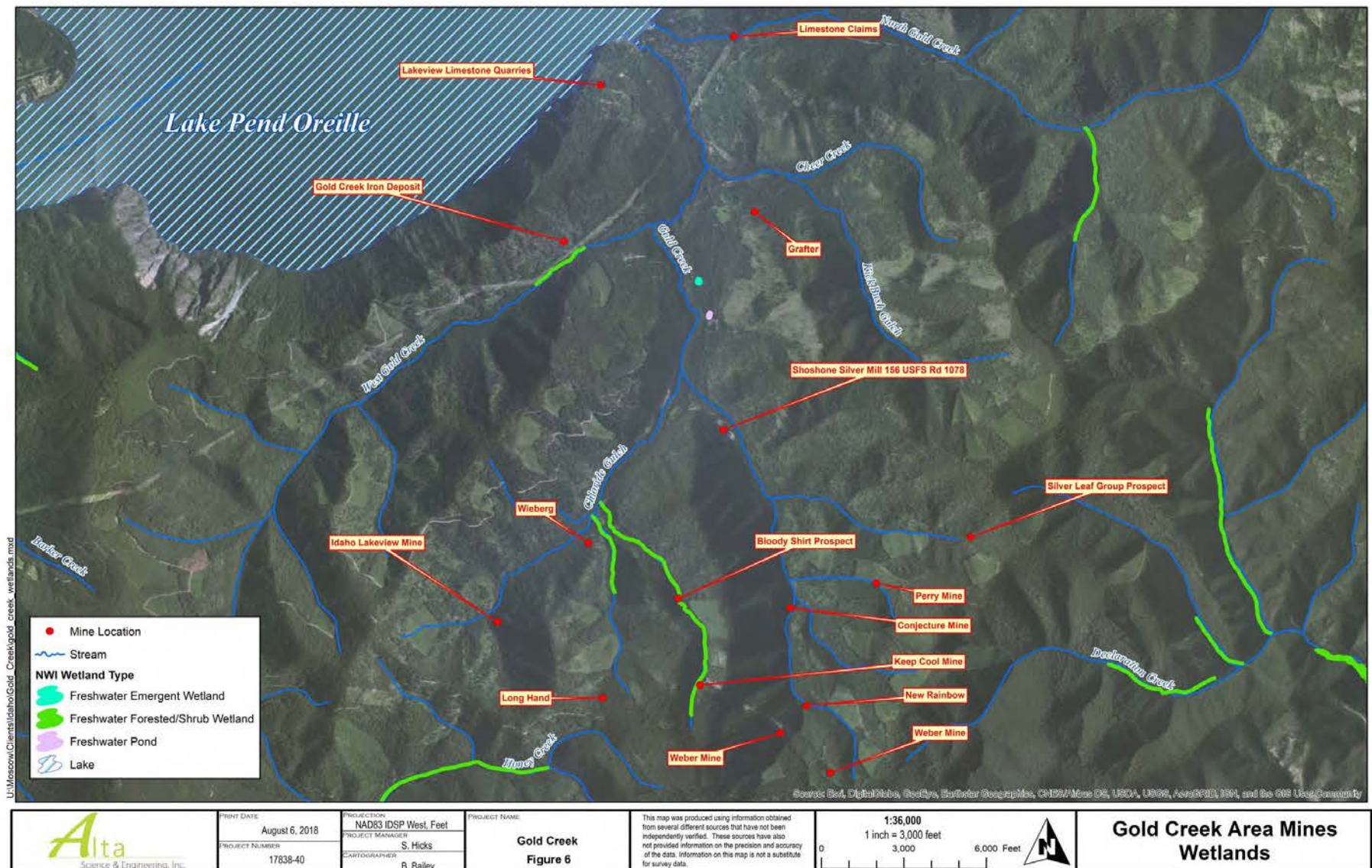


Figure 6. Gold Creek Area Mines wetland.

4 Summary and Conclusions

This PA/SI was conducted to assess the threat posed by the Gold Creek Area Mines to human health and the environment and to determine the need for additional investigation. The PA/SI work in the Gold Creek Area Mines focused on accessing upstream and downstream areas of groups or clusters of mine sites in a watershed. This focus helped to assess changes since past investigations and remedial actions at specific mine sites so DEQ can prioritize future actions.

- Arsenic concentrations in sediment at all sample locations and lead concentrations at two locations exceed EPA RSLs for both residential and industrial soils. Antimony, lead, and manganese concentrations exceed EPA RSLs for residential soils at eight, six, and seven locations, respectively.
- Metals concentrations in sediment samples greater than three times the corresponding background sample at some locations include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, manganese, mercury, silver, and zinc.
- A review of analytes with concentrations greater than three times the background sample, comparing each concentration to the previous upstream sample, shows increases in metals concentrations below nine mine and/or mill sites: New Rainbow Mine, Conjecture Mine, Shoshone Silver Mill, Weber Mine, Perry Mine, Silver Leaf Group Prospect, Wieberg, Keep Cool Mine, and Long-Hand Mine.
- Arsenic and antimony in some surface water samples exceed EPA MCLs for drinking water and/or EPA RSLs for tap water; however, no significant increases were detected of metals concentrations above corresponding background samples in surface water.
- Detections of arsenic and other metals discussed in this PA/SI identify a concern for human health and the environment; therefore, DEQ recommends **Additional Actions** for this site.
- Further investigation should focus on the areas with the highest concentrations of arsenic and other metals in sediments, in particular, Gold Creek, Chloride Gulch, their tributaries, and the mines upstream of the measured increases in metals concentrations within these drainages. To further investigate the impacts of historic mining on the watershed, DEQ recommends obtaining access agreements with private landowners and/or collecting additional samples in publicly accessible areas within these drainages.

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<http://www.wrcc.dri.edu/>

Appendix A. Site Photographs



Photo 1. Lake Pend Oreille.



Photo 2. Mouth of Gold Creek at Lake Pend Oreille.



Photo 3. Kick Bush Creek, upstream of Grafton Mine.



Photo 4. West Gold Creek, downstream of Gold Creek Iron Deposit Mine.



Photo 5. Gold Creek (dry), downstream of Shoshone Silver Mill.



Photo 6. Unnamed tributary to Chloride Gulch, upstream of Long Hand Mine.



Photo 7. Unnamed tributary to Chloride Gulch, downstream of Long Hand Mine.



Photo 8. Unnamed tributary to Chloride Gulch, downstream of Wieberg #1.



Photo 9. Chloride Gulch, downstream of Wieberg #2.



Photo 10. Gold Creek, downstream of Conjecture Mine.



Photo 11. Unnamed tributary to Gold Creek, downstream of Perry Mine.



Photo 12. Gold Creek, downstream of New Rainbow Mine.



Photo 13. Unnamed tributary to Gold Creek, downstream of Weber Mine.



Photo 14. Unnamed tributary to Chloride Gulch, downstream of Keep Cool Mine.



Photo 15. Sampling on Chloride Gulch, downstream of Idaho Lakeview Mine.



Photo 16. Chloride Gulch, upstream of Idaho Lakeview Mine.



Photo 17. Gold Creek, downstream of confluence with West Gold Creek.



Photo 18. Gold Creek, upstream of confluence with Kick Bush Creek.



Photo 19. Unnamed tributary to Gold Creek (dry), upstream of Silver Leaf Mine.

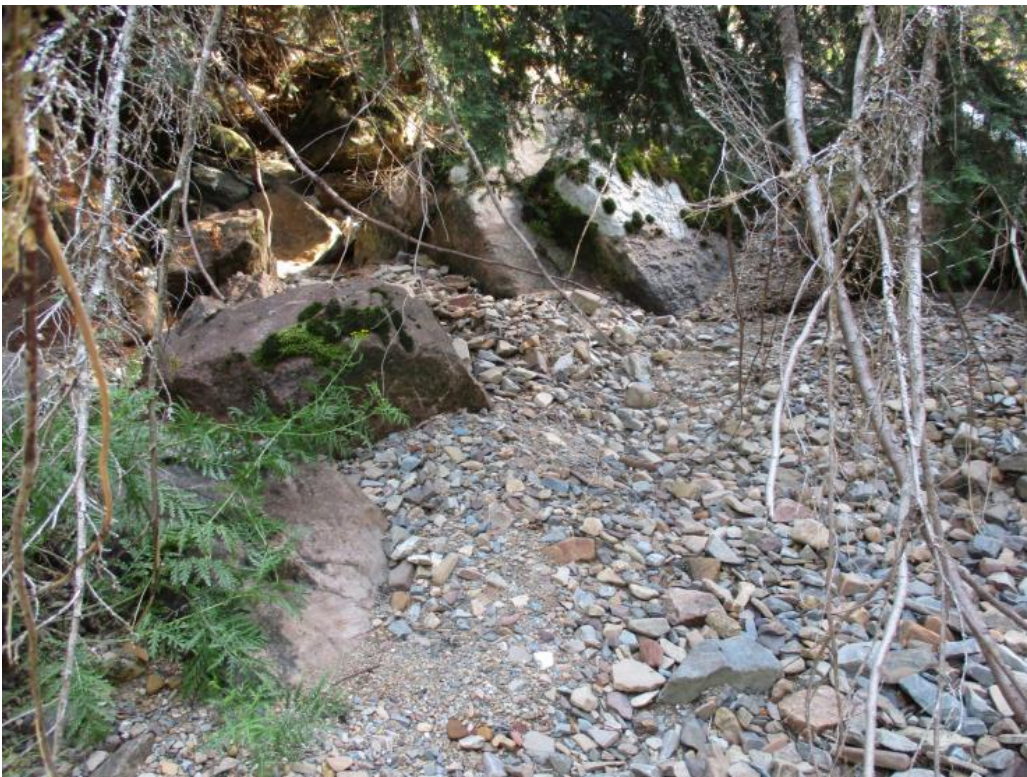


Photo 20. Gold Creek (dry), downstream of mine waste repository.

Appendix B. Analytical Laboratory Reports



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SW-1	X8H0764-01	Surface Water	27-Aug-18 11:45	GM	31-Aug-2018	
GC-SW-2	X8H0764-02	Surface Water	27-Aug-18 12:40	GM	31-Aug-2018	
GC-SW-3	X8H0764-03	Surface Water	27-Aug-18 13:35	GM	31-Aug-2018	
GC-SW-4	X8H0764-04	Surface Water	27-Aug-18 14:20	GM	31-Aug-2018	Q5
GC-SW-5	X8H0764-05	Surface Water	27-Aug-18 15:15	GM	31-Aug-2018	
GC-SW-6	X8H0764-06	Surface Water	27-Aug-18 16:00	GM	31-Aug-2018	
GC-SW-7	X8H0764-07	Surface Water	27-Aug-18 16:50	GM	31-Aug-2018	
GC-SW-8	X8H0764-08	Rinsate	27-Aug-18 17:10	GM	31-Aug-2018	
GC-SW-9	X8H0764-09	Surface Water	28-Aug-18 09:00	GM	31-Aug-2018	
GC-SW-10	X8H0764-10	Surface Water	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SW-11	X8H0764-11	Surface Water	28-Aug-18 14:20	GM	31-Aug-2018	
GC-SW-12	X8H0764-12	Surface Water	28-Aug-18 14:45	GM	31-Aug-2018	
GC-SW-13	X8H0764-13	Surface Water	28-Aug-18 15:40	GM	31-Aug-2018	
GC-SW-14	X8H0764-14	Surface Water	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SW-15	X8H0764-15	Surface Water	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SW-16	X8H0764-16	Surface Water	29-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-17	X8H0764-17	Surface Water	29-Aug-18 10:00	GM	31-Aug-2018	
GC-SW-18	X8H0764-18	Surface Water	29-Aug-18 11:00	GM	31-Aug-2018	
GC-SW-19	X8H0764-19	Surface Water	29-Aug-18 11:40	GM	31-Aug-2018	
GC-SW-20	X8H0764-20	Surface Water	29-Aug-18 12:00	GM	31-Aug-2018	
GC-SW-21	X8H0764-21	Surface Water	29-Aug-18 12:20	GM	31-Aug-2018	
GC-SW-22	X8H0764-22	Surface Water	29-Aug-18 14:30	GM	31-Aug-2018	
GC-SW-23	X8H0764-23	Surface Water	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-24	X8H0764-24	Surface Water	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-25	X8H0764-25	DI Water	30-Aug-18 09:40	GM	31-Aug-2018	
GC-SW-26	X8H0764-26	Surface Water	30-Aug-18 10:00	GM	31-Aug-2018	
GC-SW-27	X8H0764-27	DI Water	30-Aug-18 10:30	GM	31-Aug-2018	
GC-SW-28	X8H0764-28	Surface Water	30-Aug-18 13:00	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Case Narrative: X8H0764

10/10/18 Report has been revised after client requested TR 6020B As and Sb to be added.



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-1**

Sampled: 27-Aug-18 11:45

SVL Sample ID: **X8H0764-01 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:24	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:14	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:14	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:14	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:14	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:14	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:14	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:14	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:14	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:14	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:14	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:14	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:14	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:14	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:14	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:15	
EPA 6020B	Arsenic	0.00234	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:15	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:05	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-2**

Sampled: 27-Aug-18 12:40

SVL Sample ID: **X8H0764-02 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:26	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:18	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:18	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:18	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:18	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:18	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:18	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:18	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:18	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:18	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:18	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:18	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:18	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:18	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:18	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:17	
EPA 6020B	Arsenic	0.00181	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:17	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:07	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-3**

Sampled: 27-Aug-18 13:35

SVL Sample ID: **X8H0764-03 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:28	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:21	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:21	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:21	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:21	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:21	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:21	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:21	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:21	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:21	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:21	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:21	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:21	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:21	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:21	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:19	
EPA 6020B	Arsenic	0.00197	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:19	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:09	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-4**

Sampled: 27-Aug-18 14:20

SVL Sample ID: **X8H0764-04 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:30	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:25	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:25	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:25	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:25	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:25	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:25	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:25	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:25	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:25	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:25	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:25	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:25	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:25	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:25	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:09	
EPA 6020B	Arsenic	0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:09	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:11	Q3
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-5**

Sampled: 27-Aug-18 15:15

SVL Sample ID: **X8H0764-05 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:39	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:35	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:35	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:35	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:35	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:35	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:35	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:35	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:35	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:35	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:35	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:35	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:35	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:35	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:35	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:22	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:22	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:13	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-6**

Sampled: 27-Aug-18 16:00

SVL Sample ID: **X8H0764-06 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:41	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:39	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:39	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:39	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:39	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:39	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:39	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:39	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:39	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:39	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:39	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:39	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:39	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:39	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:39	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:24	
EPA 6020B	Arsenic	0.00201	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:24	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:21	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-7**

Sampled: 27-Aug-18 16:50

SVL Sample ID: **X8H0764-07 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:42	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:13	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:13	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:13	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:13	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:13	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:13	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:13	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:13	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:13	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:13	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:13	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:13	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:13	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:13	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:30	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:30	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:23	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-8**

Sampled: 27-Aug-18 17:10

SVL Sample ID: **X8H0764-08 (Rinsate)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:44	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:17	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:17	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:17	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:17	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:17	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:17	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:17	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:17	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:17	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:17	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:17	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:17	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:17	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:17	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:32	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:32	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:25	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-9**

Sampled: 28-Aug-18 09:00

SVL Sample ID: **X8H0764-09 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:46	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:20	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:20	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:20	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:20	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:20	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:20	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:20	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:20	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:20	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:20	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:20	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:20	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:20	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:20	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:34	
EPA 6020B	Arsenic	0.00675	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:34	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:27	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-10**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0764-10 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:48	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:24	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:24	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:24	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:24	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:24	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:24	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:24	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:24	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:24	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:24	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:24	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:24	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:24	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:24	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:36	
EPA 6020B	Arsenic	0.00328	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:36	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:29	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-11**

Sampled: 28-Aug-18 14:20

SVL Sample ID: **X8H0764-11 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:50	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:28	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:28	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:28	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:28	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:28	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:28	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:28	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:28	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:28	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:28	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:28	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:28	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:28	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:28	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:38	
EPA 6020B	Arsenic	0.00255	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:38	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:31	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-12**

Sampled: 28-Aug-18 14:45

SVL Sample ID: **X8H0764-12 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:51	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:31	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:31	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:31	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:31	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:31	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:31	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:31	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:31	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:31	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:31	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:31	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:31	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:31	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:31	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:40	
EPA 6020B	Arsenic	0.00470	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:40	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:33	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-13**

Sampled: 28-Aug-18 15:40

SVL Sample ID: **X8H0764-13 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:53	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:35	
EPA 6010D	Arsenic	0.029	mg/L	0.025	0.006		X836040	AS	09/14/18 09:35	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:35	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:35	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:35	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:35	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:35	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:35	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:35	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:35	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:35	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:35	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:35	
EPA 6010D	Zinc	0.105	mg/L	0.010	0.005		X836040	AS	09/14/18 09:35	
EPA 6020B	Antimony	0.00638	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:42	
EPA 6020B	Arsenic	0.0270	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:42	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-14**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0764-14 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:55	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:11	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:11	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:11	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:28	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:11	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:11	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:11	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:11	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:11	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:11	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:28	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:11	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:11	
EPA 6010D	Zinc	0.036	mg/L	0.010	0.005		X836042	DT	09/19/18 10:11	
EPA 6020B	Antimony	0.00656	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:44	
EPA 6020B	Arsenic	0.0106	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:44	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:37	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-15**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0764-15 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:00	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:15	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:15	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:15	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:31	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:15	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:15	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:15	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:15	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:15	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:15	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:31	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:15	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:15	
EPA 6010D	Zinc	0.037	mg/L	0.010	0.005		X836042	DT	09/19/18 10:15	
EPA 6020B	Antimony	0.00627	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:46	
EPA 6020B	Arsenic	0.0104	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:46	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:39	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-16**

Sampled: 29-Aug-18 09:15

SVL Sample ID: **X8H0764-16 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:02	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:19	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:19	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:19	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:33	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:19	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:19	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:19	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:19	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:19	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:19	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:33	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:19	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:19	
EPA 6010D	Zinc	0.041	mg/L	0.010	0.005		X836042	DT	09/19/18 10:19	
EPA 6020B	Antimony	0.00668	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:49	
EPA 6020B	Arsenic	0.0106	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:49	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:47	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-17**

Sampled: 29-Aug-18 10:00

SVL Sample ID: **X8H0764-17 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:04	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:22	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:22	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:22	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:36	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:22	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:22	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:22	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:22	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:22	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:22	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:36	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:22	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:22	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 10:22	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:55	
EPA 6020B	Arsenic	0.00456	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:55	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 13:59	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-18**

Sampled: 29-Aug-18 11:00

SVL Sample ID: **X8H0764-18 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:06	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:26	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:26	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:26	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:39	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:26	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:26	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:26	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:26	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:26	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:26	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:39	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:26	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:26	
EPA 6010D	Zinc	0.034	mg/L	0.010	0.005		X836042	DT	09/19/18 10:26	
EPA 6020B	Antimony	0.00756	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:57	
EPA 6020B	Arsenic	0.00286	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:57	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:01	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-19**

Sampled: 29-Aug-18 11:40

SVL Sample ID: **X8H0764-19 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:08	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:30	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:30	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:30	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:41	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:30	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:30	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:30	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:30	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:30	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:30	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:41	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:30	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:30	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 10:30	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:59	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:59	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:03	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-20**

Sampled: 29-Aug-18 12:00

SVL Sample ID: **X8H0764-20 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:09	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:33	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:33	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:33	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:44	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:33	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:33	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:33	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:33	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:33	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:33	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:44	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:33	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:33	
EPA 6010D	Zinc	0.072	mg/L	0.010	0.005		X836042	DT	09/19/18 10:33	
EPA 6020B	Antimony	0.0121	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 12:01	
EPA 6020B	Arsenic	0.00307	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 12:01	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:05	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-21**

Sampled: 29-Aug-18 12:20

SVL Sample ID: **X8H0764-21 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:38	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:37	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:37	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:37	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:47	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:37	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:37	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:37	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:37	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:37	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:37	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:47	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:37	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:37	
EPA 6010D	Zinc	0.030	mg/L	0.010	0.005		X836042	DT	09/19/18 10:37	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:14	
EPA 6020B	Arsenic	0.00279	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:14	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:13	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-22**SVL Sample ID: **X8H0764-22 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 29-Aug-18 14:30
Received: 31-Aug-18
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:40	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:51	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:51	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:51	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:05	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:51	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:51	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:51	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:51	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:51	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:51	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:05	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:51	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:51	
EPA 6010D	Zinc	0.708	mg/L	0.010	0.005		X836042	DT	09/19/18 10:51	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:20	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:20	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:15	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-23**SVL Sample ID: **X8H0764-23 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 30-Aug-18 09:15
Received: 31-Aug-18
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:42	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:55	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:55	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:55	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:07	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:55	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:55	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:55	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:55	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:55	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:55	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:07	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:55	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:55	
EPA 6010D	Zinc	0.172	mg/L	0.010	0.005		X836042	DT	09/19/18 10:55	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:22	
EPA 6020B	Arsenic	0.0132	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:22	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:17	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-24**

Sampled: 30-Aug-18 09:15

SVL Sample ID: **X8H0764-24 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:43	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:59	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:59	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:59	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:10	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:59	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:59	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:59	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:59	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:59	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:59	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:10	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:59	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:59	
EPA 6010D	Zinc	0.170	mg/L	0.010	0.005		X836042	DT	09/19/18 10:59	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:24	
EPA 6020B	Arsenic	0.0131	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:24	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:19	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-25**

Sampled: 30-Aug-18 09:40

SVL Sample ID: **X8H0764-25 (DI Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:45	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:02	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:02	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:02	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:13	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:02	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:02	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:02	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:02	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:02	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:02	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:13	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:02	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:02	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:02	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:07	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:07	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:21	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-26**

Sampled: 30-Aug-18 10:00

SVL Sample ID: **X8H0764-26 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:51	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:06	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:06	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:06	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:15	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:06	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:06	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:06	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:06	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:06	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:06	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:15	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:06	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:06	
EPA 6010D	Zinc	0.013	mg/L	0.010	0.005		X836042	DT	09/19/18 11:06	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:26	
EPA 6020B	Arsenic	0.0140	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:26	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:23	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-27**

Sampled: 30-Aug-18 10:30

SVL Sample ID: **X8H0764-27 (DI Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:56	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:16	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:16	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:16	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:23	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:16	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:16	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:16	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:16	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:16	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:16	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:23	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:16	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:16	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:16	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:28	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:28	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:25	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-28**

Sampled: 30-Aug-18 13:00

SVL Sample ID: **X8H0764-28 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:58	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:20	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:20	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:20	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:26	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:20	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:20	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:20	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:20	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:20	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:20	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:26	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:20	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:20	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:20	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:30	
EPA 6020B	Arsenic	0.00193	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:30	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:27	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	mg/L	<0.00020	0.000093	0.00020	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	<0.00020	0.000093	0.00020	X837230	14-Sep-18	

Metals (Total Recoverable)

EPA 6010D	Antimony	mg/L	<0.020	0.009	0.020	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	<0.020	0.009	0.020	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	<0.025	0.006	0.025	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	<0.025	0.006	0.025	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	<0.0020	0.0017	0.0020	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	<0.0020	0.0017	0.0020	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	<0.0020	0.0016	0.0020	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	<0.0020	0.0016	0.0020	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	<0.0060	0.0020	0.0060	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	<0.0060	0.0020	0.0060	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	<0.0060	0.0016	0.0060	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	<0.0060	0.0016	0.0060	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	<0.0100	0.0027	0.0100	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	<0.0100	0.0027	0.0100	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	<0.100	0.056	0.100	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	<0.100	0.056	0.100	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	<0.0075	0.0049	0.0075	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	<0.0075	0.0049	0.0075	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	<0.0080	0.0034	0.0080	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	<0.0080	0.0034	0.0080	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	<0.0100	0.0023	0.0100	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	<0.0100	0.0023	0.0100	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	<0.040	0.012	0.040	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	<0.040	0.012	0.040	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	<0.0050	0.0019	0.0050	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	<0.0050	0.0019	0.0050	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	<0.010	0.005	0.010	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	<0.010	0.005	0.010	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	<0.00300	0.00023	0.00300	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	<0.00300	0.00023	0.00300	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	<0.00150	0.00021	0.00150	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	<0.00150	0.00021	0.00150	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0038	0.0100	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0038	0.0100	X836020	04-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	mg/L	0.00496	0.00500	99.2	80 - 120	X837230	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00501	0.00500	100	80 - 120	X837229	14-Sep-18	

Metals (Total Recoverable)

EPA 6010D	Antimony	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.08	1.00	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.13	1.00	113	80 - 120	X836042	19-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)									
EPA 6010D	Beryllium	mg/L	1.08	1.00	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.05	1.00	105	80 - 120	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.07	1.00	107	80 - 120	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.06	1.00	106	80 - 120	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	1.09	1.00	109	80 - 120	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	1.05	1.00	105	80 - 120	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.06	1.00	106	80 - 120	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.9	10.0	109	80 - 120	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.4	10.0	104	80 - 120	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.05	1.00	105	80 - 120	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.03	1.00	103	80 - 120	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.14	1.00	114	80 - 120	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0539	0.0500	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0538	0.0500	108	80 - 120	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0275	0.0250	110	80 - 120	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0272	0.0250	109	80 - 120	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0258	0.0250	103	80 - 120	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0254	0.0250	102	80 - 120	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	0.149	0.150	99.3	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.140	0.150	93.3	90 - 110	X836020	04-Sep-18	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	mg/L	0.00097	<0.00020	0.00100	97.4	75 - 125	X837230	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	<0.00020	0.00100	98.7	75 - 125	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	<0.00020	0.00100	98.7	75 - 125	X837229	14-Sep-18	
Metals (Total Recoverable)										
EPA 6010D	Antimony	mg/L	1.05	<0.020	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.09	<0.020	1.00	109	75 - 125	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.08	<0.025	1.00	108	75 - 125	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.13	<0.025	1.00	111	75 - 125	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	1.10	<0.0020	1.00	110	75 - 125	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.07	<0.0020	1.00	107	75 - 125	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.06	<0.0020	1.00	106	75 - 125	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.03	<0.0020	1.00	103	75 - 125	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	0.967	<0.0060	1.00	96.7	75 - 125	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.08	<0.0060	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.04	<0.0060	1.00	104	75 - 125	X836040	14-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)										
EPA 6010D	Cobalt	mg/L	1.08	<0.0060	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	0.957	<0.0100	1.00	95.7	75 - 125	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.07	<0.0100	1.00	107	75 - 125	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.9	<0.100	10.0	109	75 - 125	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.4	<0.100	10.0	103	75 - 125	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.05	<0.0075	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	1.08	<0.0075	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.08	<0.0080	1.00	108	75 - 125	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.06	<0.0080	1.00	106	75 - 125	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.03	<0.0100	1.00	103	75 - 125	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.00	<0.0100	1.00	100	75 - 125	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.07	<0.040	1.00	107	75 - 125	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.12	<0.040	1.00	112	75 - 125	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0495	<0.0050	0.0500	99.0	75 - 125	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0538	<0.0050	0.0500	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.05	<0.010	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.10	0.013	1.00	109	75 - 125	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0270	<0.00300	0.0250	106	75 - 125	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0268	<0.00300	0.0250	107	75 - 125	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0268	0.00234	0.0250	97.8	75 - 125	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0253	<0.00150	0.0250	101	75 - 125	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	0.100	<0.0100	0.100	100	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0990	<0.0100	0.100	99.0	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0980	<0.0100	0.100	98.0	90 - 110	X836020	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0970	<0.0100	0.100	97.0	90 - 110	X836020	04-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total)											
EPA 7470A	Mercury	mg/L	0.00097	0.00099	0.00100	97.0	1.8	20	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	0.00097	0.00100	98.8	1.4	20	X837230	14-Sep-18	
Metals (Total Recoverable)											
EPA 6010D	Antimony	mg/L	1.03	1.05	1.00	103	2.0	20	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.12	1.09	1.00	112	2.4	20	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.05	1.08	1.00	105	2.5	20	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.16	1.13	1.00	114	2.6	20	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	1.02	1.10	1.00	102	7.5	20	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.09	1.07	1.00	109	1.6	20	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.04	1.06	1.00	104	1.8	20	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.04	1.03	1.00	104	0.5	20	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	1.01	0.967	1.00	101	4.9	20	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.09	1.08	1.00	109	0.9	20	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.02	1.04	1.00	102	1.8	20	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	1.11	1.08	1.00	111	2.4	20	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	1.01	0.957	1.00	101	5.0	20	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.08	1.07	1.00	108	1.1	20	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.2	10.9	10.0	102	7.4	20	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.6	10.4	10.0	105	2.3	20	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.04	1.05	1.00	104	1.4	20	X836040	14-Sep-18	



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Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)											
EPA 6010D	Lead	mg/L	1.11	1.08	1.00	111	2.6	20	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.00	1.08	1.00	100	7.7	20	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.09	1.06	1.00	109	2.1	20	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.02	1.03	1.00	102	1.7	20	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.00	1.00	1.00	100	0.3	20	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.05	1.07	1.00	105	2.1	20	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.14	1.12	1.00	114	2.2	20	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0516	0.0495	0.0500	103	4.2	20	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0548	0.0538	0.0500	110	1.8	20	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.03	1.05	1.00	103	1.9	20	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.12	1.10	1.00	111	2.1	20	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0268	0.0270	0.0250	105	0.5	20	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0267	0.0268	0.0250	107	0.2	20	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0268	0.0268	0.0250	98.0	0.2	20	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0254	0.0253	0.0250	101	0.4	20	X839200	05-Oct-18	
Classical Chemistry Parameters											
EPA 335.4	Cyanide (total)	mg/L	0.0980	0.100	0.100	98.0	2.0	20	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0960	0.0980	0.100	96.0	2.1	20	X836020	04-Sep-18	

Notes and Definitions

Q3	Sample was received with improper chemical preservation.
Q5	Sample was received with inadequate preservation, but preserved by the laboratory.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SD-1	X8H0766-01	Sediment	27-Aug-18 11:45	GM	31-Aug-2018	
GC-SD-2	X8H0766-02	Sediment	27-Aug-18 12:40	GM	31-Aug-2018	
GC-SD-3	X8H0766-03	Sediment	27-Aug-18 13:35	GM	31-Aug-2018	
GC-SD-4	X8H0766-04	Sediment	27-Aug-18 14:20	GM	31-Aug-2018	
GC-SD-5	X8H0766-05	Sediment	27-Aug-18 15:15	GM	31-Aug-2018	
GC-SD-6	X8H0766-06	Sediment	27-Aug-18 16:00	GM	31-Aug-2018	
GC-SD-7	X8H0766-07	Sediment	27-Aug-18 16:50	GM	31-Aug-2018	
GC-SD-8	X8H0766-08	Sediment	28-Aug-18 08:40	GM	31-Aug-2018	
GC-SD-9	X8H0766-09	Sediment	28-Aug-18 09:00	GM	31-Aug-2018	
GC-SD-10	X8H0766-10	Sediment	28-Aug-18 09:40	GM	31-Aug-2018	
GC-SD-11	X8H0766-11	Sediment	28-Aug-18 09:50	GM	31-Aug-2018	
GC-SD-12	X8H0766-12	Sediment	28-Aug-18 11:00	GM	31-Aug-2018	
GC-SD-13	X8H0766-13	Sediment	28-Aug-18 11:25	GM	31-Aug-2018	
GC-SD-14	X8H0766-14	Sediment	28-Aug-18 11:55	GM	31-Aug-2018	
GC-SD-15	X8H0766-15	Sediment	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SD-16	X8H0766-16	Sediment	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SD-17	X8H0766-17	Sediment	28-Aug-18 13:30	GM	31-Aug-2018	
GC-SD-18	X8H0766-18	Sediment	28-Aug-18 14:20	GM	31-Aug-2018	
GC-SD-19	X8H0766-19	Sediment	28-Aug-18 14:45	GM	31-Aug-2018	
GC-SD-20	X8H0766-20	Sediment	28-Aug-18 15:45	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: X8H0766

11/8/18 DG Report is reissued with dry weight corrected results.



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-1**

Sampled: 27-Aug-18 11:45

SVL Sample ID: **X8H0766-01 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:27	
EPA 6010D	Arsenic	30.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:40	
EPA 6010D	Beryllium	0.42	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:40	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:40	
EPA 6010D	Chromium	10.6	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:40	
EPA 6010D	Cobalt	6.64	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:40	
EPA 6010D	Copper	10.8	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:40	
EPA 6010D	Iron	17800	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:40	
EPA 6010D	Lead	15.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:40	
EPA 6010D	Manganese	234	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:40	
EPA 6010D	Nickel	11.1	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:40	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:40	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:40	
EPA 6010D	Zinc	66.8	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:40	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:28	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:21	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	98.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-2**

Sampled: 27-Aug-18 12:40

SVL Sample ID: **X8H0766-02 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	5.1	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:30	
EPA 6010D	Arsenic	60.9	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:42	
EPA 6010D	Beryllium	0.48	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:42	
EPA 6010D	Cadmium	0.35	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:42	
EPA 6010D	Chromium	12.6	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:42	
EPA 6010D	Cobalt	5.02	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:42	
EPA 6010D	Copper	16.6	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:42	
EPA 6010D	Iron	19000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:42	
EPA 6010D	Lead	37.7	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:42	
EPA 6010D	Manganese	413	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:42	
EPA 6010D	Nickel	10.7	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:42	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:42	
EPA 6010D	Silver	1.30	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:42	
EPA 6010D	Zinc	202	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:42	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:29	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:23	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.0	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-3**

Sampled: 27-Aug-18 13:35

SVL Sample ID: **X8H0766-03 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:32	
EPA 6010D	Arsenic	27.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:45	
EPA 6010D	Beryllium	0.49	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:45	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:45	
EPA 6010D	Chromium	8.21	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:45	
EPA 6010D	Cobalt	8.24	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:45	
EPA 6010D	Copper	14.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:45	
EPA 6010D	Iron	18300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:45	
EPA 6010D	Lead	13.3	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:45	
EPA 6010D	Manganese	334	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:45	
EPA 6010D	Nickel	11.5	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:45	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:45	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:45	
EPA 6010D	Zinc	35.3	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:45	
EPA 7471B	Mercury	0.035	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:31	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:25	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-4**

Sampled: 27-Aug-18 14:20

SVL Sample ID: **X8H0766-04 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:35	
EPA 6010D	Arsenic	26.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:48	
EPA 6010D	Beryllium	0.52	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:48	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:48	
EPA 6010D	Chromium	11.5	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:48	
EPA 6010D	Cobalt	7.25	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:48	
EPA 6010D	Copper	13.2	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:48	
EPA 6010D	Iron	18600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:48	
EPA 6010D	Lead	14.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:48	
EPA 6010D	Manganese	307	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:48	
EPA 6010D	Nickel	11.6	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:48	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:48	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:48	
EPA 6010D	Zinc	38.1	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:48	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:33	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.15	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:02	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	78.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-5**

Sampled: 27-Aug-18 15:15

SVL Sample ID: **X8H0766-05 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:38	
EPA 6010D	Arsenic	18.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:50	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:50	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:50	
EPA 6010D	Chromium	4.69	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:50	
EPA 6010D	Cobalt	7.81	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:50	
EPA 6010D	Copper	8.08	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:50	
EPA 6010D	Iron	13800	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:50	
EPA 6010D	Lead	5.8	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:50	
EPA 6010D	Manganese	599	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:50	
EPA 6010D	Nickel	7.91	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:50	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:50	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:50	
EPA 6010D	Zinc	21.0	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:50	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:35	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:29	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	84.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-6**

Sampled: 27-Aug-18 16:00

SVL Sample ID: **X8H0766-06 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.9	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:40	
EPA 6010D	Arsenic	75.7	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:53	
EPA 6010D	Beryllium	0.50	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:53	
EPA 6010D	Cadmium	0.44	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:53	
EPA 6010D	Chromium	9.92	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:53	
EPA 6010D	Cobalt	6.21	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:53	
EPA 6010D	Copper	17.5	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:53	
EPA 6010D	Iron	18300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:53	
EPA 6010D	Lead	53.2	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:53	
EPA 6010D	Manganese	489	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:53	
EPA 6010D	Nickel	13.3	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:53	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:53	
EPA 6010D	Silver	2.73	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:53	
EPA 6010D	Zinc	225	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:53	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:37	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:31	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-7**

Sampled: 27-Aug-18 16:50

SVL Sample ID: **X8H0766-07 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:43	
EPA 6010D	Arsenic	10.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:55	
EPA 6010D	Beryllium	0.30	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:55	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:55	
EPA 6010D	Chromium	3.81	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:55	
EPA 6010D	Cobalt	2.35	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:55	
EPA 6010D	Copper	5.38	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:55	
EPA 6010D	Iron	8570	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:55	
EPA 6010D	Lead	5.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:55	
EPA 6010D	Manganese	90.1	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:55	
EPA 6010D	Nickel	5.14	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:55	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:55	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:55	
EPA 6010D	Zinc	17.7	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:55	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:38	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:39	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.7	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-8**

Sampled: 28-Aug-18 08:40

SVL Sample ID: **X8H0766-08 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:46	
EPA 6010D	Arsenic	26.9	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:03	
EPA 6010D	Beryllium	0.64	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:03	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:03	
EPA 6010D	Chromium	7.29	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:03	
EPA 6010D	Cobalt	11.0	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:03	
EPA 6010D	Copper	12.5	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:03	
EPA 6010D	Iron	22900	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:03	M3
EPA 6010D	Lead	13.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:03	
EPA 6010D	Manganese	473	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:03	
EPA 6010D	Nickel	12.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:03	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:03	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:03	
EPA 6010D	Zinc	53.1	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:03	
EPA 7471B	Mercury	0.042	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:40	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:04	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	90.3	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-9**

Sampled: 28-Aug-18 09:00

SVL Sample ID: **X8H0766-09 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.8	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:59	
EPA 6010D	Arsenic	140	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:11	
EPA 6010D	Beryllium	0.71	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:11	
EPA 6010D	Cadmium	0.42	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:11	
EPA 6010D	Chromium	6.73	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:11	
EPA 6010D	Cobalt	8.73	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:11	
EPA 6010D	Copper	19.9	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:11	
EPA 6010D	Iron	20600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:11	
EPA 6010D	Lead	83.7	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:11	
EPA 6010D	Manganese	1130	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:11	
EPA 6010D	Nickel	12.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:11	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:11	
EPA 6010D	Silver	1.54	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:11	
EPA 6010D	Zinc	235	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:11	
EPA 7471B	Mercury	0.130	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:49	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.21	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:06	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	62.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-10**

Sampled: 28-Aug-18 09:40

SVL Sample ID: **X8H0766-10 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	41.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:02	
EPA 6010D	Arsenic	92.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:14	
EPA 6010D	Beryllium	0.86	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:14	
EPA 6010D	Cadmium	1.84	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:14	
EPA 6010D	Chromium	10.8	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:14	
EPA 6010D	Cobalt	6.87	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:14	
EPA 6010D	Copper	44.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:14	
EPA 6010D	Iron	18600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:14	
EPA 6010D	Lead	167	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:14	
EPA 6010D	Manganese	776	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:14	
EPA 6010D	Nickel	15.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:14	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:14	
EPA 6010D	Silver	4.81	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:14	
EPA 6010D	Zinc	609	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:14	
EPA 7471B	Mercury	0.052	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:51	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.26	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:18	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	79.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-11**

Sampled: 28-Aug-18 09:50

SVL Sample ID: **X8H0766-11 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	33.6	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:04	
EPA 6010D	Arsenic	161	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:17	
EPA 6010D	Beryllium	0.55	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:17	
EPA 6010D	Cadmium	2.13	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:17	
EPA 6010D	Chromium	10.3	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:17	
EPA 6010D	Cobalt	7.10	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:17	
EPA 6010D	Copper	32.1	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:17	
EPA 6010D	Iron	20000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:17	
EPA 6010D	Lead	155	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:17	
EPA 6010D	Manganese	1780	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:17	
EPA 6010D	Nickel	18.3	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:17	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:17	
EPA 6010D	Silver	4.31	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:17	
EPA 6010D	Zinc	743	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:17	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:53	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.69	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:20	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	95.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-12**

Sampled: 28-Aug-18 11:00

SVL Sample ID: **X8H0766-12 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:07	
EPA 6010D	Arsenic	13.6	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:19	
EPA 6010D	Beryllium	0.53	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:19	
EPA 6010D	Cadmium	1.43	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:19	
EPA 6010D	Chromium	9.51	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:19	
EPA 6010D	Cobalt	6.25	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:19	
EPA 6010D	Copper	23.8	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:19	
EPA 6010D	Iron	15000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:19	
EPA 6010D	Lead	43.5	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:19	
EPA 6010D	Manganese	1360	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:19	
EPA 6010D	Nickel	10.1	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:19	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:19	
EPA 6010D	Silver	0.92	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:19	
EPA 6010D	Zinc	174	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:19	
EPA 7471B	Mercury	0.166	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:55	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	1.13	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:22	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	59.3	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-13**

Sampled: 28-Aug-18 11:25

SVL Sample ID: **X8H0766-13 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.8	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:09	
EPA 6010D	Arsenic	15.2	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:22	
EPA 6010D	Beryllium	0.88	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:22	
EPA 6010D	Cadmium	0.48	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:22	
EPA 6010D	Chromium	9.47	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:22	
EPA 6010D	Cobalt	12.3	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:22	
EPA 6010D	Copper	125	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:22	
EPA 6010D	Iron	23600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:22	
EPA 6010D	Lead	31.1	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:22	
EPA 6010D	Manganese	2810	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:22	
EPA 6010D	Nickel	17.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:22	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:22	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:22	
EPA 6010D	Zinc	91.8	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:22	
EPA 7471B	Mercury	0.119	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:56	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.53	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:24	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	68.4	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-14**

Sampled: 28-Aug-18 11:55

SVL Sample ID: **X8H0766-14 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.1	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:12	
EPA 6010D	Arsenic	66.7	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:25	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:25	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:25	
EPA 6010D	Chromium	6.98	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:25	
EPA 6010D	Cobalt	13.5	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:25	
EPA 6010D	Copper	29.4	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:25	
EPA 6010D	Iron	21400	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:25	
EPA 6010D	Lead	190	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:25	
EPA 6010D	Manganese	1090	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:25	
EPA 6010D	Nickel	12.7	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:25	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:25	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:25	
EPA 6010D	Zinc	129	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:25	
EPA 7471B	Mercury	0.043	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:58	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:26	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	96.0	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-15**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0766-15 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:15	
EPA 6010D	Arsenic	69.0	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:27	
EPA 6010D	Beryllium	0.95	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:27	
EPA 6010D	Cadmium	0.48	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:27	
EPA 6010D	Chromium	21.9	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:27	
EPA 6010D	Cobalt	8.98	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:27	
EPA 6010D	Copper	35.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:27	
EPA 6010D	Iron	25900	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:27	
EPA 6010D	Lead	37.5	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:27	
EPA 6010D	Manganese	1050	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:27	
EPA 6010D	Nickel	19.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:27	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:27	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:27	
EPA 6010D	Zinc	278	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:27	
EPA 7471B	Mercury	0.052	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:00	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.27	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:28	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	60.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
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Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-16**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0766-16 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.6	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:17	
EPA 6010D	Arsenic	46.3	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:35	
EPA 6010D	Beryllium	0.67	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:35	
EPA 6010D	Cadmium	0.37	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:35	
EPA 6010D	Chromium	12.5	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:35	
EPA 6010D	Cobalt	6.72	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:35	
EPA 6010D	Copper	22.6	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:35	
EPA 6010D	Iron	15200	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:35	
EPA 6010D	Lead	24.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:35	
EPA 6010D	Manganese	699	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:35	
EPA 6010D	Nickel	14.2	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:35	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:35	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:35	
EPA 6010D	Zinc	155	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:35	
EPA 7471B	Mercury	0.049	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:02	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.27	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:30	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-17**

Sampled: 28-Aug-18 13:30

SVL Sample ID: **X8H0766-17 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	10.3	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:25	
EPA 6010D	Arsenic	152	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:38	
EPA 6010D	Beryllium	0.58	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:38	
EPA 6010D	Cadmium	7.83	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:38	
EPA 6010D	Chromium	11.0	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:38	
EPA 6010D	Cobalt	10.5	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:38	
EPA 6010D	Copper	120	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:38	
EPA 6010D	Iron	19300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:38	
EPA 6010D	Lead	416	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:38	
EPA 6010D	Manganese	1280	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:38	
EPA 6010D	Nickel	13.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:38	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:38	
EPA 6010D	Silver	3.45	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:38	
EPA 6010D	Zinc	3630	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:38	
EPA 7471B	Mercury	0.113	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:07	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.60	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:32	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	72.9	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-18**

Sampled: 28-Aug-18 14:20

SVL Sample ID: **X8H0766-18 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.9	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:28	
EPA 6010D	Arsenic	46.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:40	
EPA 6010D	Beryllium	0.47	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:40	
EPA 6010D	Cadmium	0.22	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:40	
EPA 6010D	Chromium	8.46	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:40	
EPA 6010D	Cobalt	3.94	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:40	
EPA 6010D	Copper	10.4	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:40	
EPA 6010D	Iron	12000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:40	
EPA 6010D	Lead	27.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:40	
EPA 6010D	Manganese	344	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:40	
EPA 6010D	Nickel	6.59	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:40	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:40	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:40	
EPA 6010D	Zinc	144	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:40	
EPA 7471B	Mercury	0.043	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:09	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.17	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:40	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	69.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-19**

Sampled: 28-Aug-18 14:45

SVL Sample ID: **X8H0766-19 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	14.3	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:31	
EPA 6010D	Arsenic	582	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:43	
EPA 6010D	Beryllium	1.06	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:43	
EPA 6010D	Cadmium	1.97	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:43	
EPA 6010D	Chromium	12.3	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:43	
EPA 6010D	Cobalt	8.24	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:43	
EPA 6010D	Copper	43.9	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:43	
EPA 6010D	Iron	16700	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:43	
EPA 6010D	Lead	274	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:43	
EPA 6010D	Manganese	1100	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:43	
EPA 6010D	Nickel	12.6	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:43	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:43	
EPA 6010D	Silver	3.17	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:43	
EPA 6010D	Zinc	611	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:43	
EPA 7471B	Mercury	0.093	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:11	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.54	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:42	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	40.9	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-20**

Sampled: 28-Aug-18 15:45

SVL Sample ID: **X8H0766-20 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	25.4	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:33	
EPA 6010D	Arsenic	1070	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:46	
EPA 6010D	Beryllium	0.64	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:46	
EPA 6010D	Cadmium	3.36	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:46	
EPA 6010D	Chromium	5.82	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:46	
EPA 6010D	Cobalt	8.31	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:46	
EPA 6010D	Copper	51.1	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:46	
EPA 6010D	Iron	19600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:46	
EPA 6010D	Lead	402	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:46	
EPA 6010D	Manganese	1710	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:46	
EPA 6010D	Nickel	12.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:46	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:46	
EPA 6010D	Silver	6.69	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:46	
EPA 6010D	Zinc	988	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:46	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:13	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.47	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:44	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	90.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	<2.0	0.8	2.0	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	<2.5	0.6	2.5	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	<0.20	0.08	0.20	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	<0.20	0.06	0.20	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	<0.60	0.20	0.60	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	<0.60	0.07	0.60	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	<1.00	0.16	1.00	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	<10.0	6.6	10.0	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	<0.8	0.3	0.8	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	<0.80	0.28	0.80	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	<1.00	0.24	1.00	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	<4.0	1.1	4.0	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	<0.50	0.20	0.50	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	<1.0	0.3	1.0	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	<0.033	0.011	0.033	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836032	05-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836033	07-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	101	100	101	80 - 120	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	98.4	100	98.4	80 - 120	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	96.1	100	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	97.1	100	97.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	99.7	100	99.7	80 - 120	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	96.1	100	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	97.3	100	97.3	80 - 120	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	961	1000	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	98.4	100	98.4	80 - 120	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	99.3	100	99.3	80 - 120	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	95.7	100	95.7	80 - 120	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	91.2	100	91.2	80 - 120	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	4.80	5.00	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	93.8	100	93.8	80 - 120	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.853	0.833	102	80 - 120	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/L	0.98	1.09	89.4	80 - 120	X836032	05-Sep-18	D2
SW846 9012B	Cyanide (total)	mg/L	1.26	1.09	116	80 - 120	X836033	07-Sep-18	D2



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Percent Solids / Percent Moisture

Percent Solids	% Solids	%	89.7	90.3	0.7	20	X837012	11-Sep-18	
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Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	112	<2.0	111	101	75 - 125	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	140	26.9	111	102	75 - 125	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	105	0.64	111	94.7	75 - 125	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	111	<0.20	111	100	75 - 125	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	121	7.29	111	103	75 - 125	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	120	11.0	111	98.1	75 - 125	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	129	12.5	111	105	75 - 125	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	23000	22900	1110	0.30R>S	75 - 125	X836065	18-Sep-18	M3
EPA 6010D	Lead	mg/kg	125	13.9	111	101	75 - 125	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	575	473	111	92.1	75 - 125	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	123	12.8	111	99.9	75 - 125	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	108	<4.0	111	97.6	75 - 125	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	5.50	<0.50	5.54	99.3	75 - 125	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	165	53.1	111	101	75 - 125	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.395	0.042	0.369	95.7	75 - 125	X836190	11-Sep-18	
EPA 7471B	Mercury	mg/kg	0.442	<0.033	0.370	120	75 - 125	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	1.24	0.25	1.11	89.0	75 - 125	X836032	05-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.70	0.27	1.67	86.0	75 - 125	X836033	07-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.31	0.31	1.11	90.0	75 - 125	X836033	07-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	111	112	111	99.7	0.8	20	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	137	140	111	99.9	1.6	20	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	107	105	111	95.8	1.2	20	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	110	111	111	99.2	0.8	20	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	121	121	111	103	0.1	20	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	116	120	111	94.7	3.2	20	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	132	129	111	107	2.2	20	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	23900	23000	1110	91.7	3.9	20	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	125	125	111	100	0.3	20	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	524	575	111	0.30R>S	9.2	20	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	123	123	111	99.8	0.1	20	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	107	108	111	96.4	1.3	20	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	5.58	5.50	5.54	101	1.5	20	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	171	165	111	107	3.7	20	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.406	0.395	0.369	98.7	2.8	20	X836190	11-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Quality Control - MATRIX SPIKE DUPLICATE Data				(Continued)								
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	1.27	1.24	1.11	92.0	2.6	20	X836032	05-Sep-18		
SW846 9012B	Cyanide (total)	mg/kg	1.95	1.70	1.67	101	13.7	20	X836033	07-Sep-18		

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SD-21	X8H0769-01	Sediment	28-Aug-18 15:40	GM	31-Aug-2018	
GC-SD-22	X8H0769-02	Sediment	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SD-23	X8H0769-03	Sediment	29-Aug-18 09:15	GM	31-Aug-2018	
GC-SD-24	X8H0769-04	Sediment	29-Aug-18 10:00	GM	31-Aug-2018	
GC-SD-25	X8H0769-05	Sediment	29-Aug-18 11:00	GM	31-Aug-2018	
GC-SD-26	X8H0769-06	Sediment	29-Aug-18 11:40	GM	31-Aug-2018	
GC-SD-27	X8H0769-07	Sediment	29-Aug-18 12:00	GM	31-Aug-2018	
GC-SD-28	X8H0769-08	Sediment	29-Aug-18 12:20	GM	31-Aug-2018	
GC-SD-29	X8H0769-09	Sediment	29-Aug-18 13:45	GM	31-Aug-2018	
GC-SD-30	X8H0769-10	Sediment	29-Aug-18 14:30	GM	31-Aug-2018	
GC-SD-31	X8H0769-11	Sediment	29-Aug-18 15:30	GM	31-Aug-2018	
GC-SD-32	X8H0769-12	Sediment	29-Aug-18 15:30	GM	31-Aug-2018	
GC-SD-33	X8H0769-13	Sediment	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SD-34	X8H0769-14	Sediment	30-Aug-18 10:00	GM	31-Aug-2018	
GC-SD-35	X8H0769-15	Sediment	30-Aug-18 13:00	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: X8H0769

11/8/18 DG Report is reissued with dry weight corrected results.



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-21**

Sampled: 28-Aug-18 15:40

SVL Sample ID: **X8H0769-01 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	65.5	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:25	
EPA 6010D	Arsenic	1660	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 14:58	
EPA 6010D	Beryllium	0.92	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 14:58	
EPA 6010D	Cadmium	1.38	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 14:58	
EPA 6010D	Chromium	8.46	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 14:58	
EPA 6010D	Cobalt	12.9	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 14:58	
EPA 6010D	Copper	110	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 14:58	
EPA 6010D	Iron	24800	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 14:58	
EPA 6010D	Lead	618	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:30	
EPA 6010D	Manganese	3430	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 14:58	
EPA 6010D	Nickel	18.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 14:58	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 14:58	
EPA 6010D	Silver	21.8	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 14:58	
EPA 6010D	Zinc	1150	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:30	
EPA 7471B	Mercury	0.128	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 15:52	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.54	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:06	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	51.7	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-22**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0769-02 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	198	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:27	
EPA 6010D	Arsenic	270	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:01	
EPA 6010D	Beryllium	0.89	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:01	
EPA 6010D	Cadmium	2.13	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:01	
EPA 6010D	Chromium	19.7	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:01	
EPA 6010D	Cobalt	6.35	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:01	
EPA 6010D	Copper	83.0	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:01	
EPA 6010D	Iron	19700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:01	
EPA 6010D	Lead	618	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:34	
EPA 6010D	Manganese	1960	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:01	
EPA 6010D	Nickel	19.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:01	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:01	
EPA 6010D	Silver	16.1	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:01	
EPA 6010D	Zinc	1180	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:34	
EPA 7471B	Mercury	0.058	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:20	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.13	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:08	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	82.0	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-23**

Sampled: 29-Aug-18 09:15

SVL Sample ID: **X8H0769-03 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	78.0	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:30	
EPA 6010D	Arsenic	151	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:04	
EPA 6010D	Beryllium	0.60	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:04	
EPA 6010D	Cadmium	3.85	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:04	
EPA 6010D	Chromium	17.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:04	
EPA 6010D	Cobalt	10.2	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:04	
EPA 6010D	Copper	148	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:04	
EPA 6010D	Iron	22300	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:04	
EPA 6010D	Lead	757	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:37	
EPA 6010D	Manganese	2330	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:04	
EPA 6010D	Nickel	21.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:04	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:04	
EPA 6010D	Silver	16.2	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:04	
EPA 6010D	Zinc	1570	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:37	
EPA 7471B	Mercury	0.061	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:22	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.12	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:10	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	76.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-24**

Sampled: 29-Aug-18 10:00

SVL Sample ID: **X8H0769-04 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	3.3	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:33	
EPA 6010D	Arsenic	128	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:07	
EPA 6010D	Beryllium	0.61	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:07	
EPA 6010D	Cadmium	0.36	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:07	
EPA 6010D	Chromium	11.2	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:07	
EPA 6010D	Cobalt	11.9	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:07	
EPA 6010D	Copper	18.8	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:07	
EPA 6010D	Iron	23700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:07	
EPA 6010D	Lead	50.3	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:40	
EPA 6010D	Manganese	586	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:07	
EPA 6010D	Nickel	12.0	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:07	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:07	
EPA 6010D	Silver	1.65	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:07	
EPA 6010D	Zinc	192	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:40	
EPA 7471B	Mercury	0.060	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:23	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.30	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:12	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	50.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-25**

Sampled: 29-Aug-18 11:00

SVL Sample ID: **X8H0769-05 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	181	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:35	
EPA 6010D	Arsenic	104	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:10	
EPA 6010D	Beryllium	0.45	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:10	
EPA 6010D	Cadmium	2.38	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:10	
EPA 6010D	Chromium	18.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:10	
EPA 6010D	Cobalt	5.88	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:10	
EPA 6010D	Copper	59.4	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:10	
EPA 6010D	Iron	18500	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:10	
EPA 6010D	Lead	567	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:43	
EPA 6010D	Manganese	1040	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:10	
EPA 6010D	Nickel	22.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:10	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:10	
EPA 6010D	Silver	23.6	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:10	
EPA 6010D	Zinc	937	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:43	
EPA 7471B	Mercury	0.051	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:29	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.20	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:14	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	76.4	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-26**

Sampled: 29-Aug-18 11:40

SVL Sample ID: **X8H0769-06 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.6	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:38	
EPA 6010D	Arsenic	21.8	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:13	
EPA 6010D	Beryllium	0.36	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:13	
EPA 6010D	Cadmium	0.56	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:13	
EPA 6010D	Chromium	11.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:13	
EPA 6010D	Cobalt	4.69	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:13	
EPA 6010D	Copper	14.3	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:13	
EPA 6010D	Iron	18800	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:13	
EPA 6010D	Lead	17.9	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:47	
EPA 6010D	Manganese	611	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:13	
EPA 6010D	Nickel	10.4	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:13	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:13	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:13	
EPA 6010D	Zinc	126	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:47	
EPA 7471B	Mercury	0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:31	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.26	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:16	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	69.5	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-27**

Sampled: 29-Aug-18 12:00

SVL Sample ID: **X8H0769-07 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	221	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:41	
EPA 6010D	Arsenic	470	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:17	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:17	
EPA 6010D	Cadmium	4.62	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:17	
EPA 6010D	Chromium	25.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:17	
EPA 6010D	Cobalt	11.0	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:17	
EPA 6010D	Copper	137	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:17	
EPA 6010D	Iron	24100	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:17	
EPA 6010D	Lead	2000	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:50	
EPA 6010D	Manganese	3020	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:17	
EPA 6010D	Nickel	34.5	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:17	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:17	
EPA 6010D	Silver	53.7	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:17	
EPA 6010D	Zinc	2370	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:50	
EPA 7471B	Mercury	0.099	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:32	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.13	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:18	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.8	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-28**

Sampled: 29-Aug-18 12:20

SVL Sample ID: **X8H0769-08 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	40.6	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:43	
EPA 6010D	Arsenic	126	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:20	
EPA 6010D	Beryllium	0.53	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:20	
EPA 6010D	Cadmium	1.11	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:20	
EPA 6010D	Chromium	15.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:20	
EPA 6010D	Cobalt	5.54	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:20	
EPA 6010D	Copper	76.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:20	
EPA 6010D	Iron	22200	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:20	
EPA 6010D	Lead	200	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:53	
EPA 6010D	Manganese	852	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:20	
EPA 6010D	Nickel	15.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:20	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:20	
EPA 6010D	Silver	6.23	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:20	
EPA 6010D	Zinc	524	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:53	
EPA 7471B	Mercury	0.037	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:34	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.24	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:42	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	62.9	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-29**

Sampled: 29-Aug-18 13:45

SVL Sample ID: **X8H0769-09 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.1	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 10:54	
EPA 6010D	Arsenic	17.3	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:33	
EPA 6010D	Beryllium	0.84	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:33	
EPA 6010D	Cadmium	0.62	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:33	
EPA 6010D	Chromium	8.92	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:33	
EPA 6010D	Cobalt	7.25	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:33	
EPA 6010D	Copper	16.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:33	
EPA 6010D	Iron	22400	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:33	
EPA 6010D	Lead	20.6	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:09	
EPA 6010D	Manganese	1960	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:33	
EPA 6010D	Nickel	15.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:33	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:33	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:33	
EPA 6010D	Zinc	61.8	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:09	
EPA 7471B	Mercury	0.077	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:36	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.49	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:22	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	81.1	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-30**

Sampled: 29-Aug-18 14:30

SVL Sample ID: **X8H0769-10 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	19.8	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 10:58	
EPA 6010D	Arsenic	204	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:36	
EPA 6010D	Beryllium	1.56	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:36	
EPA 6010D	Cadmium	25.1	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:36	
EPA 6010D	Chromium	17.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:36	
EPA 6010D	Cobalt	18.7	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:36	
EPA 6010D	Copper	712	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:36	
EPA 6010D	Iron	34900	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:36	M3
EPA 6010D	Lead	3030	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:12	M2
EPA 6010D	Manganese	5390	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:36	M3
EPA 6010D	Nickel	25.5	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:36	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:36	
EPA 6010D	Silver	19.3	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:36	
EPA 6010D	Zinc	9050	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:12	M2
EPA 7471B	Mercury	0.187	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:38	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	1.42	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:24	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	33.8	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-31**

Sampled: 29-Aug-18 15:30

SVL Sample ID: **X8H0769-11 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	14.6	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:08	
EPA 6010D	Arsenic	250	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:45	
EPA 6010D	Beryllium	0.67	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:45	
EPA 6010D	Cadmium	1.32	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:45	
EPA 6010D	Chromium	10.7	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:45	
EPA 6010D	Cobalt	5.56	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:45	
EPA 6010D	Copper	26.6	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:45	
EPA 6010D	Iron	18400	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:45	
EPA 6010D	Lead	108	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:21	
EPA 6010D	Manganese	948	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:45	
EPA 6010D	Nickel	13.4	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:45	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:45	
EPA 6010D	Silver	2.91	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:45	
EPA 6010D	Zinc	538	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:21	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:43	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.18	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:32	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	94.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-32**

Sampled: 29-Aug-18 15:30

SVL Sample ID: **X8H0769-12 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	16.4	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:12	
EPA 6010D	Arsenic	210	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:48	
EPA 6010D	Beryllium	0.57	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:48	
EPA 6010D	Cadmium	1.10	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:48	
EPA 6010D	Chromium	8.87	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:48	
EPA 6010D	Cobalt	5.81	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:48	
EPA 6010D	Copper	26.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:48	
EPA 6010D	Iron	16700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:48	
EPA 6010D	Lead	130	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:24	
EPA 6010D	Manganese	1360	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:48	
EPA 6010D	Nickel	12.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:48	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:48	
EPA 6010D	Silver	3.66	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:48	
EPA 6010D	Zinc	559	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:24	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:45	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.18	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:34	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	94.1	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-33**

Sampled: 30-Aug-18 09:15

SVL Sample ID: **X8H0769-13 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	15.1	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:15	
EPA 6010D	Arsenic	311	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:52	
EPA 6010D	Beryllium	0.40	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:52	
EPA 6010D	Cadmium	0.28	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:52	
EPA 6010D	Chromium	3.75	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:52	
EPA 6010D	Cobalt	6.49	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:52	
EPA 6010D	Copper	32.2	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:52	
EPA 6010D	Iron	11300	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:52	
EPA 6010D	Lead	77.0	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:28	
EPA 6010D	Manganese	1130	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:52	
EPA 6010D	Nickel	8.15	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:52	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:52	
EPA 6010D	Silver	1.71	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:52	
EPA 6010D	Zinc	298	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:28	
EPA 7471B	Mercury	0.037	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:50	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:36	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	82.7	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-34**

Sampled: 30-Aug-18 10:00

SVL Sample ID: **X8H0769-14 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	8.0	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:19	
EPA 6010D	Arsenic	418	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:55	
EPA 6010D	Beryllium	0.55	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:55	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:55	
EPA 6010D	Chromium	6.31	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:55	
EPA 6010D	Cobalt	5.53	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:55	
EPA 6010D	Copper	38.3	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:55	
EPA 6010D	Iron	15700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:55	
EPA 6010D	Lead	104	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:31	
EPA 6010D	Manganese	507	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:55	
EPA 6010D	Nickel	10.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:55	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:55	
EPA 6010D	Silver	1.64	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:55	
EPA 6010D	Zinc	168	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:31	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:52	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.33	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:38	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	79.5	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-35**

Sampled: 30-Aug-18 13:00

SVL Sample ID: **X8H0769-15 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	5.8	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:22	
EPA 6010D	Arsenic	73.7	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:58	
EPA 6010D	Beryllium	0.58	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:58	
EPA 6010D	Cadmium	0.27	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:58	
EPA 6010D	Chromium	15.1	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:58	
EPA 6010D	Cobalt	6.39	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:58	
EPA 6010D	Copper	15.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:58	
EPA 6010D	Iron	18700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:58	
EPA 6010D	Lead	49.5	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:34	
EPA 6010D	Manganese	430	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:58	
EPA 6010D	Nickel	15.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:58	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:58	
EPA 6010D	Silver	1.47	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:58	
EPA 6010D	Zinc	214	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:34	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:54	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.12	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:40	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	75.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010D	Antimony	mg/kg	<2.0	0.8	2.0	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	<2.5	0.6	2.5	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	<0.20	0.08	0.20	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	<0.20	0.06	0.20	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	<0.60	0.20	0.60	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	<0.60	0.07	0.60	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	<1.00	0.16	1.00	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	<10.0	6.6	10.0	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	<0.8	0.3	0.8	X836067	18-Sep-18	
EPA 6010D	Manganese	mg/kg	<0.80	0.28	0.80	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	<1.00	0.24	1.00	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	<4.0	1.1	4.0	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	<0.50	0.20	0.50	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	<1.0	0.3	1.0	X836067	18-Sep-18	
EPA 7471B	Mercury	mg/kg	<0.033	0.011	0.033	X836192	11-Sep-18	
Classical Chemistry Parameters								
SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836035	07-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010D	Antimony	mg/kg	103	100	103	80 - 120	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	102	100	102	80 - 120	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	109	100	109	80 - 120	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	98.0	100	98.0	80 - 120	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	109	100	109	80 - 120	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	101	100	101	80 - 120	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	103	100	103	80 - 120	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	987	1000	98.7	80 - 120	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	101	100	101	80 - 120	X836067	18-Sep-18	
EPA 6010D	Manganese	mg/kg	105	100	105	80 - 120	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	98.0	100	98.0	80 - 120	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	96.2	100	96.2	80 - 120	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	5.39	5.00	108	80 - 120	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	98.4	100	98.4	80 - 120	X836067	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.858	0.833	103	80 - 120	X836192	11-Sep-18	
Classical Chemistry Parameters									
SW846 9012B	Cyanide (total)	mg/L	1.20	1.09	110	80 - 120	X836035	07-Sep-18	D2



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0769
Reported: 08-Nov-18 16:28

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Percent Solids / Percent Moisture

Percent Solids	% Solids	%	34.3	33.8	1.7	20	X837013	11-Sep-18	
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Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	311	19.8	296	98.4	75 - 125	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	501	204	296	100	75 - 125	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	311	1.56	296	104	75 - 125	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	308	25.1	296	95.5	75 - 125	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	324	17.3	296	104	75 - 125	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	307	18.7	296	97.3	75 - 125	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	977	712	296	89.7	75 - 125	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	35300	34900	2960	0.30R>S	75 - 125	X836067	17-Sep-18	M3
EPA 6010D	Lead	mg/kg	3170	3030	296	0.30R>S	75 - 125	X836067	18-Sep-18	M2
EPA 6010D	Manganese	mg/kg	5540	5390	296	0.30R>S	75 - 125	X836067	17-Sep-18	M3
EPA 6010D	Nickel	mg/kg	311	25.5	296	96.3	75 - 125	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	286	<4.0	296	95.5	75 - 125	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	34.2	19.3	14.8	101	75 - 125	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	9100	9050	296	0.30R>S	75 - 125	X836067	18-Sep-18	M2
EPA 7471B	Mercury	mg/kg	1.17	0.187	0.988	99.1	75 - 125	X836192	11-Sep-18	
EPA 7471B	Mercury	mg/kg	0.463	<0.033	0.441	102	75 - 125	X836192	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	3.91	1.42	2.96	84.0	75 - 125	X836035	07-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.28	0.13	1.22	94.0	75 - 125	X836035	07-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	309	311	296	97.6	0.8	20	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	520	501	296	107	3.8	20	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	317	311	296	107	2.0	20	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	311	308	296	96.5	0.9	20	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	333	324	296	107	2.7	20	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	313	307	296	99.2	1.9	20	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	1020	977	296	105	4.7	20	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	37100	35300	2960	0.30R>S	4.9	20	X836067	17-Sep-18	M3
EPA 6010D	Iron	mg/kg	36400	35300	2960	0.30R>S	3.1	20	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	2860	3170	296	0.30R>S	10.4	20	X836067	18-Sep-18	M2
EPA 6010D	Manganese	mg/kg	5770	5540	296	0.30R>S	4.1	20	X836067	17-Sep-18	M3
EPA 6010D	Manganese	mg/kg	5770	5540	296	0.30R>S	4.2	20	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	316	311	296	98.0	1.6	20	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	290	286	296	97.0	1.6	20	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	36.6	34.2	14.8	117	6.6	20	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	8250	9100	296	0.30R>S	9.8	20	X836067	18-Sep-18	M2
EPA 7471B	Mercury	mg/kg	1.14	1.17	0.988	96.1	2.6	20	X836192	11-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Quality Control - MATRIX SPIKE DUPLICATE Data				(Continued)								
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	3.79	3.91	2.96	80.0	3.1	20	X836035	07-Sep-18		
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Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable

Appendix C. QA/QC Review

INTERNAL PROJECT MEMORANDUM

To: Shelley Hicks, Project Manager, Kellogg
Susan Spalinger, Principal, Moscow

From: Mara Thorhaug, Quality Assurance Manager, Kellogg

Date: December 11, 2018

Job Code: IDEQ Contract K157 TO #33A 17838-40

Subject: QA/QC Review of the 2018 Gold Creek Area Mines Site Investigation Sampling

Section 1 Introduction

This memorandum provides a summary of the data validation and data quality assessment performed for sampling conducted from August 27 through August 30, 2018 at the Gold Creek Area Mines. Sampling procedures and the quality assurance/quality control review followed guidelines set forth in the following documents:

- Sampling Analysis Plan (SAP) / Quality Assurance Project Plan (QAPP) for Gold Creek Area Mines Site Investigation (Alta 2018)
- National Functional Guidelines for Inorganic Superfund Methods Data Review (USEPA 2017)
- Guidance on Environmental Data Verification and Data Validation (USEPA 2002)
- Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use (USEPA 2009)

This memo discusses the data quality assessment and data validation performed for the Sample Delivery Groups (SDGs) listed in Table 1. Data qualifiers used in this review are defined in the *National Functional Guidelines for Inorganic Superfund Methods Data Review* (USEPA 2017).

Table 1. SDG Data Validation Summary

Laboratory	SDG	Matrix	Analyses	Data Validation Level (USEPA 2009)	Review Conducted by
SVL	X8H0766	Sediment	Total Metals, ^a Percent solids, Total Cyanide	Stage 2A	Alta
	X8H0769	Sediment			
	X8H0764-1 ^b	Water	Total Metals, ^a Total Cyanide		

^a Antimony (Sb), arsenic (As), beryllium (Be), cadmium (Cd), chromium (Cr), cobalt (Co), copper (Cu), iron (Fe), lead (Pb), manganese (Mn), mercury (Hg), nickel (Ni), selenium (Se), silver (Ag), and zinc (Zn).

SDG = sample delivery group

USEPA = U.S. Environmental Protection Agency

^bThe water samples were originally analyzed by method 6010D; however, the reporting limits for As and Sb were higher than the USEPA RSLs. Sb and As were reanalyzed using method 6020B. This QA/QC review does not include a review of the 6010D Sb and As results for water.

Section 2 Data Validation and Quality Review Summary

SVL Analytical, Inc. (SVL) submitted all required deliverables. Attachment A contains the final reports from SVL. Alta's review of the field data and Stage 2A validation of the analytical data are summarized in Table 2. Procedures/checks that require further discussion are explained below the table, as necessary.

Table 2. Alta's Data Quality Review Summary

Data Validation/Review Procedure or Check	Acceptable Frequency? ^a	Acceptable Performance? ^b	Data Qualified?	Discussion Item Number
Sample condition upon receipt at laboratory	-	Y	N	-
Preservation	-	Y	N	1
Holding times	-	Y	N	-
Laboratories followed specified analytical methods	-	Y	N	-
Method Blanks	Y	Y	N	-
Laboratory Control Samples	Y	Y	N	-
Matrix Spikes	Y	Y	N	2
Laboratory Duplicates and Matrix Spike Duplicates	Y	Y	N	3

Field Blanks (Table 3)	Y	Y	N	-
Rinsate Blanks (Table 3)	Y	Y	N	4
Field Duplicates (Table 4)	Y	Y	N	-

^a Frequencies and criteria as defined in the SAP/QAPP (Alta 2018).

^b As defined in the SAP/QAPP (Alta 2018), *National Functional Guidelines for Inorganic Superfund Data Review* (USEPA 2014), or based on professional judgment of the data validator.

-- = not applicable

1. The sodium hydroxide (NaOH) container for sample GC-SW-4 was received by SVL with a pH of 6, which is less than the requirement of pH 10. SVL adjusted the pH. No data were qualified.
2. Matrix Spikes:
 - a. For SDG X8H0766, the matrix spike result for iron was not usable because the parent sample concentration was more than four times the spike concentration. No data were qualified because the laboratory control sample (LCS) results were acceptable.
 - b. For SDG X8H0769, the matrix spike results for iron, lead, manganese, and zinc were not usable because the parent sample concentrations were more than four times the spike concentrations. No data were qualified because the LCS results were acceptable.
3. Matrix Spike Duplicates:
 - a. For SDG X8H0766, the matrix spike/matrix spike duplicate (MS/MSD) results for manganese were not usable because the parent sample concentration was more than four times the spike concentration; therefore, it is not possible to assess precision. No data were qualified.
 - b. For SDG X8H0769, the MS/MSD results for iron, lead, manganese, and zinc were not usable because the parent sample concentrations were more than four times the spike concentrations. No data were qualified.
4. The SAP/QAPP specified that a rinsate blank would be collected for every day of sampling. One rinsate blank was collected on the day when equipment required decontamination (specifically, the churn splitter, which was only used on the first day). All other surface water samples were collected by filling the sample bottle directly from the stream.

Table 3. Field and Rinsate Blank Analysis

Sample Type:	Field Blanks		Rinsate Blank	
Site Name:	GC-SW-25		GC-SW-27	
Sample Date:	8/30/2018		8/30/2018	
Analyte	Concentration (mg/L)		Concentration (mg/L)	
Silver	0.0050	U	0.0050	U
Beryllium	0.0020	U	0.0020	U
Cadmium	0.0020	U	0.0020	U
Cobalt	0.0060	U	0.0060	U
Chromium	0.0060	U	0.0060	U
Copper	0.0100	U	0.0100	U
Iron	0.100	U	0.100	U
Manganese	0.0080	U	0.0080	U
Nickel	0.0100	U	0.0100	U
Lead	0.0075	U	0.0075	U
Selenium	0.040	U	0.040	U
Zinc	0.010	U	0.010	U
Arsenic	0.00150	U	0.00150	U
Antimony	0.00300	U	0.00300	U
Mercury	0.00020	U	0.00020	U
Cyanide	0.0100	U	0.0100	U

mg/L = milligrams per liter

U = concentration was not detected

Table 4. Duplicate Sample Analysis

	Water								Sediment											
SampleID:	GC-SW-14		GC-SW-15			GC-SW-23		GC-SW-24			GC-SD-15		GC-SD-16			GC-SD-31		GC-SD-32		
Sample Type:	Original		Duplicate			Original		Duplicate			Original		Duplicate			Original		Duplicate		
Analyte	Concentration (mg/L)		Concentration (mg/L)			Concentration (mg/L)		Concentration (mg/L)			Concentration (mg/kg)		Concentration (mg/kg)			Concentration (mg/kg)		Concentration (mg/kg)		
Silver	0.0050	U	0.0050	U	NA	0.0050	U	0.0050	U	NA	0.50	U	0.50	U	NA	2.91	.	3.66	.	16%
Arsenic	0.0106	.	0.0104	.	1%	0.0132	.	0.0131	.	0.5%	69.0	.	46.3	.	25%	250	.	210	.	11%
Beryllium	0.0020	U	0.0020	U	NA	0.0020	U	0.0020	U	NA	0.95	.	0.67	.	22%	0.67	.	0.57	.	10%
Cadmium	0.0020	U	0.0020	U	NA	0.0020	U	0.0020	U	NA	0.48	.	0.37	.	17%	1.32	.	1.10	.	12%
Cobalt	0.0060	U	0.0060	U	NA	0.0060	U	0.0060	U	NA	8.98	.	6.72	.	18%	5.56	.	5.81	.	3%
Chromium	0.0060	U	0.0060	U	NA	0.0060	U	0.0060	U	NA	21.9	.	12.5	.	33%	10.7	.	8.87	.	12%
Copper	0.0100	U	0.0100	U	NA	0.0100	U	0.0100	U	NA	35.0	.	22.6	.	27%	26.6	.	26.1	.	1%
Iron	0.100	U	0.100	U	NA	0.100	U	0.100	U	NA	25,900	.	15,200	.	32%	18,400	.	16,700	.	6%
Manganese	0.0080	U	0.0080	U	NA	0.0080	U	0.0080	U	NA	1050	.	699	.	25%	948	.	1,360	.	25%
Nickel	0.0100	U	0.0100	U	NA	0.0100	U	0.0100	U	NA	19.4	.	14.2	.	20%	13.4	.	12.3	.	6%
Lead	0.0075	U	0.0075	U	NA	0.0075	U	0.0075	U	NA	37.5	.	24.9	.	25%	108	.	130	.	13%
Antimony	0.00656	.	0.00627	.	3%	0.00300	U	0.00300	U	NA	2.0	U	4.6	.	NA	14.6	.	16.4	.	8%
Selenium	0.040	U	0.040	U	NA	0.040	U	0.040	U	NA	4.0	U	4.0	U	NA	4.0	U	4.0	U	NA
Zinc	0.036	.	0.037	.	2%	0.172	.	0.170	.	0.8%	278	.	155	.	35%	538	.	559	.	3%
Mercury	0.00020	U	0.00020	U	NA	0.00020	U	0.00020	U	NA	0.052	U	0.049	.	NA	0.033	U	0.033	U	NA
Cyanide -Total	0.0100	U	0.0100	U	NA	0.0100	U	0.0100	U	NA	0.27	.	0.27	.	0%	0.18	.	0.18	.	0%

RPD = Relative Percent Difference = ABS(X1-X2)/((X1+X2)/2)
X1 = Original Concentration
X2 = Duplicate Concentration
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
NA = not applicable
RPD goal of 20% for water, 35% for sediment (Alta 2018)

Section 3 Overall Assessment

Based on this data quality review, the laboratory and field data are determined to be of acceptable quality and meet the data quality objectives for representativeness and comparability. Accuracy and precision are also considered acceptable. Final data and qualifiers are included in Attachment A, as no additional qualifiers were applied during this data validation. No laboratory or field data were rejected based on this data quality review. Completeness for this sampling event is calculated at 100% according to the method in the SAP/QAPP (Alta 2018).

Section 4 References

- Alta Science & Engineering, Inc. (Alta), 2018. Sampling Analysis Plan (SAP) / Quality Assurance Project Plan (QAPP) for Gold Creek Area Mines Site Investigation. Prepared for the Idaho Department of Environmental Quality; August.
- U.S. Environmental Protection Agency (USEPA), 2002. Guidance on Environmental Data Verification and Data Validation. USEPA QA/G-8; November.
- USEPA, 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. OSWER No. 9200.1-85, EPA 540-R-08-005 prepared by the Office of Solid Waste and Emergency Response; January.
- USEPA, 2017. National Functional Guidelines for Inorganic Superfund Methods Data Review, EPA 540-R-2017-001. January.

Attachment A
Laboratory Data Reports



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SW-1	X8H0764-01	Surface Water	27-Aug-18 11:45	GM	31-Aug-2018	
GC-SW-2	X8H0764-02	Surface Water	27-Aug-18 12:40	GM	31-Aug-2018	
GC-SW-3	X8H0764-03	Surface Water	27-Aug-18 13:35	GM	31-Aug-2018	
GC-SW-4	X8H0764-04	Surface Water	27-Aug-18 14:20	GM	31-Aug-2018	Q5
GC-SW-5	X8H0764-05	Surface Water	27-Aug-18 15:15	GM	31-Aug-2018	
GC-SW-6	X8H0764-06	Surface Water	27-Aug-18 16:00	GM	31-Aug-2018	
GC-SW-7	X8H0764-07	Surface Water	27-Aug-18 16:50	GM	31-Aug-2018	
GC-SW-8	X8H0764-08	Rinsate	27-Aug-18 17:10	GM	31-Aug-2018	
GC-SW-9	X8H0764-09	Surface Water	28-Aug-18 09:00	GM	31-Aug-2018	
GC-SW-10	X8H0764-10	Surface Water	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SW-11	X8H0764-11	Surface Water	28-Aug-18 14:20	GM	31-Aug-2018	
GC-SW-12	X8H0764-12	Surface Water	28-Aug-18 14:45	GM	31-Aug-2018	
GC-SW-13	X8H0764-13	Surface Water	28-Aug-18 15:40	GM	31-Aug-2018	
GC-SW-14	X8H0764-14	Surface Water	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SW-15	X8H0764-15	Surface Water	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SW-16	X8H0764-16	Surface Water	29-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-17	X8H0764-17	Surface Water	29-Aug-18 10:00	GM	31-Aug-2018	
GC-SW-18	X8H0764-18	Surface Water	29-Aug-18 11:00	GM	31-Aug-2018	
GC-SW-19	X8H0764-19	Surface Water	29-Aug-18 11:40	GM	31-Aug-2018	
GC-SW-20	X8H0764-20	Surface Water	29-Aug-18 12:00	GM	31-Aug-2018	
GC-SW-21	X8H0764-21	Surface Water	29-Aug-18 12:20	GM	31-Aug-2018	
GC-SW-22	X8H0764-22	Surface Water	29-Aug-18 14:30	GM	31-Aug-2018	
GC-SW-23	X8H0764-23	Surface Water	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-24	X8H0764-24	Surface Water	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SW-25	X8H0764-25	DI Water	30-Aug-18 09:40	GM	31-Aug-2018	
GC-SW-26	X8H0764-26	Surface Water	30-Aug-18 10:00	GM	31-Aug-2018	
GC-SW-27	X8H0764-27	DI Water	30-Aug-18 10:30	GM	31-Aug-2018	
GC-SW-28	X8H0764-28	Surface Water	30-Aug-18 13:00	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Case Narrative: X8H0764

10/10/18 Report has been revised after client requested TR 6020B As and Sb to be added.



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-1**

Sampled: 27-Aug-18 11:45

SVL Sample ID: **X8H0764-01 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:24	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:14	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:14	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:14	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:14	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:14	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:14	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:14	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:14	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:14	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:14	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:14	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:14	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:14	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:14	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:15	
EPA 6020B	Arsenic	0.00234	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:15	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:05	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-2**

Sampled: 27-Aug-18 12:40

SVL Sample ID: **X8H0764-02 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:26	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:18	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:18	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:18	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:18	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:18	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:18	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:18	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:18	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:18	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:18	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:18	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:18	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:18	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:18	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:17	
EPA 6020B	Arsenic	0.00181	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:17	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:07	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-3**

Sampled: 27-Aug-18 13:35

SVL Sample ID: **X8H0764-03 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:28	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:21	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:21	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:21	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:21	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:21	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:21	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:21	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:21	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:21	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:21	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:21	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:21	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:21	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:21	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:19	
EPA 6020B	Arsenic	0.00197	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:19	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:09	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-4**

Sampled: 27-Aug-18 14:20

SVL Sample ID: **X8H0764-04 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:30	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:25	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:25	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:25	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:25	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:25	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:25	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:25	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:25	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:25	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:25	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:25	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:25	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:25	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:25	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:09	
EPA 6020B	Arsenic	0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:09	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:11	Q3
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-5**

Sampled: 27-Aug-18 15:15

SVL Sample ID: **X8H0764-05 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:39	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:35	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:35	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:35	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:35	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:35	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:35	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:35	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:35	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:35	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:35	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:35	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:35	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:35	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:35	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:22	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:22	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:13	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-6**

Sampled: 27-Aug-18 16:00

SVL Sample ID: **X8H0764-06 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:41	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 08:39	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 08:39	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 08:39	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 08:39	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 08:39	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 08:39	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 08:39	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 08:39	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 08:39	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 08:39	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 08:39	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 08:39	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 08:39	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 08:39	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:24	
EPA 6020B	Arsenic	0.00201	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:24	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:21	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-7**

Sampled: 27-Aug-18 16:50

SVL Sample ID: **X8H0764-07 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:42	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:13	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:13	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:13	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:13	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:13	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:13	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:13	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:13	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:13	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:13	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:13	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:13	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:13	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:13	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:30	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:30	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:23	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-8**

Sampled: 27-Aug-18 17:10

SVL Sample ID: **X8H0764-08 (Rinsate)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:44	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:17	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:17	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:17	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:17	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:17	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:17	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:17	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:17	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:17	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:17	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:17	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:17	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:17	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:17	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:32	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:32	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:25	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-9**

Sampled: 28-Aug-18 09:00

SVL Sample ID: **X8H0764-09 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:46	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:20	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:20	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:20	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:20	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:20	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:20	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:20	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:20	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:20	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:20	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:20	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:20	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:20	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:20	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:34	
EPA 6020B	Arsenic	0.00675	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:34	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:27	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-10**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0764-10 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:48	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:24	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:24	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:24	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:24	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:24	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:24	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:24	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:24	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:24	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:24	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:24	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:24	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:24	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:24	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:36	
EPA 6020B	Arsenic	0.00328	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:36	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:29	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-11**

Sampled: 28-Aug-18 14:20

SVL Sample ID: **X8H0764-11 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:50	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:28	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:28	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:28	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:28	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:28	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:28	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:28	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:28	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:28	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:28	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:28	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:28	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:28	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:28	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:38	
EPA 6020B	Arsenic	0.00255	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:38	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:31	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-12**

Sampled: 28-Aug-18 14:45

SVL Sample ID: **X8H0764-12 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:51	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:31	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836040	AS	09/14/18 09:31	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:31	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:31	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:31	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:31	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:31	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:31	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:31	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:31	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:31	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:31	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:31	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836040	AS	09/14/18 09:31	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:40	
EPA 6020B	Arsenic	0.00470	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:40	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:33	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-13**

Sampled: 28-Aug-18 15:40

SVL Sample ID: **X8H0764-13 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:53	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836040	AS	09/14/18 09:35	
EPA 6010D	Arsenic	0.029	mg/L	0.025	0.006		X836040	AS	09/14/18 09:35	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836040	AS	09/14/18 09:35	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836040	AS	09/14/18 09:35	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836040	AS	09/14/18 09:35	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836040	AS	09/14/18 09:35	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836040	AS	09/14/18 09:35	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836040	AS	09/14/18 09:35	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836040	AS	09/14/18 09:35	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836040	AS	09/14/18 09:35	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836040	AS	09/14/18 09:35	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836040	AS	09/14/18 09:35	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836040	AS	09/14/18 09:35	
EPA 6010D	Zinc	0.105	mg/L	0.010	0.005		X836040	AS	09/14/18 09:35	
EPA 6020B	Antimony	0.00638	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:42	
EPA 6020B	Arsenic	0.0270	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:42	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-14**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0764-14 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 12:55	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:11	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:11	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:11	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:28	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:11	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:11	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:11	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:11	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:11	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:11	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:28	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:11	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:11	
EPA 6010D	Zinc	0.036	mg/L	0.010	0.005		X836042	DT	09/19/18 10:11	
EPA 6020B	Antimony	0.00656	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:44	
EPA 6020B	Arsenic	0.0106	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:44	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:37	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-15**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0764-15 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:00	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:15	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:15	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:15	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:31	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:15	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:15	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:15	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:15	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:15	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:15	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:31	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:15	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:15	
EPA 6010D	Zinc	0.037	mg/L	0.010	0.005		X836042	DT	09/19/18 10:15	
EPA 6020B	Antimony	0.00627	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:46	
EPA 6020B	Arsenic	0.0104	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:46	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:39	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-16**

Sampled: 29-Aug-18 09:15

SVL Sample ID: **X8H0764-16 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:02	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:19	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:19	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:19	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:33	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:19	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:19	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:19	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:19	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:19	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:19	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:33	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:19	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:19	
EPA 6010D	Zinc	0.041	mg/L	0.010	0.005		X836042	DT	09/19/18 10:19	
EPA 6020B	Antimony	0.00668	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:49	
EPA 6020B	Arsenic	0.0106	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:49	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836019	APH	09/04/18 13:47	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-17**

Sampled: 29-Aug-18 10:00

SVL Sample ID: **X8H0764-17 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:04	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:22	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:22	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:22	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:36	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:22	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:22	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:22	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:22	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:22	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:22	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:36	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:22	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:22	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 10:22	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:55	
EPA 6020B	Arsenic	0.00456	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:55	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 13:59	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-18**

Sampled: 29-Aug-18 11:00

SVL Sample ID: **X8H0764-18 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:06	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:26	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:26	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:26	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:39	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:26	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:26	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:26	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:26	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:26	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:26	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:39	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:26	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:26	
EPA 6010D	Zinc	0.034	mg/L	0.010	0.005		X836042	DT	09/19/18 10:26	
EPA 6020B	Antimony	0.00756	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:57	
EPA 6020B	Arsenic	0.00286	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:57	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:01	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-19**

Sampled: 29-Aug-18 11:40

SVL Sample ID: **X8H0764-19 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:08	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:30	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:30	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:30	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:41	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:30	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:30	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:30	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:30	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:30	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:30	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:41	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:30	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:30	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 10:30	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 11:59	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 11:59	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:03	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-20**

Sampled: 29-Aug-18 12:00

SVL Sample ID: **X8H0764-20 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837229	DPW	09/14/18 13:09	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:33	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:33	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:33	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:44	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:33	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:33	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:33	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:33	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:33	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:33	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:44	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:33	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:33	
EPA 6010D	Zinc	0.072	mg/L	0.010	0.005		X836042	DT	09/19/18 10:33	
EPA 6020B	Antimony	0.0121	mg/L	0.00300	0.00023		X839199	KWH	10/05/18 12:01	
EPA 6020B	Arsenic	0.00307	mg/L	0.00150	0.00021		X839199	KWH	10/05/18 12:01	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:05	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-21**

Sampled: 29-Aug-18 12:20

SVL Sample ID: **X8H0764-21 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:38	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:37	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:37	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:37	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 12:47	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:37	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:37	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:37	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:37	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:37	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:37	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 12:47	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:37	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:37	
EPA 6010D	Zinc	0.030	mg/L	0.010	0.005		X836042	DT	09/19/18 10:37	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:14	
EPA 6020B	Arsenic	0.00279	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:14	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:13	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-22**

Sampled: 29-Aug-18 14:30

SVL Sample ID: **X8H0764-22 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:40	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:51	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:51	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:51	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:05	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:51	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:51	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:51	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:51	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:51	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:51	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:05	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:51	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:51	
EPA 6010D	Zinc	0.708	mg/L	0.010	0.005		X836042	DT	09/19/18 10:51	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:20	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:20	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:15	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-23**

Sampled: 30-Aug-18 09:15

SVL Sample ID: **X8H0764-23 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:42	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:55	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:55	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:55	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:07	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:55	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:55	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:55	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:55	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:55	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:55	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:07	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:55	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:55	
EPA 6010D	Zinc	0.172	mg/L	0.010	0.005		X836042	DT	09/19/18 10:55	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:22	
EPA 6020B	Arsenic	0.0132	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:22	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:17	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-24**

Sampled: 30-Aug-18 09:15

SVL Sample ID: **X8H0764-24 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:43	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 10:59	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 10:59	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 10:59	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:10	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 10:59	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 10:59	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 10:59	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 10:59	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 10:59	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 10:59	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:10	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 10:59	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 10:59	
EPA 6010D	Zinc	0.170	mg/L	0.010	0.005		X836042	DT	09/19/18 10:59	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:24	
EPA 6020B	Arsenic	0.0131	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:24	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:19	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

www.svl.net

Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-25**

Sampled: 30-Aug-18 09:40

SVL Sample ID: **X8H0764-25 (DI Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:45	
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Metals (Total Recoverable)

EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:02	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:02	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:02	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:13	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:02	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:02	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:02	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:02	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:02	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:02	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:13	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:02	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:02	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:02	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:07	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:07	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:21	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-26**

Sampled: 30-Aug-18 10:00

SVL Sample ID: **X8H0764-26 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:51	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:06	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:06	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:06	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:15	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:06	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:06	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:06	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:06	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:06	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:06	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:15	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:06	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:06	
EPA 6010D	Zinc	0.013	mg/L	0.010	0.005		X836042	DT	09/19/18 11:06	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:26	
EPA 6020B	Arsenic	0.0140	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:26	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:23	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-27**

Sampled: 30-Aug-18 10:30

SVL Sample ID: **X8H0764-27 (DI Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:56	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:16	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:16	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:16	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:23	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:16	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:16	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:16	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:16	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:16	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:16	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:23	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:16	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:16	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:16	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:28	
EPA 6020B	Arsenic	< 0.00150	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:28	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:25	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Client Sample ID: **GC-SW-28**

Sampled: 30-Aug-18 13:00

SVL Sample ID: **X8H0764-28 (Surface Water)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000093		X837230	DPW	09/14/18 10:58	
Metals (Total Recoverable)										
EPA 6010D	Antimony	< 0.020	mg/L	0.020	0.009		X836042	DT	09/19/18 11:20	
EPA 6010D	Arsenic	< 0.025	mg/L	0.025	0.006		X836042	DT	09/19/18 11:20	
EPA 6010D	Beryllium	< 0.0020	mg/L	0.0020	0.0017		X836042	DT	09/19/18 11:20	
EPA 6010D	Cadmium	< 0.0020	mg/L	0.0020	0.0016		X836042	DT	09/19/18 13:26	
EPA 6010D	Chromium	< 0.0060	mg/L	0.0060	0.0020		X836042	DT	09/19/18 11:20	
EPA 6010D	Cobalt	< 0.0060	mg/L	0.0060	0.0016		X836042	DT	09/19/18 11:20	
EPA 6010D	Copper	< 0.0100	mg/L	0.0100	0.0027		X836042	DT	09/19/18 11:20	
EPA 6010D	Iron	< 0.100	mg/L	0.100	0.056		X836042	DT	09/19/18 11:20	
EPA 6010D	Lead	< 0.0075	mg/L	0.0075	0.0049		X836042	DT	09/19/18 11:20	
EPA 6010D	Manganese	< 0.0080	mg/L	0.0080	0.0034		X836042	DT	09/19/18 11:20	
EPA 6010D	Nickel	< 0.0100	mg/L	0.0100	0.0023		X836042	DT	09/19/18 13:26	
EPA 6010D	Selenium	< 0.040	mg/L	0.040	0.012		X836042	DT	09/19/18 11:20	
EPA 6010D	Silver	< 0.0050	mg/L	0.0050	0.0019		X836042	DT	09/19/18 11:20	
EPA 6010D	Zinc	< 0.010	mg/L	0.010	0.005		X836042	DT	09/19/18 11:20	
EPA 6020B	Antimony	< 0.00300	mg/L	0.00300	0.00023		X839200	KWH	10/05/18 12:30	
EPA 6020B	Arsenic	0.00193	mg/L	0.00150	0.00021		X839200	KWH	10/05/18 12:30	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	< 0.0100	mg/L	0.0100	0.0038		X836020	APH	09/04/18 14:27	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	mg/L	<0.00020	0.000093	0.00020	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	<0.00020	0.000093	0.00020	X837230	14-Sep-18	

Metals (Total Recoverable)

EPA 6010D	Antimony	mg/L	<0.020	0.009	0.020	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	<0.020	0.009	0.020	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	<0.025	0.006	0.025	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	<0.025	0.006	0.025	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	<0.0020	0.0017	0.0020	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	<0.0020	0.0017	0.0020	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	<0.0020	0.0016	0.0020	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	<0.0020	0.0016	0.0020	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	<0.0060	0.0020	0.0060	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	<0.0060	0.0020	0.0060	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	<0.0060	0.0016	0.0060	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	<0.0060	0.0016	0.0060	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	<0.0100	0.0027	0.0100	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	<0.0100	0.0027	0.0100	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	<0.100	0.056	0.100	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	<0.100	0.056	0.100	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	<0.0075	0.0049	0.0075	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	<0.0075	0.0049	0.0075	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	<0.0080	0.0034	0.0080	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	<0.0080	0.0034	0.0080	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	<0.0100	0.0023	0.0100	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	<0.0100	0.0023	0.0100	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	<0.040	0.012	0.040	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	<0.040	0.012	0.040	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	<0.0050	0.0019	0.0050	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	<0.0050	0.0019	0.0050	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	<0.010	0.005	0.010	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	<0.010	0.005	0.010	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	<0.00300	0.00023	0.00300	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	<0.00300	0.00023	0.00300	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	<0.00150	0.00021	0.00150	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	<0.00150	0.00021	0.00150	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0038	0.0100	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	<0.0100	0.0038	0.0100	X836020	04-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total)

EPA 7470A	Mercury	mg/L	0.00496	0.00500	99.2	80 - 120	X837230	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00501	0.00500	100	80 - 120	X837229	14-Sep-18	

Metals (Total Recoverable)

EPA 6010D	Antimony	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.08	1.00	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.13	1.00	113	80 - 120	X836042	19-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - LABORATORY CONTROL SAMPLE Data (Continued)

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)									
EPA 6010D	Beryllium	mg/L	1.08	1.00	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.05	1.00	105	80 - 120	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.07	1.00	107	80 - 120	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.06	1.00	106	80 - 120	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	1.09	1.00	109	80 - 120	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	1.05	1.00	105	80 - 120	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.06	1.00	106	80 - 120	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.9	10.0	109	80 - 120	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.4	10.0	104	80 - 120	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.05	1.00	105	80 - 120	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.06	1.00	106	80 - 120	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.03	1.00	103	80 - 120	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.14	1.00	114	80 - 120	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0539	0.0500	108	80 - 120	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0538	0.0500	108	80 - 120	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.07	1.00	107	80 - 120	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.10	1.00	110	80 - 120	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0275	0.0250	110	80 - 120	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0272	0.0250	109	80 - 120	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0258	0.0250	103	80 - 120	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0254	0.0250	102	80 - 120	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	0.149	0.150	99.3	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.140	0.150	93.3	90 - 110	X836020	04-Sep-18	

Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total)										
EPA 7470A	Mercury	mg/L	0.00097	<0.00020	0.00100	97.4	75 - 125	X837230	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	<0.00020	0.00100	98.7	75 - 125	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	<0.00020	0.00100	98.7	75 - 125	X837229	14-Sep-18	
Metals (Total Recoverable)										
EPA 6010D	Antimony	mg/L	1.05	<0.020	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.09	<0.020	1.00	109	75 - 125	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.08	<0.025	1.00	108	75 - 125	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.13	<0.025	1.00	111	75 - 125	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	1.10	<0.0020	1.00	110	75 - 125	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.07	<0.0020	1.00	107	75 - 125	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.06	<0.0020	1.00	106	75 - 125	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.03	<0.0020	1.00	103	75 - 125	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	0.967	<0.0060	1.00	96.7	75 - 125	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.08	<0.0060	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.04	<0.0060	1.00	104	75 - 125	X836040	14-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0764
Reported: 10-Oct-18 13:40

Quality Control - MATRIX SPIKE Data (Continued)

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total Recoverable) (Continued)										
EPA 6010D	Cobalt	mg/L	1.08	<0.0060	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	0.957	<0.0100	1.00	95.7	75 - 125	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.07	<0.0100	1.00	107	75 - 125	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.9	<0.100	10.0	109	75 - 125	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.4	<0.100	10.0	103	75 - 125	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.05	<0.0075	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Lead	mg/L	1.08	<0.0075	1.00	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.08	<0.0080	1.00	108	75 - 125	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.06	<0.0080	1.00	106	75 - 125	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.03	<0.0100	1.00	103	75 - 125	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.00	<0.0100	1.00	100	75 - 125	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.07	<0.040	1.00	107	75 - 125	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.12	<0.040	1.00	112	75 - 125	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0495	<0.0050	0.0500	99.0	75 - 125	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0538	<0.0050	0.0500	108	75 - 125	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.05	<0.010	1.00	105	75 - 125	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.10	0.013	1.00	109	75 - 125	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0270	<0.00300	0.0250	106	75 - 125	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0268	<0.00300	0.0250	107	75 - 125	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0268	0.00234	0.0250	97.8	75 - 125	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0253	<0.00150	0.0250	101	75 - 125	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	0.100	<0.0100	0.100	100	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0990	<0.0100	0.100	99.0	90 - 110	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0980	<0.0100	0.100	98.0	90 - 110	X836020	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0970	<0.0100	0.100	97.0	90 - 110	X836020	04-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
Metals (Total)											
EPA 7470A	Mercury	mg/L	0.00097	0.00099	0.00100	97.0	1.8	20	X837229	14-Sep-18	
EPA 7470A	Mercury	mg/L	0.00099	0.00097	0.00100	98.8	1.4	20	X837230	14-Sep-18	
Metals (Total Recoverable)											
EPA 6010D	Antimony	mg/L	1.03	1.05	1.00	103	2.0	20	X836040	14-Sep-18	
EPA 6010D	Antimony	mg/L	1.12	1.09	1.00	112	2.4	20	X836042	19-Sep-18	
EPA 6010D	Arsenic	mg/L	1.05	1.08	1.00	105	2.5	20	X836040	14-Sep-18	
EPA 6010D	Arsenic	mg/L	1.16	1.13	1.00	114	2.6	20	X836042	19-Sep-18	
EPA 6010D	Beryllium	mg/L	1.02	1.10	1.00	102	7.5	20	X836040	14-Sep-18	
EPA 6010D	Beryllium	mg/L	1.09	1.07	1.00	109	1.6	20	X836042	19-Sep-18	
EPA 6010D	Cadmium	mg/L	1.04	1.06	1.00	104	1.8	20	X836040	14-Sep-18	
EPA 6010D	Cadmium	mg/L	1.04	1.03	1.00	104	0.5	20	X836042	19-Sep-18	
EPA 6010D	Chromium	mg/L	1.01	0.967	1.00	101	4.9	20	X836040	14-Sep-18	
EPA 6010D	Chromium	mg/L	1.09	1.08	1.00	109	0.9	20	X836042	19-Sep-18	
EPA 6010D	Cobalt	mg/L	1.02	1.04	1.00	102	1.8	20	X836040	14-Sep-18	
EPA 6010D	Cobalt	mg/L	1.11	1.08	1.00	111	2.4	20	X836042	19-Sep-18	
EPA 6010D	Copper	mg/L	1.01	0.957	1.00	101	5.0	20	X836040	14-Sep-18	
EPA 6010D	Copper	mg/L	1.08	1.07	1.00	108	1.1	20	X836042	19-Sep-18	
EPA 6010D	Iron	mg/L	10.2	10.9	10.0	102	7.4	20	X836040	14-Sep-18	
EPA 6010D	Iron	mg/L	10.6	10.4	10.0	105	2.3	20	X836042	19-Sep-18	
EPA 6010D	Lead	mg/L	1.04	1.05	1.00	104	1.4	20	X836040	14-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0764**
Reported: 10-Oct-18 13:40

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)											
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes

Metals (Total Recoverable) (Continued)

EPA 6010D	Lead	mg/L	1.11	1.08	1.00	111	2.6	20	X836042	19-Sep-18	
EPA 6010D	Manganese	mg/L	1.00	1.08	1.00	100	7.7	20	X836040	14-Sep-18	
EPA 6010D	Manganese	mg/L	1.09	1.06	1.00	109	2.1	20	X836042	19-Sep-18	
EPA 6010D	Nickel	mg/L	1.02	1.03	1.00	102	1.7	20	X836040	14-Sep-18	
EPA 6010D	Nickel	mg/L	1.00	1.00	1.00	100	0.3	20	X836042	19-Sep-18	
EPA 6010D	Selenium	mg/L	1.05	1.07	1.00	105	2.1	20	X836040	14-Sep-18	
EPA 6010D	Selenium	mg/L	1.14	1.12	1.00	114	2.2	20	X836042	19-Sep-18	
EPA 6010D	Silver	mg/L	0.0516	0.0495	0.0500	103	4.2	20	X836040	14-Sep-18	
EPA 6010D	Silver	mg/L	0.0548	0.0538	0.0500	110	1.8	20	X836042	19-Sep-18	
EPA 6010D	Zinc	mg/L	1.03	1.05	1.00	103	1.9	20	X836040	14-Sep-18	
EPA 6010D	Zinc	mg/L	1.12	1.10	1.00	111	2.1	20	X836042	19-Sep-18	
EPA 6020B	Antimony	mg/L	0.0268	0.0270	0.0250	105	0.5	20	X839199	05-Oct-18	
EPA 6020B	Antimony	mg/L	0.0267	0.0268	0.0250	107	0.2	20	X839200	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0268	0.0268	0.0250	98.0	0.2	20	X839199	05-Oct-18	
EPA 6020B	Arsenic	mg/L	0.0254	0.0253	0.0250	101	0.4	20	X839200	05-Oct-18	

Classical Chemistry Parameters

EPA 335.4	Cyanide (total)	mg/L	0.0980	0.100	0.100	98.0	2.0	20	X836019	04-Sep-18	
EPA 335.4	Cyanide (total)	mg/L	0.0960	0.0980	0.100	96.0	2.1	20	X836020	04-Sep-18	

Notes and Definitions

Q3	Sample was received with improper chemical preservation.
Q5	Sample was received with inadequate preservation, but preserved by the laboratory.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SD-1	X8H0766-01	Sediment	27-Aug-18 11:45	GM	31-Aug-2018	
GC-SD-2	X8H0766-02	Sediment	27-Aug-18 12:40	GM	31-Aug-2018	
GC-SD-3	X8H0766-03	Sediment	27-Aug-18 13:35	GM	31-Aug-2018	
GC-SD-4	X8H0766-04	Sediment	27-Aug-18 14:20	GM	31-Aug-2018	
GC-SD-5	X8H0766-05	Sediment	27-Aug-18 15:15	GM	31-Aug-2018	
GC-SD-6	X8H0766-06	Sediment	27-Aug-18 16:00	GM	31-Aug-2018	
GC-SD-7	X8H0766-07	Sediment	27-Aug-18 16:50	GM	31-Aug-2018	
GC-SD-8	X8H0766-08	Sediment	28-Aug-18 08:40	GM	31-Aug-2018	
GC-SD-9	X8H0766-09	Sediment	28-Aug-18 09:00	GM	31-Aug-2018	
GC-SD-10	X8H0766-10	Sediment	28-Aug-18 09:40	GM	31-Aug-2018	
GC-SD-11	X8H0766-11	Sediment	28-Aug-18 09:50	GM	31-Aug-2018	
GC-SD-12	X8H0766-12	Sediment	28-Aug-18 11:00	GM	31-Aug-2018	
GC-SD-13	X8H0766-13	Sediment	28-Aug-18 11:25	GM	31-Aug-2018	
GC-SD-14	X8H0766-14	Sediment	28-Aug-18 11:55	GM	31-Aug-2018	
GC-SD-15	X8H0766-15	Sediment	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SD-16	X8H0766-16	Sediment	28-Aug-18 12:55	GM	31-Aug-2018	
GC-SD-17	X8H0766-17	Sediment	28-Aug-18 13:30	GM	31-Aug-2018	
GC-SD-18	X8H0766-18	Sediment	28-Aug-18 14:20	GM	31-Aug-2018	
GC-SD-19	X8H0766-19	Sediment	28-Aug-18 14:45	GM	31-Aug-2018	
GC-SD-20	X8H0766-20	Sediment	28-Aug-18 15:45	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: X8H0766

11/8/18 DG Report is reissued with dry weight corrected results.



One Government Gulch - PO Box 929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-1**

Sampled: 27-Aug-18 11:45

SVL Sample ID: **X8H0766-01 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:27	
EPA 6010D	Arsenic	30.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:40	
EPA 6010D	Beryllium	0.42	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:40	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:40	
EPA 6010D	Chromium	10.6	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:40	
EPA 6010D	Cobalt	6.64	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:40	
EPA 6010D	Copper	10.8	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:40	
EPA 6010D	Iron	17800	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:40	
EPA 6010D	Lead	15.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:40	
EPA 6010D	Manganese	234	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:40	
EPA 6010D	Nickel	11.1	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:40	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:40	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:40	
EPA 6010D	Zinc	66.8	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:40	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:28	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:21	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	98.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Kellogg, ID 83837-0929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-2**

Sampled: 27-Aug-18 12:40

SVL Sample ID: **X8H0766-02 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	5.1	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:30	
EPA 6010D	Arsenic	60.9	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:42	
EPA 6010D	Beryllium	0.48	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:42	
EPA 6010D	Cadmium	0.35	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:42	
EPA 6010D	Chromium	12.6	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:42	
EPA 6010D	Cobalt	5.02	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:42	
EPA 6010D	Copper	16.6	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:42	
EPA 6010D	Iron	19000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:42	
EPA 6010D	Lead	37.7	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:42	
EPA 6010D	Manganese	413	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:42	
EPA 6010D	Nickel	10.7	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:42	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:42	
EPA 6010D	Silver	1.30	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:42	
EPA 6010D	Zinc	202	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:42	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:29	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:23	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.0	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-3**

Sampled: 27-Aug-18 13:35

SVL Sample ID: **X8H0766-03 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:32	
EPA 6010D	Arsenic	27.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:45	
EPA 6010D	Beryllium	0.49	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:45	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:45	
EPA 6010D	Chromium	8.21	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:45	
EPA 6010D	Cobalt	8.24	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:45	
EPA 6010D	Copper	14.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:45	
EPA 6010D	Iron	18300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:45	
EPA 6010D	Lead	13.3	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:45	
EPA 6010D	Manganese	334	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:45	
EPA 6010D	Nickel	11.5	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:45	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:45	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:45	
EPA 6010D	Zinc	35.3	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:45	
EPA 7471B	Mercury	0.035	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:31	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:25	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-4**

Sampled: 27-Aug-18 14:20

SVL Sample ID: **X8H0766-04 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:35	
EPA 6010D	Arsenic	26.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:48	
EPA 6010D	Beryllium	0.52	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:48	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:48	
EPA 6010D	Chromium	11.5	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:48	
EPA 6010D	Cobalt	7.25	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:48	
EPA 6010D	Copper	13.2	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:48	
EPA 6010D	Iron	18600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:48	
EPA 6010D	Lead	14.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:48	
EPA 6010D	Manganese	307	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:48	
EPA 6010D	Nickel	11.6	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:48	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:48	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:48	
EPA 6010D	Zinc	38.1	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:48	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:33	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.15	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:02	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	78.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-5**

Sampled: 27-Aug-18 15:15

SVL Sample ID: **X8H0766-05 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:38	
EPA 6010D	Arsenic	18.4	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:50	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:50	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:50	
EPA 6010D	Chromium	4.69	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:50	
EPA 6010D	Cobalt	7.81	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:50	
EPA 6010D	Copper	8.08	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:50	
EPA 6010D	Iron	13800	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:50	
EPA 6010D	Lead	5.8	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:50	
EPA 6010D	Manganese	599	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:50	
EPA 6010D	Nickel	7.91	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:50	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:50	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:50	
EPA 6010D	Zinc	21.0	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:50	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:35	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:29	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	84.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-6**

Sampled: 27-Aug-18 16:00

SVL Sample ID: **X8H0766-06 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.9	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:40	
EPA 6010D	Arsenic	75.7	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:53	
EPA 6010D	Beryllium	0.50	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:53	
EPA 6010D	Cadmium	0.44	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:53	
EPA 6010D	Chromium	9.92	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:53	
EPA 6010D	Cobalt	6.21	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:53	
EPA 6010D	Copper	17.5	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:53	
EPA 6010D	Iron	18300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:53	
EPA 6010D	Lead	53.2	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:53	
EPA 6010D	Manganese	489	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:53	
EPA 6010D	Nickel	13.3	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:53	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:53	
EPA 6010D	Silver	2.73	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:53	
EPA 6010D	Zinc	225	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:53	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:37	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:31	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-7**

Sampled: 27-Aug-18 16:50

SVL Sample ID: **X8H0766-07 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:43	
EPA 6010D	Arsenic	10.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 14:55	
EPA 6010D	Beryllium	0.30	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 14:55	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 14:55	
EPA 6010D	Chromium	3.81	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 14:55	
EPA 6010D	Cobalt	2.35	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 14:55	
EPA 6010D	Copper	5.38	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 14:55	
EPA 6010D	Iron	8570	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 14:55	
EPA 6010D	Lead	5.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 14:55	
EPA 6010D	Manganese	90.1	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 14:55	
EPA 6010D	Nickel	5.14	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 14:55	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 14:55	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 14:55	
EPA 6010D	Zinc	17.7	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 14:55	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:38	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	< 0.10	mg/kg dry	0.10	0.05		X836032	APH	09/05/18 11:39	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	80.7	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-8**

Sampled: 28-Aug-18 08:40

SVL Sample ID: **X8H0766-08 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:46	
EPA 6010D	Arsenic	26.9	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:03	
EPA 6010D	Beryllium	0.64	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:03	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:03	
EPA 6010D	Chromium	7.29	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:03	
EPA 6010D	Cobalt	11.0	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:03	
EPA 6010D	Copper	12.5	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:03	
EPA 6010D	Iron	22900	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:03	M3
EPA 6010D	Lead	13.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:03	
EPA 6010D	Manganese	473	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:03	
EPA 6010D	Nickel	12.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:03	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:03	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:03	
EPA 6010D	Zinc	53.1	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:03	
EPA 7471B	Mercury	0.042	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:40	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:04	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	90.3	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-9**

Sampled: 28-Aug-18 09:00

SVL Sample ID: **X8H0766-09 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.8	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 07:59	
EPA 6010D	Arsenic	140	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:11	
EPA 6010D	Beryllium	0.71	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:11	
EPA 6010D	Cadmium	0.42	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:11	
EPA 6010D	Chromium	6.73	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:11	
EPA 6010D	Cobalt	8.73	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:11	
EPA 6010D	Copper	19.9	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:11	
EPA 6010D	Iron	20600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:11	
EPA 6010D	Lead	83.7	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:11	
EPA 6010D	Manganese	1130	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:11	
EPA 6010D	Nickel	12.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:11	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:11	
EPA 6010D	Silver	1.54	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:11	
EPA 6010D	Zinc	235	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:11	
EPA 7471B	Mercury	0.130	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:49	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.21	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:06	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	62.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-10**

Sampled: 28-Aug-18 09:40

SVL Sample ID: **X8H0766-10 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	41.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:02	
EPA 6010D	Arsenic	92.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:14	
EPA 6010D	Beryllium	0.86	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:14	
EPA 6010D	Cadmium	1.84	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:14	
EPA 6010D	Chromium	10.8	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:14	
EPA 6010D	Cobalt	6.87	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:14	
EPA 6010D	Copper	44.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:14	
EPA 6010D	Iron	18600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:14	
EPA 6010D	Lead	167	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:14	
EPA 6010D	Manganese	776	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:14	
EPA 6010D	Nickel	15.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:14	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:14	
EPA 6010D	Silver	4.81	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:14	
EPA 6010D	Zinc	609	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:14	
EPA 7471B	Mercury	0.052	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:51	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.26	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:18	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	79.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-11**

Sampled: 28-Aug-18 09:50

SVL Sample ID: **X8H0766-11 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	33.6	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:04	
EPA 6010D	Arsenic	161	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:17	
EPA 6010D	Beryllium	0.55	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:17	
EPA 6010D	Cadmium	2.13	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:17	
EPA 6010D	Chromium	10.3	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:17	
EPA 6010D	Cobalt	7.10	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:17	
EPA 6010D	Copper	32.1	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:17	
EPA 6010D	Iron	20000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:17	
EPA 6010D	Lead	155	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:17	
EPA 6010D	Manganese	1780	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:17	
EPA 6010D	Nickel	18.3	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:17	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:17	
EPA 6010D	Silver	4.31	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:17	
EPA 6010D	Zinc	743	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:17	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:53	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.69	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:20	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	95.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-12**

Sampled: 28-Aug-18 11:00

SVL Sample ID: **X8H0766-12 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:07	
EPA 6010D	Arsenic	13.6	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:19	
EPA 6010D	Beryllium	0.53	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:19	
EPA 6010D	Cadmium	1.43	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:19	
EPA 6010D	Chromium	9.51	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:19	
EPA 6010D	Cobalt	6.25	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:19	
EPA 6010D	Copper	23.8	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:19	
EPA 6010D	Iron	15000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:19	
EPA 6010D	Lead	43.5	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:19	
EPA 6010D	Manganese	1360	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:19	
EPA 6010D	Nickel	10.1	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:19	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:19	
EPA 6010D	Silver	0.92	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:19	
EPA 6010D	Zinc	174	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:19	
EPA 7471B	Mercury	0.166	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:55	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	1.13	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:22	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	59.3	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-13**

Sampled: 28-Aug-18 11:25

SVL Sample ID: **X8H0766-13 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.8	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:09	
EPA 6010D	Arsenic	15.2	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:22	
EPA 6010D	Beryllium	0.88	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:22	
EPA 6010D	Cadmium	0.48	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:22	
EPA 6010D	Chromium	9.47	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:22	
EPA 6010D	Cobalt	12.3	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:22	
EPA 6010D	Copper	125	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:22	
EPA 6010D	Iron	23600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:22	
EPA 6010D	Lead	31.1	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:22	
EPA 6010D	Manganese	2810	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:22	
EPA 6010D	Nickel	17.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:22	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:22	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:22	
EPA 6010D	Zinc	91.8	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:22	
EPA 7471B	Mercury	0.119	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:56	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.53	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:24	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	68.4	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-14**

Sampled: 28-Aug-18 11:55

SVL Sample ID: **X8H0766-14 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.1	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:12	
EPA 6010D	Arsenic	66.7	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:25	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:25	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:25	
EPA 6010D	Chromium	6.98	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:25	
EPA 6010D	Cobalt	13.5	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:25	
EPA 6010D	Copper	29.4	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:25	
EPA 6010D	Iron	21400	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:25	
EPA 6010D	Lead	190	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:25	
EPA 6010D	Manganese	1090	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:25	
EPA 6010D	Nickel	12.7	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:25	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:25	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:25	
EPA 6010D	Zinc	129	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:25	
EPA 7471B	Mercury	0.043	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 13:58	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:26	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	96.0	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
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Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-15**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0766-15 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	< 2.0	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:15	
EPA 6010D	Arsenic	69.0	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:27	
EPA 6010D	Beryllium	0.95	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:27	
EPA 6010D	Cadmium	0.48	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:27	
EPA 6010D	Chromium	21.9	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:27	
EPA 6010D	Cobalt	8.98	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:27	
EPA 6010D	Copper	35.0	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:27	
EPA 6010D	Iron	25900	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:27	
EPA 6010D	Lead	37.5	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:27	
EPA 6010D	Manganese	1050	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:27	
EPA 6010D	Nickel	19.4	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:27	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:27	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:27	
EPA 6010D	Zinc	278	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:27	
EPA 7471B	Mercury	0.052	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:00	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.27	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:28	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	60.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-16**

Sampled: 28-Aug-18 12:55

SVL Sample ID: **X8H0766-16 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	4.6	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:17	
EPA 6010D	Arsenic	46.3	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:35	
EPA 6010D	Beryllium	0.67	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:35	
EPA 6010D	Cadmium	0.37	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:35	
EPA 6010D	Chromium	12.5	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:35	
EPA 6010D	Cobalt	6.72	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:35	
EPA 6010D	Copper	22.6	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:35	
EPA 6010D	Iron	15200	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:35	
EPA 6010D	Lead	24.9	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:35	
EPA 6010D	Manganese	699	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:35	
EPA 6010D	Nickel	14.2	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:35	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:35	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:35	
EPA 6010D	Zinc	155	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:35	
EPA 7471B	Mercury	0.049	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:02	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.27	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:30	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.6	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-17**

Sampled: 28-Aug-18 13:30

SVL Sample ID: **X8H0766-17 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	10.3	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:25	
EPA 6010D	Arsenic	152	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:38	
EPA 6010D	Beryllium	0.58	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:38	
EPA 6010D	Cadmium	7.83	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:38	
EPA 6010D	Chromium	11.0	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:38	
EPA 6010D	Cobalt	10.5	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:38	
EPA 6010D	Copper	120	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:38	
EPA 6010D	Iron	19300	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:38	
EPA 6010D	Lead	416	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:38	
EPA 6010D	Manganese	1280	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:38	
EPA 6010D	Nickel	13.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:38	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:38	
EPA 6010D	Silver	3.45	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:38	
EPA 6010D	Zinc	3630	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:38	
EPA 7471B	Mercury	0.113	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:07	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.60	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:32	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	72.9	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-18**

Sampled: 28-Aug-18 14:20

SVL Sample ID: **X8H0766-18 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.9	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:28	
EPA 6010D	Arsenic	46.5	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:40	
EPA 6010D	Beryllium	0.47	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:40	
EPA 6010D	Cadmium	0.22	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:40	
EPA 6010D	Chromium	8.46	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:40	
EPA 6010D	Cobalt	3.94	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:40	
EPA 6010D	Copper	10.4	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:40	
EPA 6010D	Iron	12000	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:40	
EPA 6010D	Lead	27.0	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:40	
EPA 6010D	Manganese	344	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:40	
EPA 6010D	Nickel	6.59	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:40	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:40	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:40	
EPA 6010D	Zinc	144	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:40	
EPA 7471B	Mercury	0.043	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:09	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.17	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:40	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	69.5	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-19**

Sampled: 28-Aug-18 14:45

SVL Sample ID: **X8H0766-19 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	14.3	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:31	
EPA 6010D	Arsenic	582	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:43	
EPA 6010D	Beryllium	1.06	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:43	
EPA 6010D	Cadmium	1.97	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:43	
EPA 6010D	Chromium	12.3	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:43	
EPA 6010D	Cobalt	8.24	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:43	
EPA 6010D	Copper	43.9	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:43	
EPA 6010D	Iron	16700	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:43	
EPA 6010D	Lead	274	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:43	
EPA 6010D	Manganese	1100	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:43	
EPA 6010D	Nickel	12.6	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:43	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:43	
EPA 6010D	Silver	3.17	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:43	
EPA 6010D	Zinc	611	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:43	
EPA 7471B	Mercury	0.093	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:11	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.54	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:42	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	40.9	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Client Sample ID: **GC-SD-20**

Sampled: 28-Aug-18 15:45

SVL Sample ID: **X8H0766-20 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	25.4	mg/kg dry	2.0	0.8		X836066	AS	09/14/18 08:33	
EPA 6010D	Arsenic	1070	mg/kg dry	2.5	0.6		X836065	DT	09/18/18 15:46	
EPA 6010D	Beryllium	0.64	mg/kg dry	0.20	0.08		X836065	DT	09/18/18 15:46	
EPA 6010D	Cadmium	3.36	mg/kg dry	0.20	0.06		X836065	DT	09/18/18 15:46	
EPA 6010D	Chromium	5.82	mg/kg dry	0.60	0.20		X836065	DT	09/18/18 15:46	
EPA 6010D	Cobalt	8.31	mg/kg dry	0.60	0.07		X836065	DT	09/18/18 15:46	
EPA 6010D	Copper	51.1	mg/kg dry	1.00	0.16		X836065	DT	09/18/18 15:46	
EPA 6010D	Iron	19600	mg/kg dry	10.0	6.6		X836065	DT	09/18/18 15:46	
EPA 6010D	Lead	402	mg/kg dry	0.8	0.3		X836065	DT	09/18/18 15:46	
EPA 6010D	Manganese	1710	mg/kg dry	0.80	0.28		X836065	DT	09/18/18 15:46	
EPA 6010D	Nickel	12.8	mg/kg dry	1.00	0.24		X836065	DT	09/18/18 15:46	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836065	DT	09/18/18 15:46	
EPA 6010D	Silver	6.69	mg/kg dry	0.50	0.20		X836065	DT	09/18/18 15:46	
EPA 6010D	Zinc	988	mg/kg dry	1.0	0.3		X836065	DT	09/18/18 15:46	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836190	DPW	09/11/18 14:13	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.47	mg/kg dry	0.10	0.05		X836033	APH	09/07/18 15:44	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	90.1	%	0.1			X837012	JAA	09/11/18 09:35	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	<2.0	0.8	2.0	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	<2.5	0.6	2.5	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	<0.20	0.08	0.20	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	<0.20	0.06	0.20	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	<0.60	0.20	0.60	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	<0.60	0.07	0.60	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	<1.00	0.16	1.00	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	<10.0	6.6	10.0	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	<0.8	0.3	0.8	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	<0.80	0.28	0.80	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	<1.00	0.24	1.00	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	<4.0	1.1	4.0	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	<0.50	0.20	0.50	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	<1.0	0.3	1.0	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	<0.033	0.011	0.033	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836032	05-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836033	07-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	101	100	101	80 - 120	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	98.4	100	98.4	80 - 120	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	96.1	100	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	97.1	100	97.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	99.7	100	99.7	80 - 120	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	96.1	100	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	97.3	100	97.3	80 - 120	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	961	1000	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	98.4	100	98.4	80 - 120	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	99.3	100	99.3	80 - 120	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	95.7	100	95.7	80 - 120	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	91.2	100	91.2	80 - 120	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	4.80	5.00	96.1	80 - 120	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	93.8	100	93.8	80 - 120	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.853	0.833	102	80 - 120	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/L	0.98	1.09	89.4	80 - 120	X836032	05-Sep-18	D2
SW846 9012B	Cyanide (total)	mg/L	1.26	1.09	116	80 - 120	X836033	07-Sep-18	D2



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0766
Reported: 08-Nov-18 16:23

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Percent Solids / Percent Moisture

Percent Solids	% Solids	%	89.7	90.3	0.7	20	X837012	11-Sep-18	
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Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	112	<2.0	111	101	75 - 125	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	140	26.9	111	102	75 - 125	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	105	0.64	111	94.7	75 - 125	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	111	<0.20	111	100	75 - 125	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	121	7.29	111	103	75 - 125	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	120	11.0	111	98.1	75 - 125	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	129	12.5	111	105	75 - 125	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	23000	22900	1110	0.30R>S	75 - 125	X836065	18-Sep-18	M3
EPA 6010D	Lead	mg/kg	125	13.9	111	101	75 - 125	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	575	473	111	92.1	75 - 125	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	123	12.8	111	99.9	75 - 125	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	108	<4.0	111	97.6	75 - 125	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	5.50	<0.50	5.54	99.3	75 - 125	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	165	53.1	111	101	75 - 125	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.395	0.042	0.369	95.7	75 - 125	X836190	11-Sep-18	
EPA 7471B	Mercury	mg/kg	0.442	<0.033	0.370	120	75 - 125	X836190	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	1.24	0.25	1.11	89.0	75 - 125	X836032	05-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.70	0.27	1.67	86.0	75 - 125	X836033	07-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.31	0.31	1.11	90.0	75 - 125	X836033	07-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	111	112	111	99.7	0.8	20	X836066	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	137	140	111	99.9	1.6	20	X836065	18-Sep-18	
EPA 6010D	Beryllium	mg/kg	107	105	111	95.8	1.2	20	X836065	18-Sep-18	
EPA 6010D	Cadmium	mg/kg	110	111	111	99.2	0.8	20	X836065	18-Sep-18	
EPA 6010D	Chromium	mg/kg	121	121	111	103	0.1	20	X836065	18-Sep-18	
EPA 6010D	Cobalt	mg/kg	116	120	111	94.7	3.2	20	X836065	18-Sep-18	
EPA 6010D	Copper	mg/kg	132	129	111	107	2.2	20	X836065	18-Sep-18	
EPA 6010D	Iron	mg/kg	23900	23000	1110	91.7	3.9	20	X836065	18-Sep-18	
EPA 6010D	Lead	mg/kg	125	125	111	100	0.3	20	X836065	18-Sep-18	
EPA 6010D	Manganese	mg/kg	524	575	111	0.30R>S	9.2	20	X836065	18-Sep-18	
EPA 6010D	Nickel	mg/kg	123	123	111	99.8	0.1	20	X836065	18-Sep-18	
EPA 6010D	Selenium	mg/kg	107	108	111	96.4	1.3	20	X836065	18-Sep-18	
EPA 6010D	Silver	mg/kg	5.58	5.50	5.54	101	1.5	20	X836065	18-Sep-18	
EPA 6010D	Zinc	mg/kg	171	165	111	107	3.7	20	X836065	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.406	0.395	0.369	98.7	2.8	20	X836190	11-Sep-18	



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0766**
Reported: 08-Nov-18 16:23

Quality Control - MATRIX SPIKE DUPLICATE Data (Continued)

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	1.27	1.24	1.11	92.0	2.6	20	X836032	05-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.95	1.70	1.67	101	13.7	20	X836033	07-Sep-18	

Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received	Notes
GC-SD-21	X8H0769-01	Sediment	28-Aug-18 15:40	GM	31-Aug-2018	
GC-SD-22	X8H0769-02	Sediment	29-Aug-18 08:45	GM	31-Aug-2018	
GC-SD-23	X8H0769-03	Sediment	29-Aug-18 09:15	GM	31-Aug-2018	
GC-SD-24	X8H0769-04	Sediment	29-Aug-18 10:00	GM	31-Aug-2018	
GC-SD-25	X8H0769-05	Sediment	29-Aug-18 11:00	GM	31-Aug-2018	
GC-SD-26	X8H0769-06	Sediment	29-Aug-18 11:40	GM	31-Aug-2018	
GC-SD-27	X8H0769-07	Sediment	29-Aug-18 12:00	GM	31-Aug-2018	
GC-SD-28	X8H0769-08	Sediment	29-Aug-18 12:20	GM	31-Aug-2018	
GC-SD-29	X8H0769-09	Sediment	29-Aug-18 13:45	GM	31-Aug-2018	
GC-SD-30	X8H0769-10	Sediment	29-Aug-18 14:30	GM	31-Aug-2018	
GC-SD-31	X8H0769-11	Sediment	29-Aug-18 15:30	GM	31-Aug-2018	
GC-SD-32	X8H0769-12	Sediment	29-Aug-18 15:30	GM	31-Aug-2018	
GC-SD-33	X8H0769-13	Sediment	30-Aug-18 09:15	GM	31-Aug-2018	
GC-SD-34	X8H0769-14	Sediment	30-Aug-18 10:00	GM	31-Aug-2018	
GC-SD-35	X8H0769-15	Sediment	30-Aug-18 13:00	GM	31-Aug-2018	

Solid samples are analyzed on an as-received, wet-weight basis, unless otherwise requested.

Sample preparation is defined by the client as per their Data Quality Objectives.

This report supercedes any previous reports for this Work Order. The complete report includes pages for each sample, a full QC report, and a notes section.

Analyses were performed in accordance with SVL standard operating procedures and calibrations were performed and met SVL internal QC criteria.

The results presented in this report relate only to the samples, and meet all requirements of the NELAC Standards unless otherwise noted.

Case Narrative: X8H0769

11/8/18 DG Report is reissued with dry weight corrected results.



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-21**

Sampled: 28-Aug-18 15:40

SVL Sample ID: **X8H0769-01 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	65.5	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:25	
EPA 6010D	Arsenic	1660	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 14:58	
EPA 6010D	Beryllium	0.92	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 14:58	
EPA 6010D	Cadmium	1.38	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 14:58	
EPA 6010D	Chromium	8.46	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 14:58	
EPA 6010D	Cobalt	12.9	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 14:58	
EPA 6010D	Copper	110	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 14:58	
EPA 6010D	Iron	24800	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 14:58	
EPA 6010D	Lead	618	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:30	
EPA 6010D	Manganese	3430	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 14:58	
EPA 6010D	Nickel	18.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 14:58	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 14:58	
EPA 6010D	Silver	21.8	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 14:58	
EPA 6010D	Zinc	1150	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:30	
EPA 7471B	Mercury	0.128	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 15:52	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.54	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:06	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	51.7	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-22**

Sampled: 29-Aug-18 08:45

SVL Sample ID: **X8H0769-02 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	198	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:27	
EPA 6010D	Arsenic	270	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:01	
EPA 6010D	Beryllium	0.89	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:01	
EPA 6010D	Cadmium	2.13	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:01	
EPA 6010D	Chromium	19.7	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:01	
EPA 6010D	Cobalt	6.35	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:01	
EPA 6010D	Copper	83.0	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:01	
EPA 6010D	Iron	19700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:01	
EPA 6010D	Lead	618	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:34	
EPA 6010D	Manganese	1960	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:01	
EPA 6010D	Nickel	19.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:01	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:01	
EPA 6010D	Silver	16.1	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:01	
EPA 6010D	Zinc	1180	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:34	
EPA 7471B	Mercury	0.058	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:20	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.13	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:08	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	82.0	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-23**

Sampled: 29-Aug-18 09:15

SVL Sample ID: **X8H0769-03 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	78.0	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:30	
EPA 6010D	Arsenic	151	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:04	
EPA 6010D	Beryllium	0.60	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:04	
EPA 6010D	Cadmium	3.85	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:04	
EPA 6010D	Chromium	17.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:04	
EPA 6010D	Cobalt	10.2	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:04	
EPA 6010D	Copper	148	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:04	
EPA 6010D	Iron	22300	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:04	
EPA 6010D	Lead	757	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:37	
EPA 6010D	Manganese	2330	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:04	
EPA 6010D	Nickel	21.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:04	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:04	
EPA 6010D	Silver	16.2	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:04	
EPA 6010D	Zinc	1570	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:37	
EPA 7471B	Mercury	0.061	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:22	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.12	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:10	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	76.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-24**

Sampled: 29-Aug-18 10:00

SVL Sample ID: **X8H0769-04 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	3.3	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:33	
EPA 6010D	Arsenic	128	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:07	
EPA 6010D	Beryllium	0.61	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:07	
EPA 6010D	Cadmium	0.36	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:07	
EPA 6010D	Chromium	11.2	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:07	
EPA 6010D	Cobalt	11.9	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:07	
EPA 6010D	Copper	18.8	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:07	
EPA 6010D	Iron	23700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:07	
EPA 6010D	Lead	50.3	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:40	
EPA 6010D	Manganese	586	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:07	
EPA 6010D	Nickel	12.0	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:07	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:07	
EPA 6010D	Silver	1.65	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:07	
EPA 6010D	Zinc	192	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:40	
EPA 7471B	Mercury	0.060	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:23	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.30	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:12	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	50.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-25**

Sampled: 29-Aug-18 11:00

SVL Sample ID: **X8H0769-05 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	181	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:35	
EPA 6010D	Arsenic	104	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:10	
EPA 6010D	Beryllium	0.45	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:10	
EPA 6010D	Cadmium	2.38	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:10	
EPA 6010D	Chromium	18.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:10	
EPA 6010D	Cobalt	5.88	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:10	
EPA 6010D	Copper	59.4	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:10	
EPA 6010D	Iron	18500	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:10	
EPA 6010D	Lead	567	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:43	
EPA 6010D	Manganese	1040	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:10	
EPA 6010D	Nickel	22.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:10	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:10	
EPA 6010D	Silver	23.6	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:10	
EPA 6010D	Zinc	937	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:43	
EPA 7471B	Mercury	0.051	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:29	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.20	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:14	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	76.4	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-26**

Sampled: 29-Aug-18 11:40

SVL Sample ID: **X8H0769-06 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.6	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:38	
EPA 6010D	Arsenic	21.8	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:13	
EPA 6010D	Beryllium	0.36	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:13	
EPA 6010D	Cadmium	0.56	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:13	
EPA 6010D	Chromium	11.5	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:13	
EPA 6010D	Cobalt	4.69	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:13	
EPA 6010D	Copper	14.3	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:13	
EPA 6010D	Iron	18800	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:13	
EPA 6010D	Lead	17.9	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:47	
EPA 6010D	Manganese	611	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:13	
EPA 6010D	Nickel	10.4	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:13	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:13	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:13	
EPA 6010D	Zinc	126	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:47	
EPA 7471B	Mercury	0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:31	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.26	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:16	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	69.5	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-27**

Sampled: 29-Aug-18 12:00

SVL Sample ID: **X8H0769-07 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	221	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:41	
EPA 6010D	Arsenic	470	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:17	
EPA 6010D	Beryllium	0.59	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:17	
EPA 6010D	Cadmium	4.62	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:17	
EPA 6010D	Chromium	25.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:17	
EPA 6010D	Cobalt	11.0	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:17	
EPA 6010D	Copper	137	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:17	
EPA 6010D	Iron	24100	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:17	
EPA 6010D	Lead	2000	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:50	
EPA 6010D	Manganese	3020	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:17	
EPA 6010D	Nickel	34.5	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:17	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:17	
EPA 6010D	Silver	53.7	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:17	
EPA 6010D	Zinc	2370	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:50	
EPA 7471B	Mercury	0.099	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:32	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.13	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:18	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	77.8	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



One Government Gulch - PO Box 929

Kellogg, ID 83837-0929

(208) 784-1258

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-28**

Sampled: 29-Aug-18 12:20

SVL Sample ID: **X8H0769-08 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	40.6	mg/kg dry	2.0	0.8		X836068	AS	09/14/18 09:43	
EPA 6010D	Arsenic	126	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:20	
EPA 6010D	Beryllium	0.53	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:20	
EPA 6010D	Cadmium	1.11	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:20	
EPA 6010D	Chromium	15.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:20	
EPA 6010D	Cobalt	5.54	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:20	
EPA 6010D	Copper	76.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:20	
EPA 6010D	Iron	22200	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:20	
EPA 6010D	Lead	200	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 13:53	
EPA 6010D	Manganese	852	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:20	
EPA 6010D	Nickel	15.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:20	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:20	
EPA 6010D	Silver	6.23	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:20	
EPA 6010D	Zinc	524	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 13:53	
EPA 7471B	Mercury	0.037	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:34	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.24	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:42	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	62.9	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-29**

Sampled: 29-Aug-18 13:45

SVL Sample ID: **X8H0769-09 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	2.1	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 10:54	
EPA 6010D	Arsenic	17.3	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:33	
EPA 6010D	Beryllium	0.84	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:33	
EPA 6010D	Cadmium	0.62	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:33	
EPA 6010D	Chromium	8.92	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:33	
EPA 6010D	Cobalt	7.25	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:33	
EPA 6010D	Copper	16.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:33	
EPA 6010D	Iron	22400	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:33	
EPA 6010D	Lead	20.6	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:09	
EPA 6010D	Manganese	1960	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:33	
EPA 6010D	Nickel	15.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:33	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:33	
EPA 6010D	Silver	< 0.50	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:33	
EPA 6010D	Zinc	61.8	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:09	
EPA 7471B	Mercury	0.077	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:36	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.49	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:22	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	81.1	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-30**

Sampled: 29-Aug-18 14:30

SVL Sample ID: **X8H0769-10 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	19.8	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 10:58	
EPA 6010D	Arsenic	204	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:36	
EPA 6010D	Beryllium	1.56	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:36	
EPA 6010D	Cadmium	25.1	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:36	
EPA 6010D	Chromium	17.3	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:36	
EPA 6010D	Cobalt	18.7	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:36	
EPA 6010D	Copper	712	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:36	
EPA 6010D	Iron	34900	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:36	M3
EPA 6010D	Lead	3030	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:12	M2
EPA 6010D	Manganese	5390	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:36	M3
EPA 6010D	Nickel	25.5	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:36	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:36	
EPA 6010D	Silver	19.3	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:36	
EPA 6010D	Zinc	9050	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:12	M2
EPA 7471B	Mercury	0.187	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:38	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	1.42	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:24	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	33.8	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-31**

Sampled: 29-Aug-18 15:30

SVL Sample ID: **X8H0769-11 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	14.6	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:08	
EPA 6010D	Arsenic	250	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:45	
EPA 6010D	Beryllium	0.67	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:45	
EPA 6010D	Cadmium	1.32	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:45	
EPA 6010D	Chromium	10.7	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:45	
EPA 6010D	Cobalt	5.56	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:45	
EPA 6010D	Copper	26.6	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:45	
EPA 6010D	Iron	18400	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:45	
EPA 6010D	Lead	108	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:21	
EPA 6010D	Manganese	948	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:45	
EPA 6010D	Nickel	13.4	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:45	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:45	
EPA 6010D	Silver	2.91	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:45	
EPA 6010D	Zinc	538	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:21	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:43	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.18	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:32	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	94.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-32**SVL Sample ID: **X8H0769-12 (Sediment)**

Sample Report Page 1 of 1

Sampled: 29-Aug-18 15:30
Received: 31-Aug-18
Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	16.4	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:12	
EPA 6010D	Arsenic	210	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:48	
EPA 6010D	Beryllium	0.57	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:48	
EPA 6010D	Cadmium	1.10	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:48	
EPA 6010D	Chromium	8.87	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:48	
EPA 6010D	Cobalt	5.81	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:48	
EPA 6010D	Copper	26.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:48	
EPA 6010D	Iron	16700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:48	
EPA 6010D	Lead	130	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:24	
EPA 6010D	Manganese	1360	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:48	
EPA 6010D	Nickel	12.3	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:48	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:48	
EPA 6010D	Silver	3.66	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:48	
EPA 6010D	Zinc	559	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:24	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:45	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.18	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:34	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	94.1	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-33**

Sampled: 30-Aug-18 09:15

SVL Sample ID: **X8H0769-13 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	15.1	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:15	
EPA 6010D	Arsenic	311	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:52	
EPA 6010D	Beryllium	0.40	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:52	
EPA 6010D	Cadmium	0.28	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:52	
EPA 6010D	Chromium	3.75	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:52	
EPA 6010D	Cobalt	6.49	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:52	
EPA 6010D	Copper	32.2	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:52	
EPA 6010D	Iron	11300	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:52	
EPA 6010D	Lead	77.0	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:28	
EPA 6010D	Manganese	1130	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:52	
EPA 6010D	Nickel	8.15	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:52	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:52	
EPA 6010D	Silver	1.71	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:52	
EPA 6010D	Zinc	298	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:28	
EPA 7471B	Mercury	0.037	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:50	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.31	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:36	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	82.7	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-34**

Sampled: 30-Aug-18 10:00

SVL Sample ID: **X8H0769-14 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods										
EPA 6010D	Antimony	8.0	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:19	
EPA 6010D	Arsenic	418	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:55	
EPA 6010D	Beryllium	0.55	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:55	
EPA 6010D	Cadmium	< 0.20	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:55	
EPA 6010D	Chromium	6.31	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:55	
EPA 6010D	Cobalt	5.53	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:55	
EPA 6010D	Copper	38.3	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:55	
EPA 6010D	Iron	15700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:55	
EPA 6010D	Lead	104	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:31	
EPA 6010D	Manganese	507	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:55	
EPA 6010D	Nickel	10.7	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:55	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:55	
EPA 6010D	Silver	1.64	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:55	
EPA 6010D	Zinc	168	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:31	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:52	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.33	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:38	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	79.5	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



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Kellogg, ID 83837-0929

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Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Client Sample ID: **GC-SD-35**

Sampled: 30-Aug-18 13:00

SVL Sample ID: **X8H0769-15 (Sediment)**

Received: 31-Aug-18

Sample Report Page 1 of 1

Sampled By: GM

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	5.8	mg/kg dry	2.0	0.8		X836068	DT	09/14/18 11:22	
EPA 6010D	Arsenic	73.7	mg/kg dry	2.5	0.6		X836067	DT	09/17/18 15:58	
EPA 6010D	Beryllium	0.58	mg/kg dry	0.20	0.08		X836067	DT	09/17/18 15:58	
EPA 6010D	Cadmium	0.27	mg/kg dry	0.20	0.06		X836067	DT	09/17/18 15:58	
EPA 6010D	Chromium	15.1	mg/kg dry	0.60	0.20		X836067	DT	09/17/18 15:58	
EPA 6010D	Cobalt	6.39	mg/kg dry	0.60	0.07		X836067	DT	09/17/18 15:58	
EPA 6010D	Copper	15.1	mg/kg dry	1.00	0.16		X836067	DT	09/17/18 15:58	
EPA 6010D	Iron	18700	mg/kg dry	10.0	6.6		X836067	DT	09/17/18 15:58	
EPA 6010D	Lead	49.5	mg/kg dry	0.8	0.3		X836067	DT	09/18/18 14:34	
EPA 6010D	Manganese	430	mg/kg dry	0.80	0.28		X836067	DT	09/17/18 15:58	
EPA 6010D	Nickel	15.8	mg/kg dry	1.00	0.24		X836067	DT	09/17/18 15:58	
EPA 6010D	Selenium	< 4.0	mg/kg dry	4.0	1.1		X836067	DT	09/17/18 15:58	
EPA 6010D	Silver	1.47	mg/kg dry	0.50	0.20		X836067	DT	09/17/18 15:58	
EPA 6010D	Zinc	214	mg/kg dry	1.0	0.3		X836067	DT	09/18/18 14:34	
EPA 7471B	Mercury	< 0.033	mg/kg dry	0.033	0.011		X836192	DPW	09/11/18 14:54	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	0.12	mg/kg dry	0.10	0.05		X836035	APH	09/07/18 16:40	
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Percent Solids / Percent Moisture

Percent Solids	% Solids	75.6	%	0.1			X837013	JAA	09/11/18 11:50	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

Dianne Gardner
Project Manager



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: **X8H0769**
Reported: 08-Nov-18 16:28

Quality Control - BLANK Data

Method	Analyte	Units	Result	MDL	MRL	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods								
EPA 6010D	Antimony	mg/kg	<2.0	0.8	2.0	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	<2.5	0.6	2.5	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	<0.20	0.08	0.20	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	<0.20	0.06	0.20	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	<0.60	0.20	0.60	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	<0.60	0.07	0.60	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	<1.00	0.16	1.00	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	<10.0	6.6	10.0	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	<0.8	0.3	0.8	X836067	18-Sep-18	
EPA 6010D	Manganese	mg/kg	<0.80	0.28	0.80	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	<1.00	0.24	1.00	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	<4.0	1.1	4.0	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	<0.50	0.20	0.50	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	<1.0	0.3	1.0	X836067	18-Sep-18	
EPA 7471B	Mercury	mg/kg	<0.033	0.011	0.033	X836192	11-Sep-18	
Classical Chemistry Parameters								
SW846 9012B	Cyanide (total)	mg/kg	<0.10	0.05	0.10	X836035	07-Sep-18	

Quality Control - LABORATORY CONTROL SAMPLE Data

Method	Analyte	Units	LCS Result	LCS True	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
Metals (Total) by EPA 6000/7000 Methods									
EPA 6010D	Antimony	mg/kg	103	100	103	80 - 120	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	102	100	102	80 - 120	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	109	100	109	80 - 120	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	98.0	100	98.0	80 - 120	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	109	100	109	80 - 120	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	101	100	101	80 - 120	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	103	100	103	80 - 120	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	987	1000	98.7	80 - 120	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	101	100	101	80 - 120	X836067	18-Sep-18	
EPA 6010D	Manganese	mg/kg	105	100	105	80 - 120	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	98.0	100	98.0	80 - 120	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	96.2	100	96.2	80 - 120	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	5.39	5.00	108	80 - 120	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	98.4	100	98.4	80 - 120	X836067	18-Sep-18	
EPA 7471B	Mercury	mg/kg	0.858	0.833	103	80 - 120	X836192	11-Sep-18	
Classical Chemistry Parameters									
SW846 9012B	Cyanide (total)	mg/L	1.20	1.09	110	80 - 120	X836035	07-Sep-18	D2



Alta Science and Engineering - Kellogg
108 W. Idaho Street
Kellogg, ID 83837

Project Name: Gold Creek 2018
Work Order: X8H0769
Reported: 08-Nov-18 16:28

Quality Control - DUPLICATE Data

Method	Analyte	Units	Duplicate Result	Sample Result	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Percent Solids / Percent Moisture

Percent Solids	% Solids	%	34.3	33.8	1.7	20	X837013	11-Sep-18	
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Quality Control - MATRIX SPIKE Data

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Recovery	Acceptance Limits	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	311	19.8	296	98.4	75 - 125	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	501	204	296	100	75 - 125	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	311	1.56	296	104	75 - 125	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	308	25.1	296	95.5	75 - 125	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	324	17.3	296	104	75 - 125	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	307	18.7	296	97.3	75 - 125	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	977	712	296	89.7	75 - 125	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	35300	34900	2960	0.30R>S	75 - 125	X836067	17-Sep-18	M3
EPA 6010D	Lead	mg/kg	3170	3030	296	0.30R>S	75 - 125	X836067	18-Sep-18	M2
EPA 6010D	Manganese	mg/kg	5540	5390	296	0.30R>S	75 - 125	X836067	17-Sep-18	M3
EPA 6010D	Nickel	mg/kg	311	25.5	296	96.3	75 - 125	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	286	<4.0	296	95.5	75 - 125	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	34.2	19.3	14.8	101	75 - 125	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	9100	9050	296	0.30R>S	75 - 125	X836067	18-Sep-18	M2
EPA 7471B	Mercury	mg/kg	1.17	0.187	0.988	99.1	75 - 125	X836192	11-Sep-18	
EPA 7471B	Mercury	mg/kg	0.463	<0.033	0.441	102	75 - 125	X836192	11-Sep-18	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	3.91	1.42	2.96	84.0	75 - 125	X836035	07-Sep-18	
SW846 9012B	Cyanide (total)	mg/kg	1.28	0.13	1.22	94.0	75 - 125	X836035	07-Sep-18	

Quality Control - MATRIX SPIKE DUPLICATE Data

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes
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Metals (Total) by EPA 6000/7000 Methods

EPA 6010D	Antimony	mg/kg	309	311	296	97.6	0.8	20	X836068	14-Sep-18	
EPA 6010D	Arsenic	mg/kg	520	501	296	107	3.8	20	X836067	17-Sep-18	
EPA 6010D	Beryllium	mg/kg	317	311	296	107	2.0	20	X836067	17-Sep-18	
EPA 6010D	Cadmium	mg/kg	311	308	296	96.5	0.9	20	X836067	17-Sep-18	
EPA 6010D	Chromium	mg/kg	333	324	296	107	2.7	20	X836067	17-Sep-18	
EPA 6010D	Cobalt	mg/kg	313	307	296	99.2	1.9	20	X836067	17-Sep-18	
EPA 6010D	Copper	mg/kg	1020	977	296	105	4.7	20	X836067	17-Sep-18	
EPA 6010D	Iron	mg/kg	37100	35300	2960	0.30R>S	4.9	20	X836067	17-Sep-18	M3
EPA 6010D	Iron	mg/kg	36400	35300	2960	0.30R>S	3.1	20	X836067	17-Sep-18	
EPA 6010D	Lead	mg/kg	2860	3170	296	0.30R>S	10.4	20	X836067	18-Sep-18	M2
EPA 6010D	Manganese	mg/kg	5770	5540	296	0.30R>S	4.1	20	X836067	17-Sep-18	M3
EPA 6010D	Manganese	mg/kg	5770	5540	296	0.30R>S	4.2	20	X836067	17-Sep-18	
EPA 6010D	Nickel	mg/kg	316	311	296	98.0	1.6	20	X836067	17-Sep-18	
EPA 6010D	Selenium	mg/kg	290	286	296	97.0	1.6	20	X836067	17-Sep-18	
EPA 6010D	Silver	mg/kg	36.6	34.2	14.8	117	6.6	20	X836067	17-Sep-18	
EPA 6010D	Zinc	mg/kg	8250	9100	296	0.30R>S	9.8	20	X836067	18-Sep-18	M2
EPA 7471B	Mercury	mg/kg	1.14	1.17	0.988	96.1	2.6	20	X836192	11-Sep-18	



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Quality Control - MATRIX SPIKE DUPLICATE Data				(Continued)								
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	% Rec.	RPD	RPD Limit	Batch ID	Analyzed	Notes	

Classical Chemistry Parameters

SW846 9012B	Cyanide (total)	mg/kg	3.79	3.91	2.96	80.0	3.1	20	X836035	07-Sep-18		
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Notes and Definitions

D2	Sample required dilution due to high concentration of target analyte.
M2	Matrix spike recovery was low, but the LCS recovery was acceptable.
M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The LCS was acceptable.
LCS	Laboratory Control Sample (Blank Spike)
RPD	Relative Percent Difference
UDL	A result is less than the detection limit
0.30R>S	% recovery not applicable; spike level is less than 30% of the sample concentration
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable
