

# **SILVER MOON MINE**

## **PRELIMINARY ASSESSMENT AND SITE INSPECTION REPORT**

Lemhi County  
State of Idaho



**Department of Environmental Quality**

June 2011

Submitted to:  
U. S. Environmental Protection Agency  
Region 10  
1200 Sixth Avenue  
Seattle, WA 98101

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STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

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C.L. "Butch" Otter, Governor  
Toni Hardesty, Director

June 20, 2011

Mr. Dean C. Morgan  
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Region 4/Salmon-Challis National Forest  
1206 S. Challis Street  
Salmon, ID 83467

Subject: Silver Moon Mine Preliminary Assessment, Lemhi County, Idaho

Dear Mr. Morgan:

The Idaho Department of Environmental Quality (DEQ) appreciates the review and comments that the USDA Forest Service (USFS) has provided on this document. As stated in the document, the assessment of the Silver Moon Mine was completed because it is located on private and public lands. DEQ was asked to complete assessments of several private properties within the historic mine site, and consequently evaluated potential sources for contaminated lands administered by the USFS.

Generally speaking, toxicological risks to human and ecological receptors are limited to dermal and inhalation exposure of recreational users and wildlife to metals in waste rock. From the one domestic well DEQ sampled, it appears metals are not very mobile in ground water down gradient from the Silver Moon Mine.

The background soils (sample SMBGSS1) exceeded Idaho's Initial Default Target Levels (IDTLs), which are human health risk based, for arsenic, chromium, lead, manganese, silver, and mercury. Soil sample SMWD1SS1, which was a composite sample from Waste Dump #1, exceeded the IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample also exceeded EPA's Human Health Screening Levels (HHSLs) for antimony, arsenic, manganese, selenium, and zinc. Soil sample SMWD1SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, silver, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

Soil sample UKADSS1 exceeded IDTLs for arsenic, cadmium, chromium, lead, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and zinc. Soil sample UKADSS1 exceeded the background sample by three times for arsenic, barium, lead, silver,

Mr. Dean C. Morgan  
Region 4/Salmon-Challis National Forest  
June 20, 2011  
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zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

Soil sample SMDSS1 exceeded IDTLs for antimony, arsenic, barium, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for antimony, arsenic, barium, manganese, and zinc. Soil sample SMDSS1 exceeded the background sample by three times for antimony, arsenic, barium, cadmium, lead, silver, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for cadmium, copper, lead, and zinc.

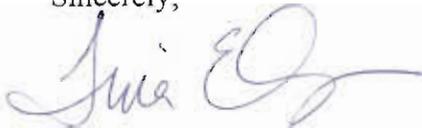
Soil sample SMWD6SS1 exceeded IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and iron. Soil sample SMWD6SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

DEQ appreciates that the USFS will placard the site with advisory signs and retain the site in their queue until federal funding will allow for remedial actions. Concentrations of contaminants in the soil samples, the high level of recreation use, and the close proximity to the cabins may warrant additional site investigation and risk management. DEQ is also recommending that a preliminary Hazard Ranking Score is generated for the site.

Determining remedial actions on mine openings is outside of the mission of DEQ. However, we feel obligated to identify known physical hazards to site owners or administrators. The Silver Moon Mine contains a number of open adits and one open shaft. Many of these are very dangerous and DEQ is recommending they are either closed or access is restricted.

Again, DEQ very much appreciates the long term coordination between the USFS and adjacent land owners. If we can be of additional service, please call me at (208) 373-0563.

Sincerely,



Tina Elayer  
Mine Waste Specialist

cc: Ken Marcy, U.S. Environmental Protection Agency  
Maggie Baker, USDA National Forest Service, Region IV  
Glen and Connie Embree  
Bruce and Suzette Horton  
Silver Moon Mine File

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## List of Acronyms

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amsl	above mean sea level
APA	Abbreviated Preliminary Assessment
BLM	Bureau of Land Management
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWA	Clean Water Act
DEQ	Idaho Department of Environmental Quality
EPA	United States Environmental Protection Agency
ESU	Ecologically Significant Unit
GIS	Geographic Information System
gpm	gallons per minute
HHSLs	Human Health Medium-Specific Screening Levels
HRS	Hazard Ranking Score
IDTLs	Initial Default Target Levels
MCL	maximum concentration limit
NAIP	National Agriculture Imagery Program
Nfd	National forest development
NPDES	National Pollution Discharge Elimination System
NOAA	National Oceanic and Atmospheric Administration
NRAP	No Remedial Action Planned
ORV	off road vehicle
PA	Preliminary Assessment
PPE	probable point of entry

ppm, mg/kg, mg/L	parts per million, milligrams per kilograms, milligrams per Liter
PWS	Public Water System
RCRA	Resource Conservation Recovery Act
RMP	Risk Management Plan
SI	Site Inspection
SVL	Silver Valley Laboratories, Inc.
TDL	Target Distance Limit
TMDL	Total Maximum Daily Load
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service

## Section 1. Introduction

---

This document presents the results of the Preliminary Assessment (PA) and Site Inspection (SI) for the Silver Moon Mine site. The Idaho Department of Environmental Quality (DEQ) is contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of preliminary assessments at various mines on private or state lands. This mine is located on federally administered patented lands.

The Silver Moon Mine is located in Silver Moon Gulch in the Lemhi River Valley on mixed ownership lands administered by the USDA Forest Service (USFS), USDI Bureau of Land Management (BLM), and numerous private individuals or families. Silver Moon Mine is also in close proximity to the private land which includes the Hecla, Isabel, and Calumet patented claims mill sites where DEQ performed Abbreviated Preliminary Assessments (APAs). Access was granted to several home sites on the Hecla, Isabel, and Calumet claims and observations were made of adjacent properties and conditions. DEQ recommended a designation of No Remedial Actions Planned (NRAP) and no further investigations of the mill sites are necessary. The APAs for the Hecla, Isabel, and Calumet patented claims are included in this report as Appendix A.

As a result of the recent history and the requests for inspections by the current owners, DEQ completed field inspections and site assessment work in the summer of 2010.

DEQ often receives complaints or information about sites that may be contaminated with hazardous waste. These sites include abandoned mines, rural airfields that have served as bases for aerial spraying, old landfills, illegal dumps, and abandoned industrial facilities that have known or suspected releases.

In February 2002, DEQ initiated a Preliminary Assessment Program to evaluate and prioritize assessment of such 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. Priority is also given to mining districts where groups or clusters of sites can be assessed on a watershed basis.

For additional information about the Preliminary Assessment Program, see the following:

[http://www.deq.idaho.gov/waste/prog\\_issues/mining/pa\\_program.cfm](http://www.deq.idaho.gov/waste/prog_issues/mining/pa_program.cfm)

DEQ visited the Silver Moon Mine claims twice. The first visit was on May 12, 2010. There was still a large amount of snow on the ground at the time, so this was considered a reconnaissance visit. The second visit was a full SI on July 20, 2010. DEQ would like to thank Glen and Connie Embree, who provided a large amount of historical, geologic and recent use information on the site and also accompanied DEQ while we conducted the PA/SI work. DEQ would also like to thank Bruce and Suzette Horton who allowed collection of a water sample from their well. DEQ did not purposely or knowingly trespass on any private holdings.

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## Section 2. Ownership

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DEQ does not warrant the ownership research or location of property boundaries contained in this report. The information regarding ownership and property boundaries was obtained from the Lemhi County tax assessor's office in Salmon, Idaho. The poor juxtaposition of the claims' boundaries observed in this report's figures are plotted according to the Lemhi County tax assessor's database and are indicative of errors that may exist in the recorded surveys of the properties.

During the site assessments, DEQ used references from several different documents including U.S. Geological Survey (USGS) maps, county tax rolls, and historical reports that had numerous spellings for claim names, town sites, and/or geographic features. DEQ's use of the different spellings is to remain in context with the reference used for each given section of text or written in this report.

Within the following ownership descriptions the "**Partial Determination**" is meant to convey a very brief summary of DEQ's assessment of individual claims and parcels relative to human health and ecological risk factors associated with toxicological responses to mine wastes. A determination of No Remedial Action Planned or "**NRAP**" means based on current conditions at the site, DEQ did not find any significant evidence that would indicate the potential of adverse toxicological effects to human or ecological receptors on the parcel of land and, therefore no additional work is necessary to manage those potential effects. This determination says nothing about risks associated with physical hazards such as open adits, open shafts, high walls, or unstable ground. Partial Determination of "**Calculate HRS**" indicates DEQ has determined there is sufficient evidence to warrant calculation of a "**Hazard Ranking Score**" (HRS) by EPA's contractors. It also indicates DEQ has made significant conclusions and recommendations that additional site assessment and/or remedial actions are necessary to prevent adverse effects to human or ecological receptors. These conclusions and recommendations are contained in the final section of this report.

As of the date of this report, there are no unpatented mining claims located on lands administered by either the USFS in the vicinity of the Silver Moon Mine. Unpatented mining claims are owned by private parties and can be located on lands administered by either the USFS or other federal agencies. Although the mining claims are located on lands administered by federal agencies, the BLM administers the mining claim location and recordation process. The status of unpatented mining claims can change annually and the unpatented mining claim disposition is current as of the date of inquiry.

**Silver Moon Mine Ownership**

Mine Site	Owner(s) or Administrators	Claims	Township	Range	Section	Latitude (N)	Longitude (W)	Partial Determination
Silver Moon Mine	USDA Forest Service Salmon/Challis National Forest 1206 S. Challis Street Salmon, ID 83467		13N	27E	29	44.43295°	-113.26466°	Calculate HRS score, needs additional characterization and risk management.
	<p>John W. Fortner 2040 Midway Ammon, ID 83406 <b>Parcel No:</b> RP99000020005H</p> <p>Chuck &amp; Carol Curran c/o Jose Gonzales 2329 Belmont Avenue Idaho Falls, ID 83404 <b>Parcel No:</b> RP99000020005I</p> <p>Bruce and Suzette Horton Revocable Living Trust 220 East Shelley Street Idaho Falls, ID 83402 <b>Parcel No:</b> RP99000020005J</p> <p>Unknown <b>Parcel No:</b> RP99000020005K</p>	Hecla Patented Claim	13N	27E	21	44.4347°	-113.2608°	NRAP

Mine Site	Owner(s)	Claims	Township	Range	Section	Latitude (N)	Longitude (W)	Partial Determination
	<p>Paul Simmons 1066 Yellowstone Avenue Apt. 25 Pocatello, ID 83201 <b>Parcel No:</b> RP99000020005S</p> <p>Larry Simmons 8523 N. 25<sup>th</sup> E. Idaho Falls, ID 83401 <b>Parcel No:</b> RP99000020005T &amp; <b>Parcel No:</b> RP99000020005U</p> <p>Glenn &amp; Connie Embree Constance Revocable Family Trust 485 N. 4154 E. Rigby, ID 83442 <b>Parcel No:</b> RP99000020005V</p> <p>Ann Marie Harmon 250 Yale Avenue Rexburg, ID 83440 <b>Parcel No:</b> RP99000020005W</p>	Isabel Patented Claim	13N	27 <sup>E</sup>	21	44.4356°	-113.2576°	NRAP
	<p>Steve &amp; Jan Nickels 11620 N. Faith Lane Pocatello, ID 83202 <b>Parcel No:</b> RP99000020005N</p> <p>Ronald Mizia 240 Beacon Drive Idaho Falls, ID 83402 <b>Parcel No:</b> RP99000020005O</p> <p>Larry &amp; Patsy Lounsbury c/o Juis Soria 334 N. 4100 E. Rigby, ID 83442 <b>Parcel No:</b> RP9900002000PQ</p> <p>Gary Beardall 477 E. 14th Street Idaho Falls, ID 833404 <b>Parcel No:</b> RP99000020005Q</p> <p>Doug &amp; Robert Morrow 240 N. Bellin Road #17 Idaho Falls, ID 83402 <b>Parcel No:</b> RP99000020005R</p>	Calumet Patented Claim	13N	27E	21	44.4400°	-113.2588 °	NRAP

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## **Section 3. Overview and Location**

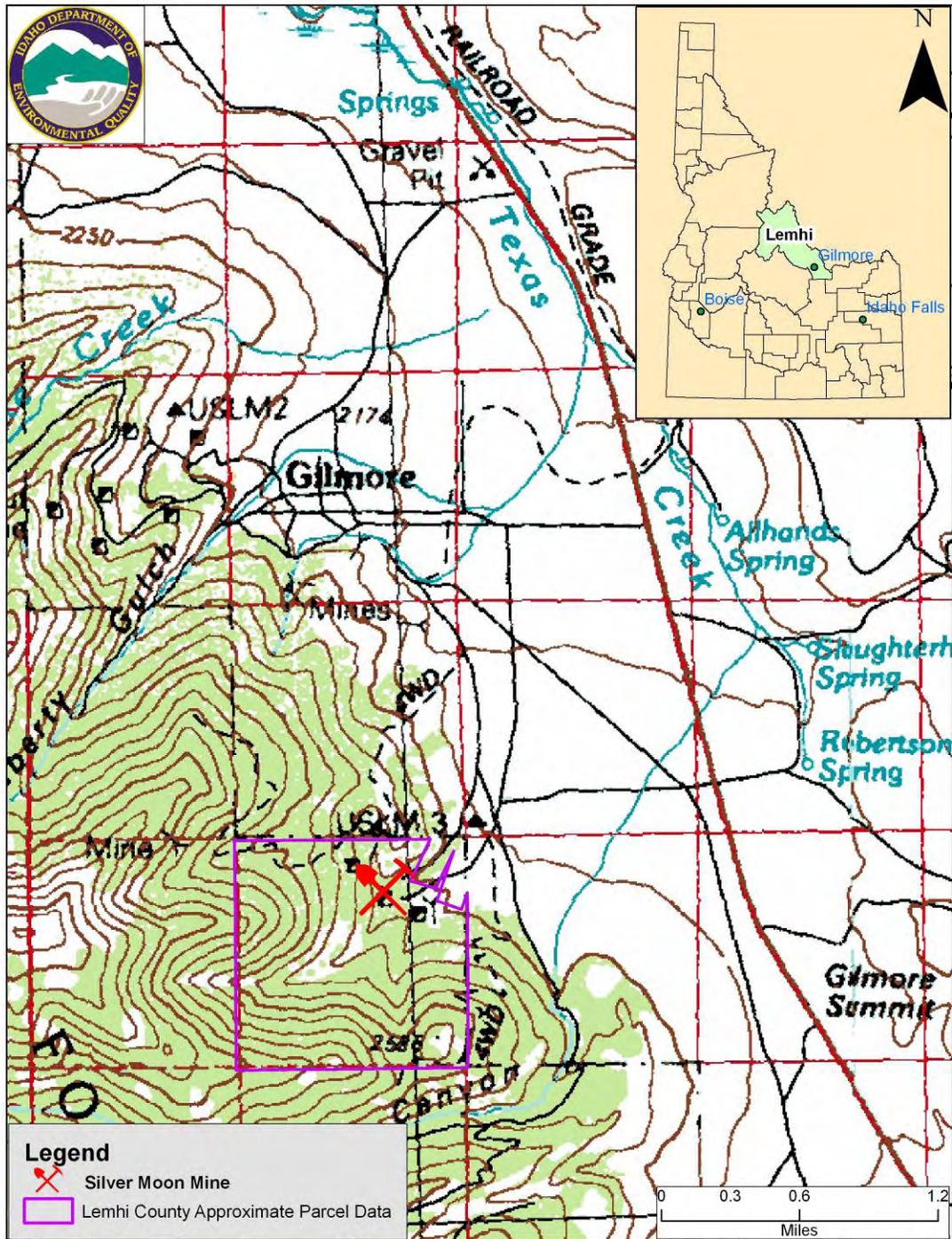
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### **3.1 Location**

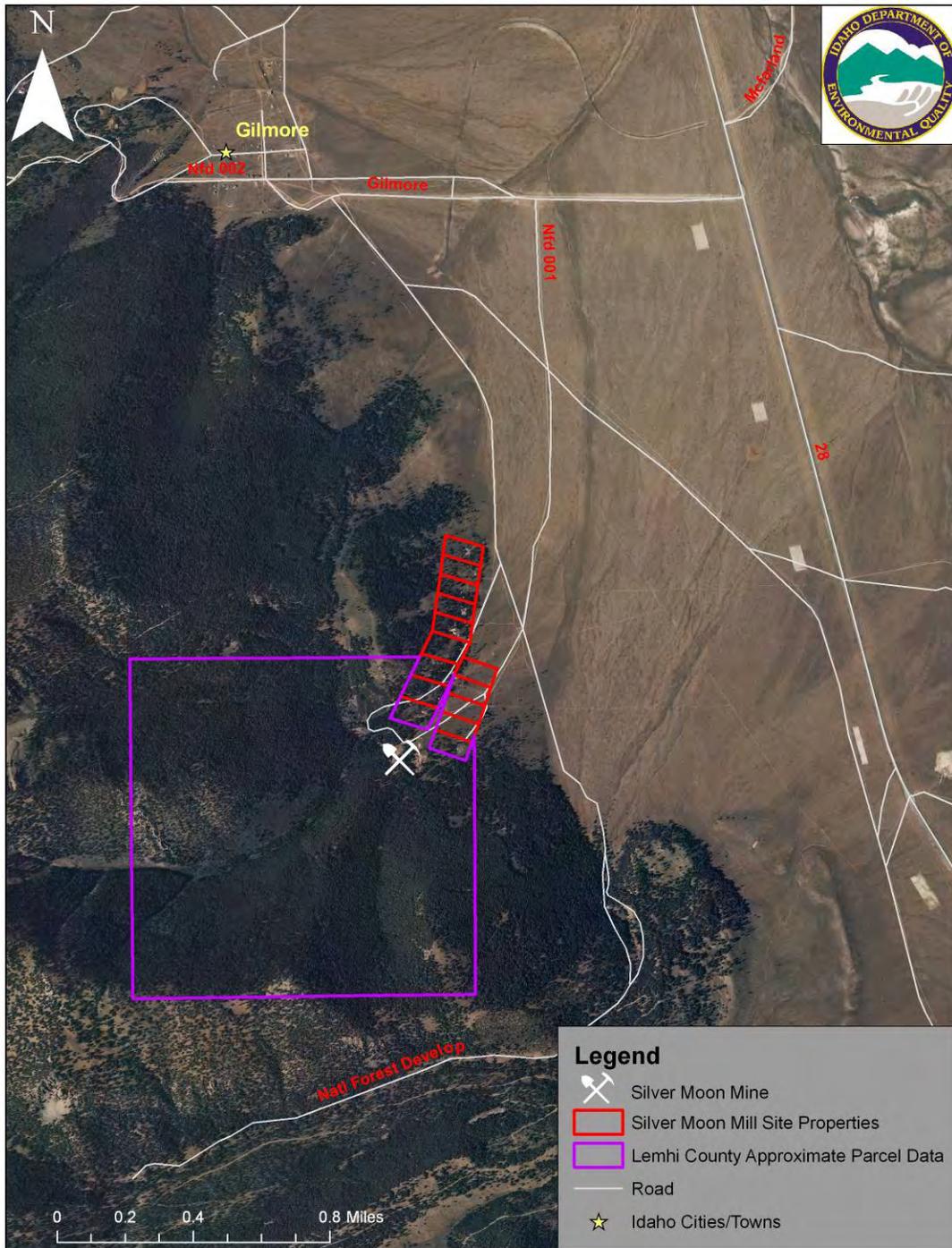
The Silver Moon Mine is located at an altitude of 7,500 feet amsl in Silver Moon Gulch, approximately three miles south of Gilmore, Idaho, in Section 29 of Township 13 North, Range 27 East of the Boise Meridian, at Latitude 44.43295° N, Longitude -113.26466° W. The mine site lies within surrounding land uses (urban and agriculture). The Silver Moon Mine location is illustrated in Figures 1 and 2.

### **3.2 Directions to the Mine**

The most direct route to the Silver Moon Mine is from Idaho Falls, traveling on Highway 28 for approximately 100 miles to Gilmore Pass (elevation 7,186 feet amsl). Approximately 2.5 miles past the summit turn west onto Gilmore Road and travel approximately 0.6 miles to National forest development (Nfd) road 001. Head south on Nfd 001 for approximately two miles. The road passes by some cabins and then heads west into Silver Moon Gulch where there are mine camp buildings. The road from Gilmore is not maintained. The road is in fair condition but requires high clearance vehicles to access the mine site.



**Figure 1. Topographical Overview Map of the Silver Moon Mine within the BLM Parcel Boundary in Lemhi County, Idaho (Map Source: USGS 24k)**



**Figure 2. Aerial Overview Map of the Silver Moon Mine within the BLM Parcel Boundary in Lemhi County, Idaho (Map Source: National Agricultural Imagery Program (NAIP) 2004)**

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## Section 4. Mine Site History

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The following historical production information was taken from a review prepared for Universal Exploration by Steven C. Hansen, PhD in June 1984. The document was provided by Dr. Glen Embree, a local land owner.

### *Production, Lease Activity*

#### *A. 1880-1913*

*The first recorded information on the claims is found in U.S.G.S. Bulletin 528. This government document states that "the vein is said to have produced about 80,000 ounces of silver during its period of activity". This would have referred (sic) to the years previous to 1913. One ore body mined at this time was a bedding plane replacement ore body located on the northwest side of the original claims. This area merits more exploration for similar ore bodies.*

#### *B. 1935-1941 Denton and Evans*

*This period of activity is not well documented. They are said to have produced (sic) \$90,000.00 of ore from one high grade pocket. The 140 foot mining level was established during this period and extensive other mining was done. A small amount of high grade ore was taken form (sic) this pocket in 1970.*

#### *C. 1962-1968 Silver Moon Mining Co.*

*The Silver Moon Mining Company obtained a lease from Mr. Walter Denton and began exploration of the claims. They drove an incline to the 140 foot level and opened the workings for exploration and development. No ore was shipped by the company but ore was stockpiled during this period.*

#### *D. 1969-1971 Universal Exploration-Universal Resources*

*Silver Moon Mining Company became part of Universal Exploration by stock exchange and the mine was leased to Universal Resources. Many of the people in Universal Exploration were also part of Universal Resources.*

*The high grade ore left from the 1935-1941 period and the stockpiled ore were shipped during this period of activity. Two shipments are documented by settlement records from ASRSCO.*

*The smaller shipment of 1.6 tons assayed at 1760.4 ounces silver per ton. The larger shipment of 19.5 tons assayed 58.8 ounces of silver per ton.*

#### *E. 1971-1978 T. and B. Mining Company*

*During this period of activity numerous air rotary holes were drilled. A new two man vertical shaft was mined to the 140 foot level and over 150 tons of ore were stockpiled. Drift work was extended on the 140 foot level to cut the veins identified by the drilling. One shipment of 23 tons was made to ASRSCO. This shipment assayed 26.25 ounces of silver per ton.*

#### *F. 1978-1979 Brown and Wilcox*

*This lease was marked by discovery (sic) of surface exposures of new mineralization in the northwest part of the claims. Drilling and open cut work did not prove enough ore to support full scale mining. Approximately 8 tons of ore were shipped from scavenger work in the 1880 tunnels and other areas.*

#### *G. 1979-1983 R. and D. Minerals*

*R. and D. Minerals was allowed by Universal Exploration to ship the ore stockpiled at the mine... The total tonnage was 189.7 and the silver averaged over 13 ounces per ton.*

*R. and D. began an incline ramp to reach the 140 foot level using modern rubber tired equipment. This ramp is approximately 117 feet from the projected goal. Completion of this ramp would allow a more economic mining operation.*

*Boyer, in the R. and D. report divided the principal mining level into an eastern ore body and a western ore body. He lists total proven ore value at \$749,302.00, probable ore value at \$3,162,640.00, and two possible ore values at \$66,902,000.00 and  $\$1.19 \times 10^8$ . The two values given to possible ore were obtained using two different types of calculations. The measurements which he used are not included in his report so no evaluation can be given for his calculations. One specific area identified by Boyer as the 110 foot level can only be found in the western ore body. Boyer lists on this paper 9 assays and sample widths. He then calculates 19,750 also stated that no further (sic) work was done on the Silver Moon ore due to the lack of funds. It was his desire to try flotation tests on the ore to separate (sic) the Silver and Manganese. He felt a concentrate running 30 ounces of Silver could be obtained with little difficulty. He also said that one ore body at the mine assayed 10 ounces of Silver and contained over 8000 tons of ore. He felt the Silver Moon could be a good producing mine.*

#### *Conclusions*

*The Silver Moon Claims have produced over 700 tons of ore rich in Silver since 1935. The geology and production history infer future production is likely. A mill on site would allow mining of lower grade ore. All mining in the past has been done above the water table in highly altered rock. Enrichment at the water table is possible. Deeper and more intensive exploration is recommended along with development of the known ore bodies.*

## Section 5. Climatology

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Climate information provided in this section is based on a climatological summary for Leadore, Idaho which was obtained from the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center. The climatological data collected at the Leadore station (elevation 6,000 amsl) is for the year 2010. Each site for which this data is used is subject to more localized meteorological conditions that result from difference in elevation, orientation of slopes in watershed, vegetation, and other factors.

The region is characterized by short cool dry summers and very cold winters. The total annual precipitation measured at the Leadore station averages 16.2 inches. The majority of precipitation occurs as snow. Total annual snowfall averages 78.2 inches with most snowfall occurring in December and January. The driest months are July, August, and September.

Annual precipitation is seven inches on the valley floor and increases to over 42 inches on parts of the Lemhi Range (Donato, 1998, p. 3).

No period of record for temperatures was available at the Leadore station, the closest area containing temperature records is at the Idaho Falls Regional Airport. Based on records from February 1998 to December 2008, the average annual temperature measured by the Idaho Falls Regional Airport is 44°F. The lowest temperature recorded for this period was -21°F in 1998. The highest temperature for this period of record was 101°F in 2002. January is the coldest month with an average temperature of 20°F. July is the hottest month with an average temperature of 69.2°F.

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## Section 6. General Geology

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The following description, taken from Joseph B. Umpleby's 1913 USGS Bulletin *Geology and Ore Deposits of Lemhi County, Idaho* illustrates the geology of the area:

*A great succession of sedimentary rocks, striking north and south and for the most part dipping about 45° E., occupies most of the district. Cambrian, Ordovician, Silurian (?), Devonian (?), and Mississippian formations are present. The basal series is made up of clear-white, fine-grained quartzite and is at least 2,000 feet thick. It is well exposed above Meadow Lake. Conformably above it is a series of massive blue dolomitic limestones about 500 feet thick, which is assigned to the Ordovician. Then follows 300 feet of massive white dolomitic limestone of Silurian (?) age. The strata next above comprise about 2,000 feet of thin-bedded blue and white dolomitic limestones, with here and there a siliceous band. This series is tentatively considered Devonian. Its upper contact was not seen, although it is presumably conformable with the Mississippian. The latter formation is exposed along the lower slopes of the range south of Long Canyon.*

*The known deposits of the Texas district occur in comparatively narrow north-south belt bounded on the east by Miocene lake beds of the Lemhi Valley and on the west by the quartzite that forms the crest of the range and thence dips eastward, disappearing beneath the limestones which enclose the veins.*

*The mineral locations are mainly along the walls of valleys which cut back into the otherwise regular mountain face, thus exposing the lodes. The mines at Gilmore are situated in such a valley. The Pittsburgh-Idaho mine appears in the south side of this depression near its head, and the Latest Out vein crosses its steep upper end. Several claims, not now operated but showing strong mineralization in places, are situated in Silver Moon and Liberty gulches south of Gilmore, and in Texas and Ulich gulches to the north.*

(Umpleby 1913, p. 92-94)

Umpleby provided a description of the Silver Moon vein:

*In Silver Moon Gulch most of the deposits strike north and south with the limestone but dip west, almost at right angles to the dip of the latter. In Silver Moon Gulch most of the deposits strike north and south with the limestone but dip west, almost at right angles to the dip of the latter. The Silver Moon vein is an exception in that it lies with the bedding of the inclosing formation. This vein differs also from the others in being predominately a silver instead of a lead deposit. The Silver Moon ore body, as exposed in the tunnel level, is in the form of a lens about 50 feet long and 30 inches in maximum thickness, feathering out to the north and south. The vein is said to have produced about 80,000 ounces of silver during its period of activity, 20 or more years ago*

(Umpleby 1913, p. 108)

## 6.1 Structure

Umpleby noted the following in regards to the general structure of the rocks in the region:

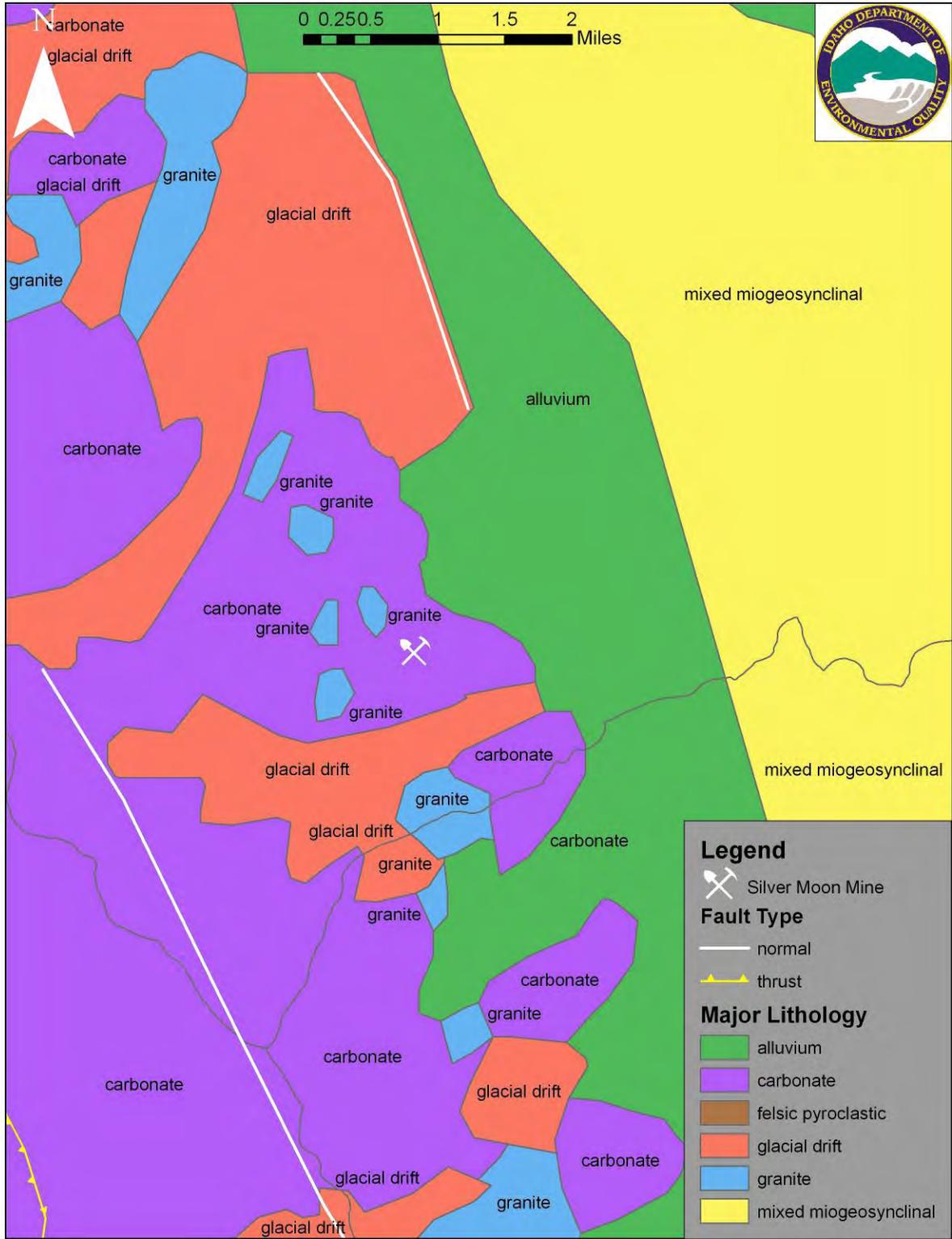
*In general the lodes strike a few degrees east of north and dip west at angles varying widely but usually of more than 45°. Thus the course of the veins is parallel to the strike of the formations although their dip is generally opposite and steeper. This relation suggests that the fissures which the ores follow were formed when the rocks were folded into their present attitude, for it is apparent that fissures with dip toward the core of an uplift would result from the upbending of a great series of rocks with resistant quartzite at the base and inelastic limestone above.*

*Intersecting the veins at right angles are fissures, some of which are opened and unmineralized; others, though seldom mineralized far from the north-south fissures which seem to have carried the solutions, bear a definite relation to ore shots.*

*Although the deposits are but rarely offset by faults (all small), slickensides and crushing within the ore are common, implying that movement since the ore deposition has largely followed the original lines of weakness. The faults which cut the veins follow the beds in such a way as to indicate settling toward Lemhi Valley of successively overlying strata...The ore deposits, although in some places extending out along bedding planes and in others abruptly evading some rock not as susceptible to dissolution as its neighbor, are on the whole to be considered as tabular bodies and classed as veins.*

(Umpleby, 1913, pp. 94-95)

Figure 3 shows the major lithology of the Silver Moon Mine and surrounding area.



**Figure 3. Major Lithology of the Silver Moon Mine and Surrounding Area (Map Source: Idaho DEQ GIS ArcSDE 9.3.1 Geodatabase)**

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## Section 7. Current and Potential Future Land Uses

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### 7.1 Current Land Uses

Current land uses in the Silver Moon Gulch and adjacent tributary areas include seasonal housing and recreational activities such as biking, hiking, hunting, horseback riding, and off-road vehicle (ORV) touring. Cattle and sheep grazing are other current land uses in the area.

Public access to the Silver Moon Mine is unrestricted. There are many historical markers encouraging travelers to explore the mine sites in this historic mining district.



**Photo 1. Historical marker for the Gilmore mining area of the Texas Mining District (5/12/10)**

Silver Moon Gulch and the area just outside it in the Lemhi River Valley contain mixed ownership lands administered by the BLM, USFS and numerous private individuals or families.

A large portion of the Texas Gilmore area has been subdivided or is being subdivided and sold for recreational residential development.

Flyers (Figure 4) were available advertising lots for sale in Gilmore, Idaho. There is a real estate office set up at the Gilmore town site. The office was closed when DEQ performed the site assessment.

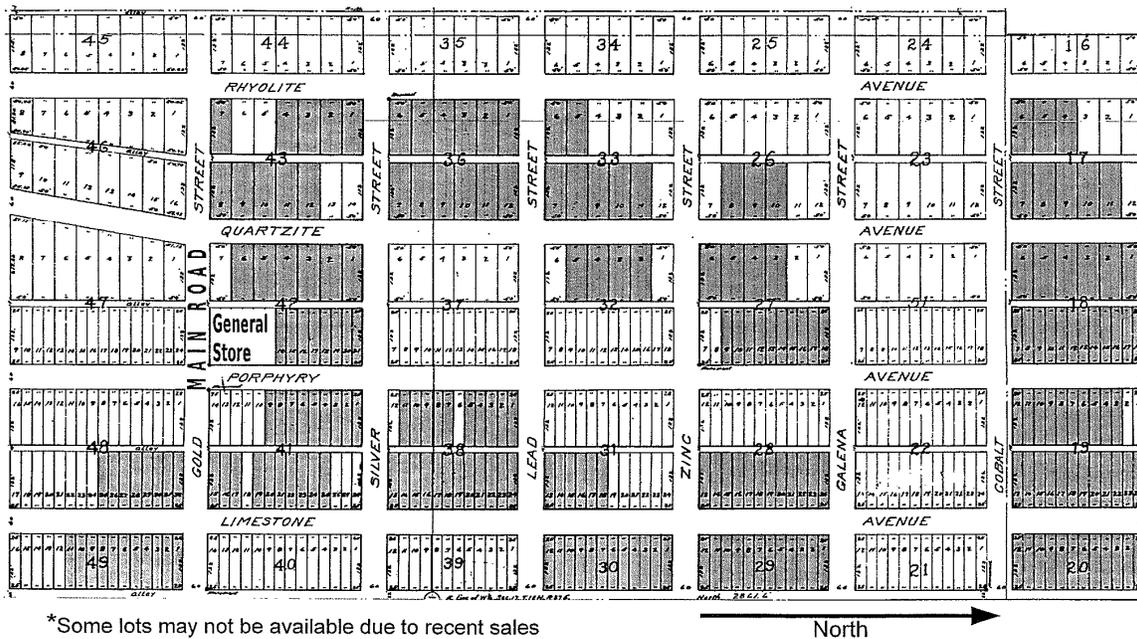
## Lots For Sale in Gilmore, Idaho

The shaded lots are available to purchase.\*  
 Pick your lot(s) and contact us to purchase. Small lots are 25' by 132'. Large lots are 50' by 132'.  
 Small lots are \$3500. Owner will finance with \$500 down and \$50 a month.  
 Large lots are \$7000. Owner will finance with \$1000 down and \$100 a month.

No Credit Checks.

Contact us for more information or to purchase.  
[www.meadowlakelandcompany.com](http://www.meadowlakelandcompany.com)

Justin Jay  
 801-609-8440 435-467-2047



**Figure 4. Flyer promoting lots for sale in Gilmore**

### 7.2 Future Land Uses

Current uses are likely to continue well into the future, and there remains potential for additional mineral developments. However, the local intentions to subdivide adjoining private properties are the most significant future beneficial use when completing this assessment of human health and ecological risks around the site.

## Section 8. Mine Site Conditions

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DEQ performed the site inspection for the Silver Moon Mine on July 20, 2010.

The investigation team noted four (possibly five) shafts. Only one shaft was observed to be open, which is located at Lat. 44.44097°N, Long. -113.26640°W. At least 11 adits were observed in the vicinity of the Silver Moon Gulch. There were also at least six waste dumps. Samples were collected from four of the waste dumps (SMWD1SS1, UKAD1SS1, SMDSS1, and SMWD6SS1).

Silver Moon Gulch was sampled for background analysis approximately 500 feet above the mine workings and development. The sample SMBGSS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.



**Photo 2. Silver Moon Gulch background soil sample (SMBGSS1) Lat. 44.43197°N, Long. -113.26500°W (7/20/10)**

The USFS conducted reclamation work in 2006 where they removed a couple of structures that were physical hazards (Russ Bjorklund, USFS 2011). There are a few buildings left in good condition on the site.



**Photo 3. Silver Moon Mine bunkhouse and office on USFS administered lands (5/12/10)**

The buildings were not boarded or fenced off. This may encourage people to enter the buildings. Signs may be warranted identifying the risks associated with entering old buildings.



**Photo 4. Historic mine office for the Silver Moon Mine (5/12/10)**



**Photo 5. Historic mine office for the Silver Moon Mine (5/12/10)**

Silver Moon Mine Adit #1 is located northwest from the historic mine office. This adit is open and poses a significant physical hazard.



**Photo 6. Dangerous open Silver Moon Mine Adit #1 Lat. 44.434300°N, Long. -113.26500°W (5/12/10)**

Because the waste dump associated with Adit #1 contains less than 100 cubic yards of waste rock dominated by dolomite with little evidence of sulfides, there may not be a significant human health or ecological risk due to heavy metals.

In the same area DEQ observed another opening and labeled as Silver Moon Mine Adit #2. This adit is open and poses a significant physical hazard.



**Photo 7. Silver Moon Mine Adit #2 Lat. 44.43417°N, Long. -113.26500°W  
(5/12/10)**

Again, because the waste dump contains less than 100 cubic yards of waste rock dominated by dolomite with little evidence of sulfides there may not be a significant human health or ecological risk due to heavy metals.

The third adit DEQ observed is located further northwest, past all of the major workings. Labeled as Silver Moon Mine Adit #3, this adit is open and poses a significant physical hazard.



**Photo 8. Silver Moon Mine Adit #3 Lat. 44.43385°N, Long. -113.26400°W  
(5/12/10)**

The waste dump associated with Adit #3 contains less than 1,000 cubic yards of waste rock dominated by dolomite with little evidence of sulfides. Based on its size and sample analysis of similar wastes it may constitute a human health or ecological risk due to heavy metals.

Two caved adits were observed west of the historic mine office and bunkhouse. These adits most likely contributed material to Waste Dump #1, which was characterized as part of Shaft #1.



**Photo 9. Caved adit(s) behind (west) Silver Moon Shaft #1 and headframe (7/20/10)**

This area appears to contain the majority of the Silver Moon mine workings. It also appears to have been reclaimed by the USFS. Waste Dump #1 is the largest of the Silver Moon Mine waste dumps and is located above the mine office and facilities. Waste Dump #1 contains country rock derived from driving Shaft #1 and at least two adits located west of Shaft #1. The waste dump covers approximately three acres and may contain over 10,000 cubic yards of material. A very minor amount of the material appears to be ore (approximately <100 yards). The rest of the material appears to have been generated while driving the shaft and tunnels from this location.



**Photo 10. Silver Moon Mine Waste Dump #1 is the site of the closed Shaft #1 (above) (7/20/10)**

Silver Moon Shaft #1 and headframe were backfilled and appear in stable condition. The USFS conducted reclamation work in 2006 where they blocked and filled a shaft (Russ Bjorklund, USFS 2011).



**Photo 11. Silver Moon Shaft #1 and headframe backfilled (7/20/10)**



**Photo 12. Silver Moon Shaft #1 and headframe (7/20/10)**

A composite waste sample (SMWD1SS1) was collected from seven surficial sites on Waste Dump #1. After removal of the first few inches of debris and organic matter, approximately one pound of sample was extracted from each of the sites and placed in a stainless steel bowl. The samples were mixed and then sieved through a 9 mesh screen. Approximately 30 percent passed the 9 mesh screen. The other 70 percent was typically +1/2-inch to three inches in size. However, there was a large volume or percentage of material on the dump 4 to 24 inches in size. Little or no massive sulfides were noted on the dump and the material was dominated by highly altered dolomite (marble).



**Photo 13. North half of Silver Moon Waste Dump #1 (7/20/10)**

Approximately 460 feet northwest from Silver Moon Shaft #1 and Waste Dump #1 there is a caved adit, or stope adjacent to Silver Moon Shaft #2.



**Photo 14. Caved adit or stope adjacent to Silver Moon Shaft #2 (7/20/10)**

Silver Moon Shaft #2 is collapsed and this is a very dangerous physical hazard and should be closed or access restricted.



**Photo 15. Collapsed Silver Moon Mine Shaft #2 Lat. 44.43370°N, Long. -113.26400°W (7/20/10)**

Numerous uses of the area were evident including residential development, off road vehicle (ORV) touring of historical mines, hunting, fishing, and camping.



**Photo 16. Remnants of hunting camp near Silver Moon Shaft #2 approximately 300 feet north of Silver Moon Shaft #1 (7/20/10)**

From the hunting camp area the road forks off and creates a spur heading northwest into Silver Moon Gulch.



**Photo 17. Open adit and waste dump in spur to Silver Moon Gulch on USFS administered lands Lat. 44.434600°N, Long. -113.26500°W (7/20/10)**

DEQ observed an open adit and a waste dump (UKWD1), which contained less than 500 cubic yards. This dump was sampled (UKAD1SS1). DEQ observed signs that people had dug into one of the waste dumps.



**Photo 18. Unknown open adit and dump, containing less than 500 cubic yards, was sampled UKAD1SS1 Lat. 44.43454°N Long. -113.26600°W (7/20/10)**

The area west of the main shafts and waste dumps in Silver Moon Gulch is riddled with exploration pits and adits. One feature of particular interest is the open adit in the spur to Silver Moon Gulch which shows evidence of cribbing to stabilize the entrance. This is a very dangerous physical hazard and should be closed.



**Photo 19. Open adit and waste dump in spur to Silver Moon Gulch on USFS administered lands Lat. 44.434600°N, Long. -113.26500°W (7/20/10)**

Due to the number of open dangerous adits and shafts found on the lands administered by the USFS, DEQ will recommend a mine opening inventory be completed by the USFS and, where appropriate, access is restricted since several openings were found immediately adjacent to heavily used ORV trails and dispersed campsites.



**Photo 20. Unnamed open adit on USFS administered lands Lat. 44.43957°N, Long. -113.26690°W (7/20/10)**



**Photo 21. Unnamed open adit on USFS administered lands Lat. 44.43957°N, Long. -113.26690°W (7/20/10)**

An open shaft was observed on USFS administered lands toward the end of the spur in Silver Moon Gulch. The shaft is located in close proximity to the road and this is a very dangerous physical hazard and should be closed or access restricted.



**Photo 22. Unnamed open shaft on USFS administered lands in spur to Silver Moon Gulch at Lat. 44.44097°N, Long. -113.26640°W (7/20/10)**

After traveling through the spur in Silver Moon Gulch, DEQ returned to the area referred to as the Silver Moon Decline. This area is located at the head of Silver Moon Gulch approximately 300 feet southeast from the Silver Moon Shaft #1.

The USFS closed and retrofitted the Silver Moon Mine Decline with a bat gate.



**Photo 23. The Silver Moon Mine Decline has been closed and retrofitted with a bat gate Lat. 44.43238°N, Long. -113.26100°W (5/12/10)**

The dump surrounding the Silver Moon Decline was very large (>5,000 cubic yards) and has been significantly altered by earth moving equipment. Therefore, DEQ was unable to accurately measure how much material was country rock extracted from the excavation or was ore material.

A composite sample was collected using a similar methodology as on Waste Dump #1. Seven random sites were selected, sampled, and composited for total metals analysis. Sample SMDSS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.

The last area of the Silver Moon Mine facilities that DEQ assessed was referred to as Silver Moon Waste Dump #6. The waste dump appeared to be very well vegetated. However, there were several areas where massive sulfides were apparent in heavily altered and stained dolomite. Waste sample SMWD6SS1 was collected at this location.



**Photo 24. Silver Moon Caved Adit #6 and Waste Dump #6 (7/20/10)**

Sample SMWD6SS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.

Although there are several deep domestic wells located in the area, access was only given to Mr. Bruce Horton's well. His property is located on the Hecla claim, immediately outside of Silver Moon Gulch and down gradient from the surface and underground mine workings. Mr. Horton's well is approximately 500 feet deep. Mr. Horton's well was sampled (SMGW1) on July 20, 2010. Initially the well was run for approximately 10 minutes to allow the pump and local storage to be purged. Sample containers and filtering towers were rinsed three times with well water to cleanse them of contaminants. A sample was collected and acidified for analysis of total metals concentrations. A second sample was collected and filtered through a 45  $\mu$  filter and pressurized tower, placed in a rinsed container, and acidified.



**Photo 25. Bruce Horton's cabin and site of domestic well sampling for ground water quality associated with Silver Moon Mine workings and mineralization Lat. 44.43499°N, Long. -113.26000°W (7/20/10)**

Field parameters were also collected at the well head using a calibrated Horiba and rinsed reservoir. Field parameters are:

<b>Parameters</b>	<b>Horton Well</b>
pH	7.75 std. units
Specific Conductance	0.298 $\mu$ siemen/cm
Turbidity	<10 NTUs
Dissolved Oxygen	10.63 mg/L
Temperature	11.5°C
Salinity	.01%

There was no available background source for ground water.

## Section 9. Sample Collection and Analysis

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### 9.1 Collection

A total of five soil samples were collected from the Silver Moon Mine. One filtered and one unfiltered water sample was collected from a land owner's well down gradient from the Silver Moon Mine.

A matrix identifying sample number, location, and sampling rationale is provided in Tables 1 through 3. Table 1 is the soil and waste sample analysis from the Silver Moon Mine. Table 2 provides information about wildlife and livestock risk management criteria for metals found in soils. Table 3 shows the water quality analysis from the land owner's well. Sample locations are indicated on Figure 5.

The soil samples were sieved prior to shipping to the laboratory. Material passing through the No. 9 mesh was retained for laboratory analysis. Soil sample equipment that came into direct contact with the samples was decontaminated with distilled water and a solution containing Alconox before the next sample was collected and screened.

The soil and ground water samples were submitted in accordance with EPA Chain-of-Custody procedures to SVL in Kellogg, Idaho for analysis of RCRA 8 Suite (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) + copper, iron, manganese, antimony, and zinc. A copy of the laboratory report is included as Appendix B.

A brief narrative of the sample locations and pertinent observations is included in the following section.

One background soil sample was collected from above the Silver Moon Mine site (SMBGSS1). This sample was brown to buff in color and was a mixture of silt and organic debris. The soil sample contained approximately 90 percent soil and less than 10 percent organics.

The remaining samples were collected from a land owner's domestic well and waste dumps on the site.

DEQ collected a filtered and an unfiltered ground water sample (SMGW1 (Total), SMGW1 (Dissolved)) from Bruce Horton's well which is approximately 500 feet deep. Initially the well was run for approximately 10 minutes to allow the pump and local storage to be purged. Sample containers and filtering towers were rinsed three times with well water to cleanse them of contaminants. A sample was collected and acidified for analysis of total metals concentrations. A second sample was collected and filtered through a 45  $\mu$  filter and pressurized tower, placed in a rinsed container, and acidified.

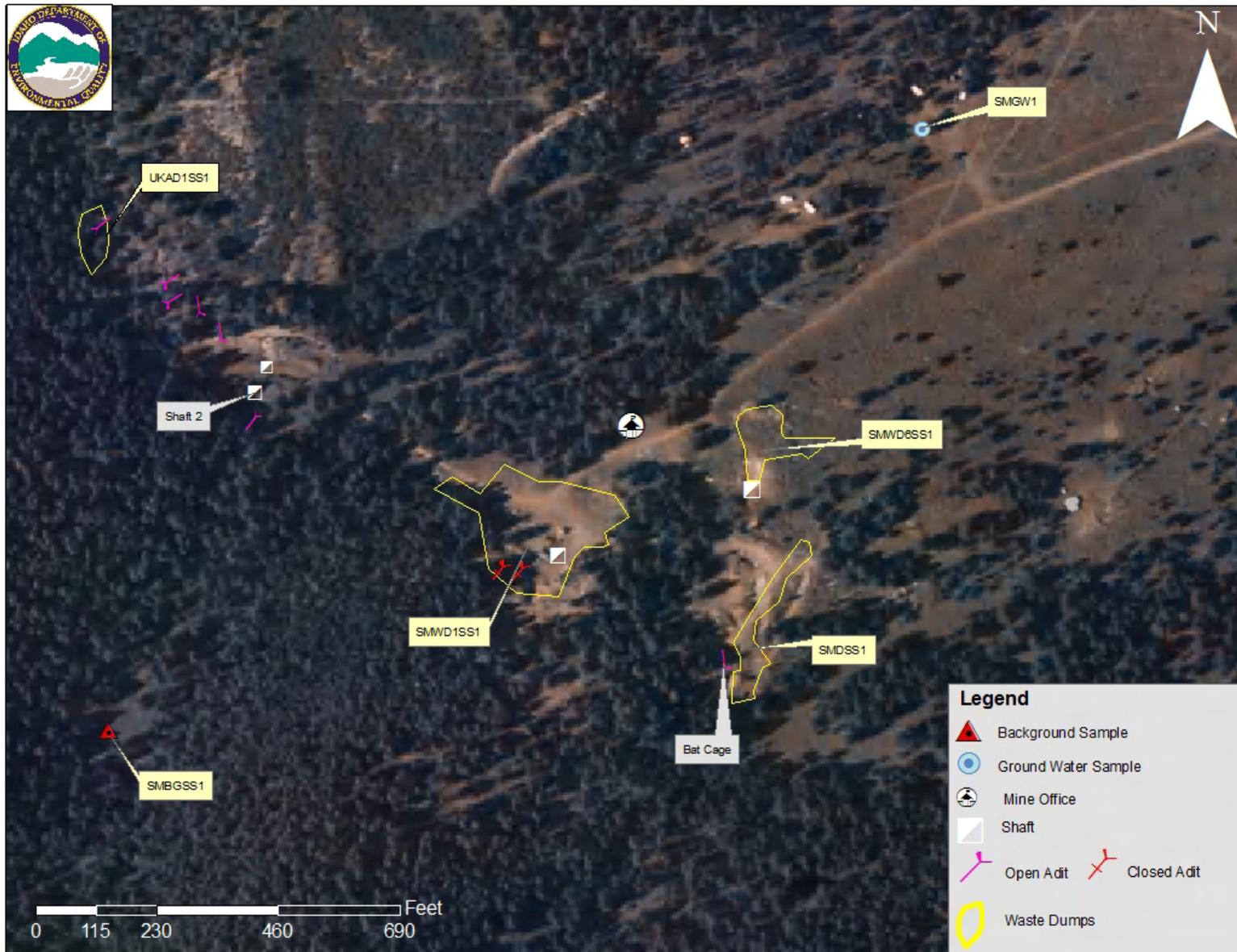


Figure 5. Site Map for Silver Moon Mine; Sample Locations Identified (Map Source: NAIP 2004)

**Table 1. Soil and Waste Sample Analysis**

**Silver Moon Mine**

Metals	IDTLs (mg/kg)	HHSLs (mg/kg)	Silver Moon Background Soil Sample SMBGSS1  (mg/kg)	Silver Moon Soil Sample SMWD1SS1  (mg/kg)	Silver Moon Soil Sample SMDSS1  (mg/kg)	Silver Moon Soil Sample SMWD6SS1  (mg/kg)	Silver Moon Soil Sample UKAD1SS1  (mg/kg)
Antimony	4.77	31	<2.0	90.7	145	56.1	2.3
Arsenic	0.391	23	18	112	201	106	51.5
Barium	896	1,600	358	623	2,610	543	842
Cadmium	1.35	39	0.75	4.58	<b>9.04</b>	6.64	1.38
Chromium	7.9	210	22.1	17.2	62.2	21.6	12.9
Copper	921	2,900	18.8	121	<b>217</b>	68.1	108
Iron		55,000	17,700	16,200	26,600	16,500	19,600
Lead	49.6		102	<b>4,850</b>	<b>7,570</b>	<b>1,230</b>	<b>848</b>
Manganese	223	3,600	913	6,320	17,300	2,640	1,970
Selenium	2.03	23	<4.0	23.4	4.6	23.4	9.6
Silver	0.189	390	0.85	39.6	69.7	2.46	6.88
Zinc	886	390	191	<b>930</b>	<b>1,550</b>	<b>1,140</b>	<b>2,330</b>
Mercury	0.00509	23	0.063	2.13	6.28	0.21	3.5

**BOLD = exceeds the BLM Ecological Risk Benchmarks (median values).**

Gold = exceeds Idaho Initial Default Target Levels (IDTLs).

Light Yellow = exceeds Human Health Screening Levels (HHSLs).

Larger Font Size = exceeds Background Levels by greater than three times.

**Table 2. Wildlife and Livestock Risk Management Criteria for Metals in Soils (mg/kg)  
BLM Technical Note 390 Rev. 2004 “Risk Management Criteria for Metals at BLM Mining Sites”**

**Silver Moon Mine**

Metals	Elk	Mule Deer	Big Horn Sheep	Deer Mice	Cottontail Rabbits	Canada Goose	Mallard	Robin	Cattle	Sheep	Median Values
Antimony											
Arsenic	328	200	387	230	438	61	116	4	419	275	275
Barium											
Cadmium	3	3	9	7	6	2	1	0.3	15	12	8
Chromium											
Copper	131	102	64	640	358	161	141	7	413	136	136
Iron											
Lead	127	106	152	142	172	34	59	6	244	125	125
Manganese											
Selenium											
Silver											
Zinc	275	222	369	419	373	271	196	43	1082	545	307
Mercury	11	11	6	2	15	6	4	1	45	8	8

**Table 3. Total Recoverable Metals Analysis (mg/L) in Surface Water**  
 (Concentrations expressed in mg/l unless otherwise stated)

**Silver Moon Mine**

Description	DEQ Ground Water Standard	DEQ Drinking Water Standard	DEQ Cold Water Biota Standard	DEQ Cold Water Biota Standard	Total Recoverable Metals (T) Silver Moon Well Water Sample SMGW1	Dissolved Metals (D) Silver Moon Well Water Sample SMGW1
	(T)	MCL	Acute	Chronic		
Antimony					<0.020	<0.020
Arsenic	0.05	0.01	0.36	0.19	<0.025	<0.025
Barium	2	2			0.0836	0.0796
Cadmium	0.005	0.005	0.00082 (H)	0.00037 (H)	<0.0020	<0.0020
Chromium (Total)	0.1	0.1			<0.0060	<0.0060
Copper	1.3		0.0046 (H)	0.0035 (H)	<0.010	<0.010
Iron	0.3*				0.107	<0.06
Lead	0.015	0.015	0.014 (H)	0.00054 (H)	<0.0075	<0.0075
Manganese	0.05				<0.004	<0.004
Selenium	0.05	0.05	0.018 (T)	0.005 (T)	<0.040	<0.040
Silver	0.1*		0.00032 (H)		<0.0050	<0.0050
Zinc	5*		0.035 (H)	0.032 (H)	<b>0.619</b>	<b>0.582</b>
Mercury	0.002					<0.0002
pH	6.5 – 8.5			6.5 - 9.0	7.75 su	
Conductivity					0.298 µs/cm	
Turbidity				Not >50 NTU instantaneous and not >25 NTU over a 10 day period	<10 NTU	
Dissolved Oxygen				<6	10.63	
Temperature				Cold water aquatic life 22°C or less or a maximum daily average not >19°C  Salmonid spawning 13°C or less with a maximum daily average not >9°C	11.5°C	
Salinity					.01%	

\* Secondary MCL (T) – Standard in Total (H) – Hardness dependent \* 25 mg/L  
**Bold = exceeds cold water biota standard.**

There was no available background source for ground water.

The next soil (waste) samples were collected from Waste Dumps SMWD1, UKWD1, SMD1, and SMWD6.

Soil sample SMWD1SS1 was a composite sample collected from seven sites at SMWD1, one of which was in ore. An approximately one pound sample was collected and screened to -9 mesh, but the dump contains greater than 50 percent plus 1-inch to 24-inch fragments of broken rock. Most of the host rock appears to be crystalline dolomite/limestone and is buff to brown in color.

Soil sample UKAD1SS1 was collected from the unknown waste dump UKWD1. The sample contained light brown to buff soil with greater than 60 percent passing through -9 mesh. The dump also contains 4-inch to 24-inch fragments of broken rock.

Soil sample SMDSS1 was a composite sample from seven sites in an area labeled as the Silver Moon Decline (SMD1). The waste dump is a heterogeneous mix of country rock and ore, neither of which could DEQ accurately measure the volumes since this dump has been shoved around during various stages of development and closure. Each site was sampled at the surface with four samples collected at the locations dominated by country rock and three samples from what appears as ore. An approximately one pound sample was collected and screened from each site. Initial samples were all about the same composition of coarse and fines. Coarse (+60 percent) was dominated by one-half inch to two-inch fragments. The ore was very dark brown to black while the waste appeared to be light to buff colored. Both appeared to be altered dolomite.

Soil Sample SMWD6SS1 came from a large waste dump (SMWD6), but there were no signs of ore waste rock or country rock. The rock was light brown to buff colored with greater than 60 percent passing through -9 mesh. Like the other dumps there were mostly one-half inch plus fragments ranging in size from coarse to plus 24 inches.

## 9.2 Soils Analysis

Soil samples were analyzed at SVL utilizing EPA 6000/7000 method 6010B for all metals except mercury where method 7471A was utilized. Laboratory analytical results have been compared to and will be discussed below relative to Idaho's *Initial Default Target Levels* (IDTLs), EPA Region 6 Human Health Screening Levels (HHSLs), and the BLM Wildlife and Livestock Risk Management Criteria for Metals in Soils (Technical Note 390 rev.2004). Analytical data will also be discussed relative to background concentrations found in soil sample SMBGSS1.

The IDTLs are risk-based target levels for certain chemicals that have been developed by DEQ using conservative input parameters, a target acceptable risk of  $10^{-5}$ , and a *Hazard Quotient* of 1. These numbers, although used for comparison even at remote locations, are more applicable to sites where "unrestricted uses" such as residential development are expected. Similarly, the EPA Region 6 HHSLs are human health based risk derived for screening where residents are at risk for exposure. These concentrations are not unusual for a location or facility in a historic mining district such as the Silver Moon area.

Table 1 summarizes laboratory analytical results for soil samples collected. The background soil sample SMBGSS1 exceeded the IDTLs for arsenic, chromium, lead, manganese, silver, and mercury.

Soil sample SMWD1SS1 exceeded the IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample also exceeded levels above the HHSLs for antimony, arsenic, manganese, selenium, and zinc. SMWD1SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, silver, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc (Table 2).

Soil sample UKADSS1 exceeded IDTLs for arsenic, cadmium, chromium, lead, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and zinc. UKADSS1 exceeded the background sample by three times for arsenic, barium, lead, silver, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

Soil sample SMDSS1 exceeded IDTLs for antimony, arsenic, barium, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for antimony, arsenic, barium, manganese, and zinc. SMDSS1 exceeded the background sample by three times for antimony, arsenic, barium, cadmium, lead, silver, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for cadmium, copper, lead, and zinc.

Soil sample SMWD6SS1 exceeded IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and iron. SMWD6SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

### **9.3 Ground Water Analysis**

Table 3 summarizes laboratory analytical results for ground water sample/well water sample SMGW1 collected from a private land owner's well down gradient from the Silver Moon Mine. Analysis was done for total recoverable metals and dissolved metals.

The total recoverable sample exceeded the Acute Cold Water Biota Standard for zinc by 17.6 times and the chronic value for zinc by 19.3 times. This sample did not exceed the Idaho Ground Water or Idaho Drinking Water Standard. The zinc concentration is not remarkable.

The dissolved metals sample exceeded the Acute Cold Water Biota Standard for zinc by 16.6 times and the chronic value for zinc by 18.1 times. This sample did not exceed the Idaho Ground Water or Idaho Drinking Water Standard. The zinc concentration is not remarkable.

Although zinc concentrations exceeded the DEQ Acute and Chronic Cold Water Biota Standard, both samples did not exceed the Idaho Ground Water and Drinking Water Standards. It is very unlikely that any human health risks are associated with this well from metals.

At the time of the site inspection the Silver Moon Gulch stream was dry, and no water was available to collect a background sample.

## **Section 10. Pathways and Environmental Hazards**

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### **10.1 Ground Water Pathways**

In areas where historic mines are located in proximity to residential areas, contamination of drinking water systems may come from two types of mine sources (ore bodies and waste dumps) and along three pathways, as illustrated by the following three scenarios. First, heavy metals leach from tailings piles and waste rock dumps, enter ephemeral or perennial drains, and then contaminate the area's shallow ground water system. Second, heavy metals leach from the local ore bodies and are transported through the geologic structure to the shallow ground water. Third, heavy metals could leach out of the ore bodies, and be discharged from the underground workings as adit water, that is then conveyed through ephemeral and perennial drains to the shallow ground water systems.

For the purposes of completing PA/SIs, DEQ usually uses Source Water Assessments (completed for local public drinking water supplies) to identify any known or potential effects to those systems. No public drinking water supply exists down gradient of the mine site within the 15 mile TDL. Ground water samples collected from one domestic water supply indicate that metals are not readily mobile in the ground water system and have not adversely impacted drinking water supplies.

DEQ concludes that the ground water pathway is incomplete (Figure 6).

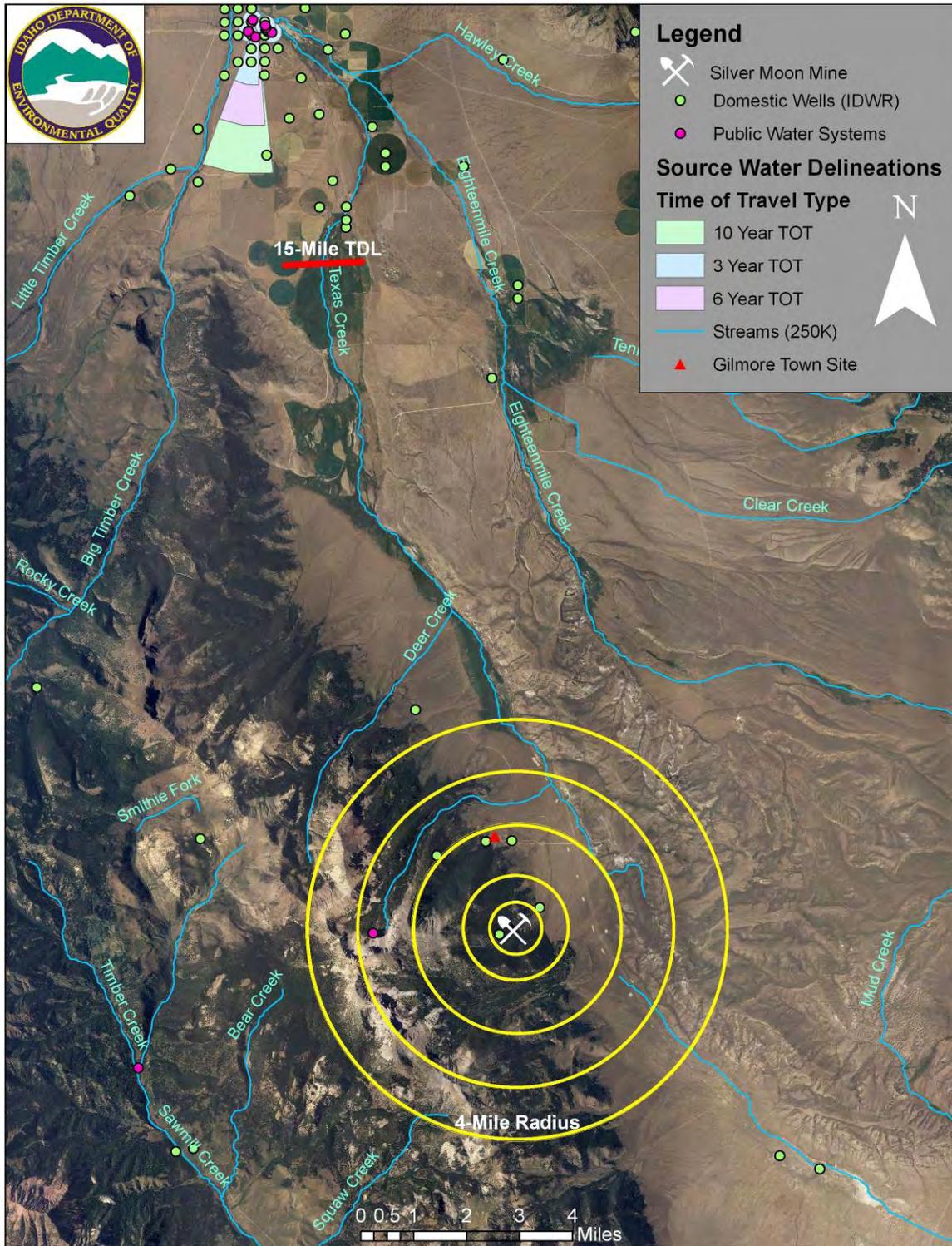
### **10.2 Surface Water Pathways**

The surface water migration pathway target distance limit (TDL) begins at the probable point of entry (PPE) of surface water runoff from a site to a surface water body and extends downstream for 15 miles. The surface water TDL for the Silver Moon Gulch sub-drainage is presented in Figure 6.

Silver Moon Gulch Creek is an ephemeral drain through most of its reach. During the site visit no surface water pathways were observed linking this drain to Texas Creek.

### **10.3 Domestic Wells and Public Water Supplies**

There are approximately five domestic wells within a four mile radius of the Silver Moon site. Only one appears to be down gradient from the mine site. One public water system well is located within a 4-mile radius of the Silver Moon Mine site; however, the USFS Meadow Lake campground (PWS #7300083) is located up gradient and is segregated from the site by structural geology. This PWS is from a spring so there are no zones of capture available (Figure 6). The nearest public water system possibly considered down gradient from the site is the Leadore School (PWS #7300022) which is located approximately 5.25 miles beyond the 15 mile TDL.



**Figure 6. Domestic Wells and Public Water System Wells Located Near the Silver Moon Mine, 15-Mile Target Distance Limit (Map Source: NAIP 2004)**

## **10.4 Air Quality Pathways**

The air quality pathways may be complete for recreational users at the site. Although waste dumps have sparse vegetation on them and are dominated by coarse (> 80 mesh) waste rock, there are indications that ATV traffic frequently disturbs contaminated soils, which is likely to translate into fugitive dust.

## **10.5 Soil Exposures**

According to DEQ's Risk Evaluation Manual, if pathways are determined to be "complete" or if pathways are anticipated to become complete as a result of future uses, and the IDTLs are exceeded for any constituents, two options should be considered:

1. Adopt the IDTLs as the cleanup levels and develop a *Risk Management Plan* (RMP).
2. Perform a more detailed, site-specific evaluation, which includes developing site-specific background concentrations for comparative purposes.

There is significant evidence of extensive recreational use of the site including tire tracks, camp fire rings and trash. Therefore soil exposure pathways are complete for recreational users.

DEQ did not observe releases or pathways from the waste dumps to the adjacent residential developments. Therefore, DEQ has concluded that pathways are not complete for full-time residents.

## **10.6 Residences, Schools, and Day Care Facilities**

The nearest seasonal cabin is approximately 0.2 miles northeast of the Silver Moon Mine site. There are no schools or day care facilities within 200 feet of this mine site.

## **10.7 Wetlands**

There are no significant wetlands (>500 feet wide) located in the immediate area of the Silver Moon Mine site (Figure 6).

No significant wetlands exist along Texas Creek within the 15 mile TDL (Figure 6).

## **10.8 Sensitive, Rare, and Threatened Species (Plant and Animal)**

Most of the sensitive species have large ranges which overlap the Silver Moon Mine site. Due to the size of those ranges, these species may not receive significant exposure time or doses to heavy metals.

Although they are likely to exist locally, no sensitive plant species have been documented to exist within the 4-mile radius of Silver Moon Mine site. (Figure 7).

**Endangered Species Act List (Non-Game Species and Plants):**

**Non-Game Species (No Status):**

No Status Species within 4-mile radius:

- Long-eared Myotis (*Myotis evotis*)
- Uinta Ground Squirrel (*Spermophilus armatus*)
- Northern Flying Squirrel (*Glaucomys sabrinus*)
- North American wolverine (*Gulo gulo luscus*)
- Lark Bunting (*Calamospiza melanocorys*)
- Grasshopper (*Barracris petraea*)
- Grasshopper (*Argiacris militaris*)
- Columbia spotted frog (*Rana luteiventris*)

No Status Species outside of 4-mile radius:

- Gray wolf habitat (Leadore-Hawley Creek)
- Pygmy Rabbit (*Brachylagus idahoensis*)
- Short-horned Lizard (*Phrynosoma douglasii*)
- Piute Ground Squirrel (*Spermophilus mollis*)
- Flammulated Owl (*Otus flammeolus*)
- Long-tailed Vole (*Microtus longicaudus*)
- Columbia spotted frog (*Rana luteiventris*)
- Long-toed Salamander (*Ambystoma macrodactylum*)
- Dusky or Montane Shrew (*Sorex monticolus*)
- Cinereus or Masked Shrew (*Sorex cinereus*)
- Sagebrush Vole (*Lemmiscus curtatus*)
- Water Shrew (*Sorex palustris*)

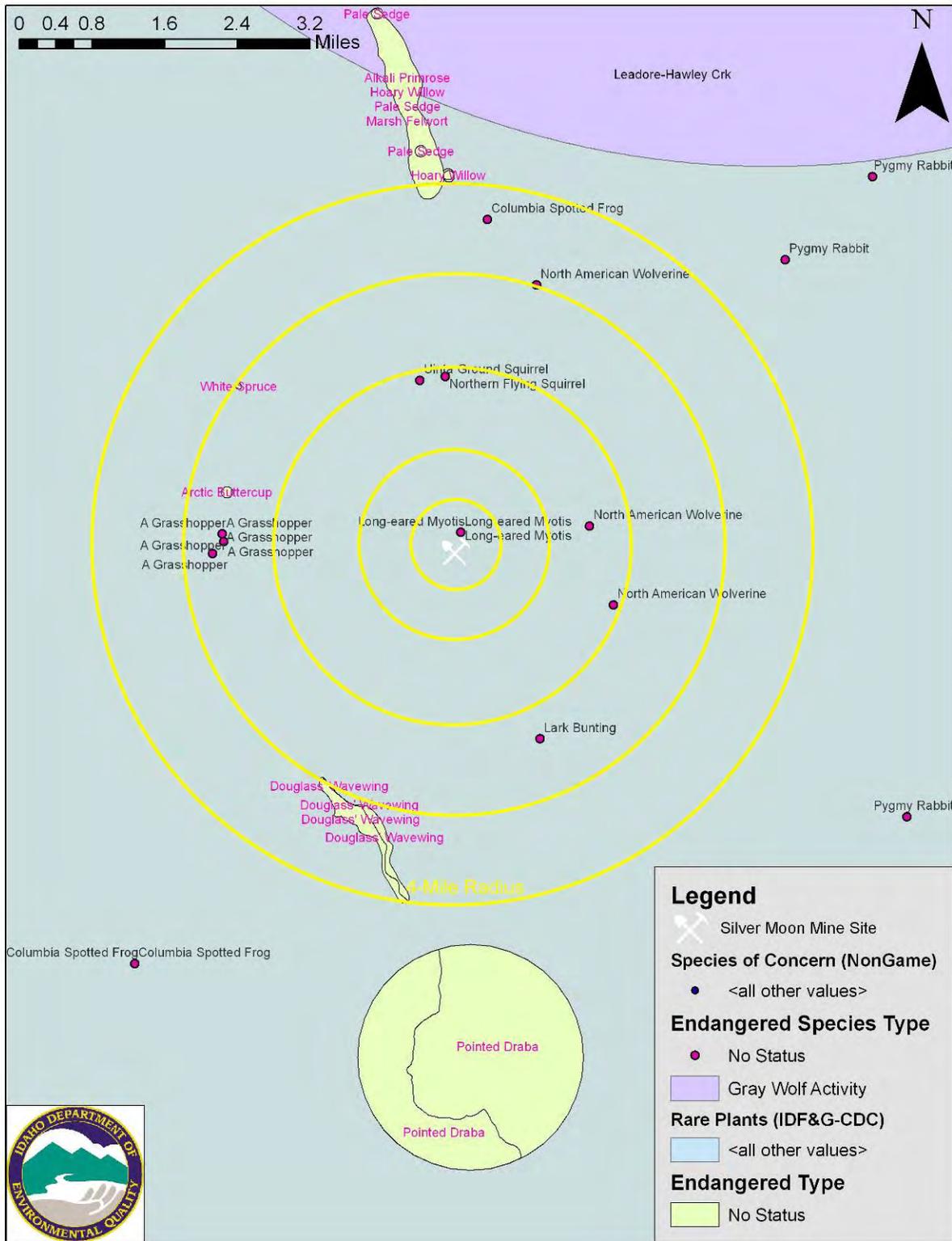
**Rare Plants (No Status):**

No Status Species within 4-mile radius:

- Arctic Buttercup (*Ranunculus gelidus*)
- White Spruce (*Picea glauca*)
- Marsh Felwort (*Lomatogonium rotatum*)
- Pale Sedge (*Carex livida*)
- Alkali Primrose (*Primula alcalina*)
- Hoary Willow (*Salix candida*)
- Douglass' Wavewing (*Cymopterus douglassii*)

No Status Species outside of 4-mile radius:

- Hoary Willow (*Salix candida*)
- Marsh Felwort (*Lomatogonium rotatum*)
- False Mountain Willow (*Salix pseudomonticola*)
- Pale Sedge (*Carex livida*)
- Alkali Primrose (*Primula alcalina*)
- Pointed Draba (*Draba globosa*)



**Figure 7. Sensitive Species (non-game and plant) within 4-Mile Radius and in the Vicinity of Silver Moon Mine Site (Map Source: Idaho DEQ GIS ArcSDE 9.3.1 Geodatabase)**

## 10.9 Fisheries

The Silver Moon Mine site is located in the Bull Trout Core Area according to the Idaho Conservation Data Center. The Latin name for the species is (*Salvelinus confluentus*).

The Silver Moon Mine site is also located in an Ecologically Significant Unit (ESU) according to the Idaho Conservation Data Center for Chinook Salmon (*Oncorhynchus tshawytscha*) (fall and spring-summer runs).

Sockeye Salmon (Snake River Runs) (*Oncorhynchus nerka pop 1*), Chinook salmon (Fall Run) (*Oncorhynchus tshawytscha pop 2*), Steelhead (Snake River Basin) (*Oncorhynchus mykiss pop 13*), Bull Trout (*Salvelinus confluentus*), are present within Texas Creek (IDFG, 2000) (Figure 8). Fish were not noted in Texas Creek at the time of the SI.

## 10.10 Sensitive Waterways

The Clean Water Act (CWA) requires the state to prepare a report, listing (a) the current conditions of all state waters and (b) those waters that are impaired and needing a TMDL (total maximum daily load). The first list is called the 305(b) list and the second is called the 303(d) list. Both lists are named in accordance with the sections of the CWA where they are defined; together they are known as the Integrated Report. Although they are maintained as separate lists and presented separately in the Integrated Report, impaired waters are just some of the state's waters, so water on the 303(d) list is actually a subset of those on the 305(b) list. Figure 9 illustrates the relationship between 303(d) and 305(b) lists.

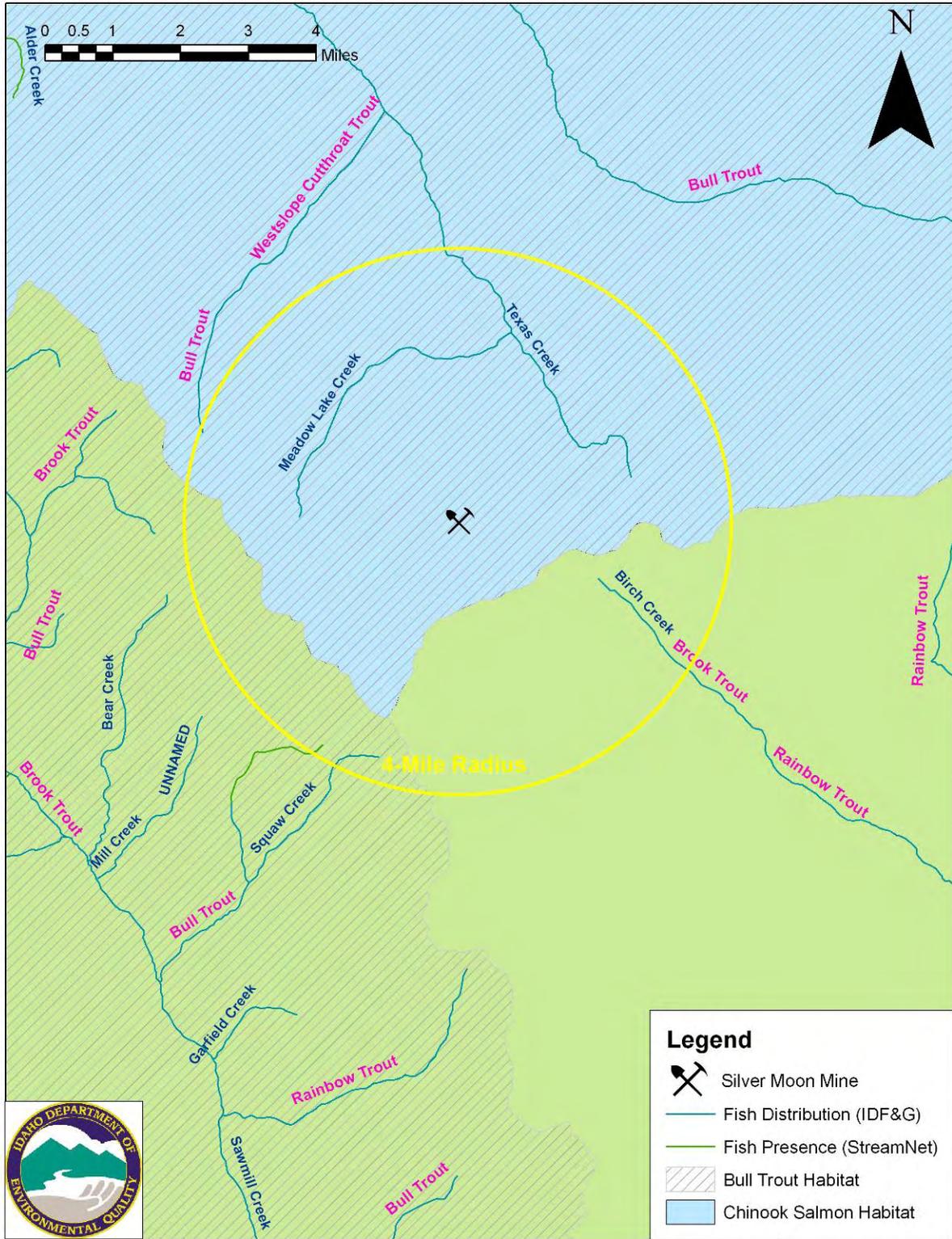
The Silver Moon Gulch stream (drain) and a portion of Texas Creek (approximately 6.2 miles) have not been assessed.

At the confluence of Deer Creek and Texas Creek there has been an assessment and the finding is Texas Creek (Assessment Unit ID17060204SL036\_03) is listed in the EPA CWA 305(b) from mouth to source as not supporting. The segment size is approximately 14.93 miles.

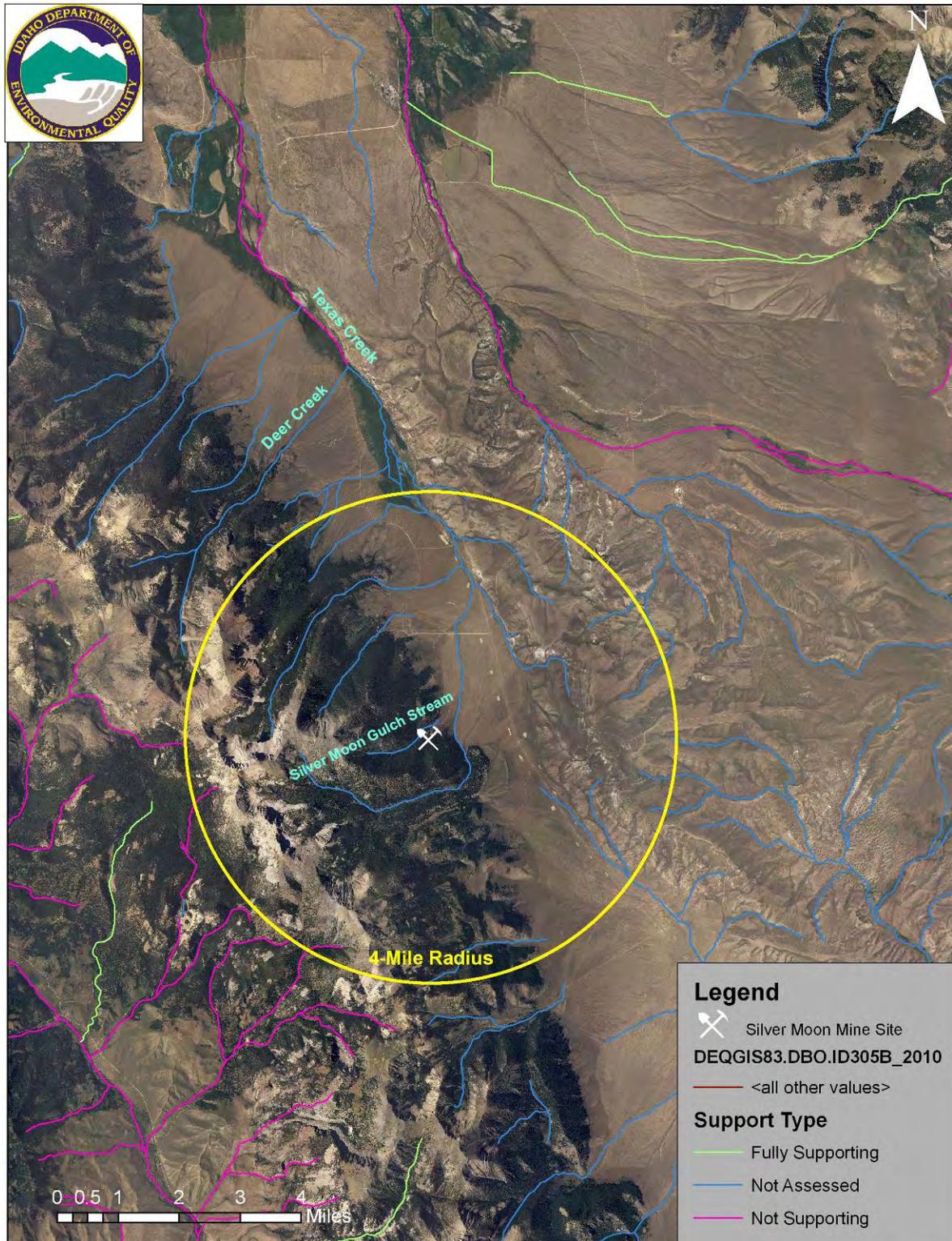
Beneficial uses for Texas Creek include; secondary contact recreation (not supporting), cold water aquatic life (not supporting), and salmonid spawning (not supporting) (Figure 9).

## 10.11 Livestock Receptors

There were numerous indications the area is used for livestock grazing. The area around the seasonal cabins has been fenced off to discourage cattle from grazing on private properties. The Silver Moon Mine site is located just outside the boundary of the BLM's Spring Canyon grazing allotment, which covers 26,880.932668 (GIS) acres. However, there is no exclusionary fencing located on the USFS property and there were signs indicating the potential for grazing to occur on the property.



**Figure 8. Fisheries within 4-Mile Radius and in the Vicinity of the Silver Moon Mine Site (Map Source: Idaho DEQ GIS ArcSDE 9.3.1 Geodatabase)**



**Figure 9. 305(b) Map Sensitive Waterways within 4-Mile Radius and Vicinity of Silver Moon Mine Site (Map Source: Idaho DEQ GIS 83.DBO.ID305B\_2010, ArcSDE 9.3.1 Geodatabase; 2004 NAIP)**

## Section 11. Summary and Conclusions

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Generally speaking, toxicological risks to human and ecological receptors are limited to dermal and inhalation exposure of recreational users and wildlife to metals in waste rock. From the one domestic well DEQ sampled, it appears metals are not very mobile in ground water down gradient from the Silver Moon Mine.

The background soil sample SMBGSS1 exceeded the IDTLs for arsenic, chromium, lead, manganese, silver, and mercury.

Soil sample SMWD1SS1 exceeded the IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample also exceeded levels above the HHSLs for antimony, arsenic, manganese, selenium, and zinc. SMWD1SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, silver, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

Soil sample UKADSS1 exceeded IDTLs for arsenic, cadmium, chromium, lead, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and zinc. UKADSS1 exceeded the background sample by three times for arsenic, barium, lead, silver, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

Soil sample SMDSS1 exceeded IDTLs for antimony, arsenic, barium, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for antimony, arsenic, barium, manganese, and zinc. Sample SMDSS1 exceeded the background sample by three times for antimony, arsenic, barium, cadmium, lead, silver, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for cadmium, copper, lead, and zinc.

Soil sample SMWD6SS1 exceeded IDTLs for antimony, arsenic, cadmium, chromium, lead, manganese, selenium, silver, zinc, and mercury. The sample exceeded the HHSLs for arsenic and iron. Sample SMWD6SS1 exceeded the background sample by three times for antimony, arsenic, cadmium, copper, lead, selenium, zinc, and mercury. This sample also exceeded BLM Ecological Risk Benchmarks median values for lead and zinc.

In summation, high concentrations of contaminants in the soil samples, the high level of recreation use and the close proximity to the cabins may warrant additional site investigation and risk management.

DEQ staff had a follow-up discussion with Dean Morgan (USFS) on May 26, 2011 and provided some brief recommendations regarding risk management. Recognizing toxicological risks the USFS will placard the site with advisory signs and retain the site in their queue until federal funding will allow for remedial actions.

Institutional controls will be used on the site to further reduce risk.

There were a number of open dangerous adits and shafts found on the lands administered by the USFS. Many of these are very dangerous and, DEQ is recommending that they are either closed or access is restricted.

Dean Morgan said in the discussion that Jeff Gabardi (USFS) will be focusing on closing the open adits this season.

## Section 12. References

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## **Appendix A. Abbreviated Preliminary Assessments for Hecla, Isabel, and Calumet Patented Claims**

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## ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Bruce A. Schuld 08/24/10  
 Mine Waste Program Coordinator  
 Idaho Department of Environmental Quality  
 1410 N. Hilton, Boise, ID 83706  
 (208)373-0554  
 bruce.schuld@deq.idaho.gov

**Site Name:** Hecla Patented Claim

**Previous Names (if any):** aka Silver Moon Mine and Mill sites

**Site Location:** 2 mile south of Gilmore, Idaho  
 T13N, R27E, Sec. 21 83464  
(Zip)

**Latitude:** N 44.4347° **Longitude:** W 113.2608°

**Describe the release (or potential release) and its probable nature:**

This site was investigated for potential releases of heavy metals and sediment from mine waste dumps, and potential discharges of other deleterious materials, such as petroleum products and ore processing chemicals.

**Part 1 - Superfund Eligibility Evaluation**

**If all answers are "no" go on to Part 2, otherwise proceed to Part 3.**

	YES	NO
1. Is the site currently in CERCLIS or an "alias" of another site?		x
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		x
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		x
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		x
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)?	x	

**Please explain all "yes" answer(s).** Indirect and direct observations, plus historical records research confirmed that contaminants of concern do not exist in concentrations that present a threat to human health or the environment.

**Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a "yes" or "no" response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

**If the answer is "no" to any of questions 1, 2, or 3, proceed directly to Part 3.**

	YES	NO
1. Does the site have a release or a potential to release?		X
2. Does the site have uncontained sources containing CERCLA eligible substances?		X
3. Does the site have documented on-site, adjacent, or nearby targets?		X

**If the answers to questions 1, 2, and 3 above were all "yes" then answer the questions below before proceeding to Part 3.**

	YES	NO
4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		X
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?		X
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within 1 mile)?		X
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		X

**Notes:**

Recreational home sites are located within the subject area; however, there are no potential risks to human health or the environment. Very little mining activities occurred in this area and no waste dumps, adits, or discharges were observed. **(See attached Silver Moon Mine and Mill site area Photo Log and Site Conditions.)**

## EXHIBIT 1 SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	Full PA	PA/SI	SI
1. There are no releases or potential to release.		<u>Yes</u>			
2. No uncontained sources with CERCLA-eligible substances are present on site.		<u>Yes</u>			
3. There are no on-site, adjacent, or nearby targets.		<u>Yes</u>			
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	<u>Yes</u>			
	Option 2: PA/SI	<u>No</u>			
5. There is an apparent release at the site with no documentation of targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	<u>No</u>			
	Option 2: PA/SI	<u>No</u>			
6. There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		<u>No</u>			
7. There is no indication of a hazardous substance release, and there are not uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		<u>No</u>			

### Part 3 - EPA Site Assessment Decision

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was "no," then an APA may be performed and the "NFRAP" box below should be checked. Additionally, if the answer to question 4 in Part 2 is "yes," then you have two options (as indicated in Exhibit 1): Option 1 --conduct an APA and check the "Lower Priority SI" or "Higher Priority SI" box below; or Option 2 -- proceed with a combined PA/SI assessment.

**Check the box that applies based on the conclusions of the APA:**

x	NFRAP	Refer to Removal Program – further site assessment needed
	Higher Priority SI	Refer to Removal Program - NFRAP
	Lower Priority SI	Site is being addressed as part of another CERCLIS site
	Defer to RCRA Subtitle C	Other: _____
	Defer to NRC	

Regional EPA Reviewer:

Bruce A. Schulz *Bruce A. Schulz*

Print Name/Signature

11/1/10

Date ~~8/24/10~~

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:**

This claim contains no historic mine developments. Its dominant features include 5 individual home sites, most of which have some level of domestic development located on them. However, as a result of our observations, DEQ is recommending this site be designated as "No Remedial Action Planned" (NRAP).

**NOTES: (SEE ATTACHED)**

## ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Bruce A. Schuld 08/24/10  
 Mine Waste Program Coordinator  
 Idaho Department of Environmental Quality  
 1410 N. Hilton, Boise, ID 83706  
 (208)373-0554  
 bruce.schuld@deq.idaho.gov

**Site Name:** Isabel Patented Claim

**Previous Names (if any):** aka Silver Moon Mine and Mill sites

**Site Location:** 2 miles south of Gilmore, Idaho

T13N, R27E, Sec. 21 83464  
(Zip)

**Latitude:** N 44.4356° **Longitude:** W 113.2576°

**Describe the release (or potential release) and its probable nature:**

This site was investigated for potential releases of heavy metals and sediment from mine waste dumps, and potential discharges of other deleterious materials, such as petroleum products and ore processing chemicals.

**Part 1 - Superfund Eligibility Evaluation**

**If all answers are "no" go on to Part 2, otherwise proceed to Part 3.**

	YES	NO
1. Is the site currently in CERCLIS or an "alias" of another site?		x
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		x
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		x
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		x
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)?	x	

**Please explain all "yes" answer(s).** Indirect and direct observations, plus historical records research confirmed that contaminants of concern do not exist in concentrations that present a threat to human health or the environment.

**Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a “yes” or “no” response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

**If the answer is “no” to any of questions 1, 2, or 3, proceed directly to Part 3.**

	YES	NO
1. Does the site have a release or a potential to release?		<b>x</b>
2. Does the site have uncontained sources containing CERCLA eligible substances?		<b>x</b>
3. Does the site have documented on-site, adjacent, or nearby targets?		<b>X</b>

**If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.**

	YES	NO
4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		<b>X</b>
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?		<b>X</b>
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within 1 mile)?		<b>X</b>
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		<b>X</b>

**Notes:**

Recreational home sites are located within the subject area; however, there are no potential risks to human health or the environment. Very little mining activities occurred in this area and no waste dumps, adits, or discharges were observed. **(See attached Silver Moon Mine and Mill Site Area Photo Log and Site Conditions.)**

## EXHIBIT 1 SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	Full PA	PA/SI	SI
1. There are no releases or potential to release.		<u>Yes</u>			
2. No uncontained sources with CERCLA-eligible substances are present on site.		<u>Yes</u>			
3. There are no on-site, adjacent, or nearby targets.		<u>Yes</u>			
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	<u>Yes</u>			
	Option 2: PA/SI	<u>No</u>			
5. There is an apparent release at the site with no documentation of targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	<u>No</u>			
	Option 2: PA/SI	<u>No</u>			
6. There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		<u>No</u>			
7. There is no indication of a hazardous substance release, and there are not uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		<u>No</u>			

### Part 3 - EPA Site Assessment Decision

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was "no," then an APA may be performed and the "NFRAP" box below should be checked. Additionally, if the answer to question 4 in Part 2 is "yes," then you have two options (as indicated in Exhibit 1): Option 1 --conduct an APA and check the "Lower Priority SI" or "Higher Priority SI" box below; or Option 2 -- proceed with a combined PA/SI assessment.

#### Check the box that applies based on the conclusions of the APA:

x	NFRAP	Refer to Removal Program – further site assessment needed
	Higher Priority SI	Refer to Removal Program - NFRAP
	Lower Priority SI	Site is being addressed as part of another CERCLIS site
	Defer to RCRA Subtitle C	Other: _____
	Defer to NRC	

Regional EPA Reviewer:

Bruce A. Schald *Bruce A. Schald*

11/1/10..

Print Name/Signature

Date ~~8/24/10~~

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:**

This claim contains no historic mine developments. Its dominant features include nine individual home sites, most of which have some level of domestic development located on them. However, as a result of our observations, DEQ is recommending this site be designated as "No Remedial Action Planned" (NRAP).

**NOTES: (SEE ATTACHED)**

## ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Bruce A. Schuld 08/24/10  
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 1410 N. Hilton, Boise, ID 83706  
 (208)373-0554  
 bruce.schuld@deq.idaho.gov

**Site Name:** Calumet Patented Claim

**Previous Names (if any):** aka Silver Moon Mine and Mill sites

**Site Location:** 2 miles south of Gilmore, Idaho

T13N, R27E, Sec. 21 83464  
(Zip)

**Latitude:** N 44.4400° **Longitude:** W 113.2588°

**Describe the release (or potential release) and its probable nature:**

This site was investigated for potential releases of heavy metals and sediment from mine waste dumps, and potential discharges of other deleterious materials, such as petroleum products and ore processing chemicals.

**Part 1 - Superfund Eligibility Evaluation**

**If all answers are "no" go on to Part 2, otherwise proceed to Part 3.**

	YES	NO
1. Is the site currently in CERCLIS or an "alias" of another site?		x
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		x
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (e.g., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		x
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		x
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exists (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, or an EPA approved risk assessment completed)?	x	

**Please explain all "yes" answer(s).** Indirect and direct observations, plus historical records research confirmed that contaminants of concern do not exist in concentrations that present a threat to human health or the environment.

**Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a "yes" or "no" response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

**If the answer is "no" to any of questions 1, 2, or 3, proceed directly to Part 3.**

	YES	NO
1. Does the site have a release or a potential to release?		x
2. Does the site have uncontained sources containing CERCLA eligible substances?		x
3. Does the site have documented on-site, adjacent, or nearby targets?		X

**If the answers to questions 1, 2, and 3 above were all "yes" then answer the questions below before proceeding to Part 3.**

	YES	NO
4. Does documentation indicate that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		X
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?		X
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (e.g., targets within 1 mile)?		X
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		X

**Notes:**

Recreational home sites are located within the subject area; however, there are no potential risks to human health or the environment. Very little mining activities occurred in this area and no waste dumps, adits, or discharges were observed. (See attached Silver Moon Mine and Mill site area Photo Log and Site Conditions.)

## EXHIBIT 1 SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	Full PA	PA/SI	SI
1. There are no releases or potential to release.		<u>Yes</u>			
2. No uncontained sources with CERCLA-eligible substances are present on site.		<u>Yes</u>			
3. There are no on-site, adjacent, or nearby targets.		<u>Yes</u>			
4. There is documentation indicating that a target (e.g., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	<u>Yes</u>			
	Option 2: PA/SI	<u>No</u>			
5. There is an apparent release at the site with no documentation of targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	<u>No</u>			
	Option 2: PA/SI	<u>No</u>			
6. There is an apparent release and no documented on-site targets and no documented targets immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migration from the site.		<u>No</u>			
7. There is no indication of a hazardous substance release, and there are not uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		<u>No</u>			

### Part 3 - EPA Site Assessment Decision

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was "no," then an APA may be performed and the "NFRAP" box below should be checked. Additionally, if the answer to question 4 in Part 2 is "yes," then you have two options (as indicated in Exhibit 1): Option 1 --conduct an APA and check the "Lower Priority SI" or "Higher Priority SI" box below; or Option 2 -- proceed with a combined PA/SI assessment.

#### Check the box that applies based on the conclusions of the APA:

x	NFRAP	Refer to Removal Program – further site assessment needed
	Higher Priority SI	Refer to Removal Program - NFRAP
	Lower Priority SI	Site is being addressed as part of another CERCLIS site
	Defer to RCRA Subtitle C	Other: _____
	Defer to NRC	

Regional EPA Reviewer:

Bruce A. Schald *Bruce A. Schald*

Print Name/Signature

11/1/10

Date 8/24/10

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:**

This claim contains no historic mine developments. Its dominant features include 5<sup>7</sup> individual home sites, most of which have some level of domestic development located on them. However, as a result of our observations, DEQ is recommending this site be designated as "No Remedial Action Planned" (NRAP).

**NOTES: (SEE ATTACHED)**

Mine/Mill Name	Parcel #	Owners	Mine aka	T R S	Latitude	Longitude	State's Recommendation
18 unpatented claims: Big Moose, Moose No. 2, Mohawk No. 1, Mohawk No. 2, Grace Phelan, Snow Bird, Settler, Blue Sage No. 1, Blue Sage No. 2, Patty Ann, Ridge No. 1, C.P.Ross No. 1, C.P.Ross No. 2, C.P.Ross No. 3, Craig No. 1, Craig No. 2, Craig No. 3, Craig No. 4	None Designated	Mixed Ownership--USFS 18 unpatented claims.	Silver Moon Group	T13N R27E Sections 20, 21, 28, 29	44.43331	-113.26437	PENDING
Hecla Mill Site	RP99000020005H	John W. Fortner 2040 Midway Ammon, ID 83406	Hecla Patent	T13N R27E 21	44.43755	-113.25924	NRAP
Hecla Mill Site	RP99000020005I	Chuck and Carol Curran c/o Jose Gonzales 2329 Belmont Ave. Idaho Falls, ID 83404-6413	Hecla Patent	T13N R27E 21	44.43471	-113.26082	NRAP
Hecla Mill Site	RP99000020005J	Bruce and Suzette Horton Revocable Living Trust 220 East Shelly Street Idaho Falls, ID 83402-2215	Hecla Patent	T13N R27E 21	44.43554	-113.26037	NRAP
Hecla Mill Site	RP99000020005K	UNKNOWN	Hecla Patent	T13N R27E 21	44.43641	-113.25966	NRAP
Isabel Mill Site	RP99000020005S	Paul Simmons 1066 Yellowstone Avenue Apt # 25 Pocatello, ID 83201	Isabel Patent	T13N R27E 21	44.43334	-113.25913	NRAP
Isabel Mill Site	RP99000020005T	Larry Simmons 8523 N 25th E Idaho Falls, ID 83401	Isabel Patent	T13N R27E 21	44.43404	-113.25861	NRAP
Isabel Mill Site	RP99000020005U	Larry Simmons 8523 N 25th E Idaho Falls, ID 83401	Isabel Patent	T13N R27E 21	44.43482	-113.25795	NRAP

Mine/Mill Name	Parcel #	Owners	Mine aka	T R S	Latitude	Longitude	State's Recommendation
Isabel Mill Site	RP99000020005V	Glenn & Connie Embree aka Constance Revocable Family Trust 485 N 4154 E Rigby, ID 83442	Isabel Patent	T13N R27E 21	44.43561	-113.25763	NRAP
Isabel Mill Site	RP99000020005W	Ann Marie Harmon 250 Yale Avenue Rexburg, ID 83440	Isabel Patent	T13N R27E 21	44.43621	-113.25703	NRAP
Calumet Mill Site	RP99000020005N	Steve & Jan Nickels 11620 N Faith Lane Pocatello ID 83202	Calumet Patent	T13N R27E 21	44.44162	-113.25808	NRAP
Calumet Mill Site	RP99000020005O	Ronald Mizia 240 Beacon Drive Idaho Falls, ID 83402	Calumet Patent	T13N R27E 21	44.44072	-113.2583	NRAP
Calumet Mill Site	RP99000020005P	Larry & Patsy Lounsbury c/o Juis Soria 334 N 4100 E Rigby, ID 83442	Calumet Patent	T13N R27E 21	44.43997	-113.2587	NRAP
Calumet Mill Site	RP99000020005Q	Gary Beardall 477 E 14th Street Idaho Falls, ID 83404	Calumet Patent	T13N R27E 21	44.43905	-113.25878	NRAP
Calumet Mill Site	RP99000020005R	Doug & Robert Morrow 240 N Berlin Rd #17 Idaho Falls ID 83402	Calumet Patent	T13N R27E 21	44.43824	-113.25888	NRAP

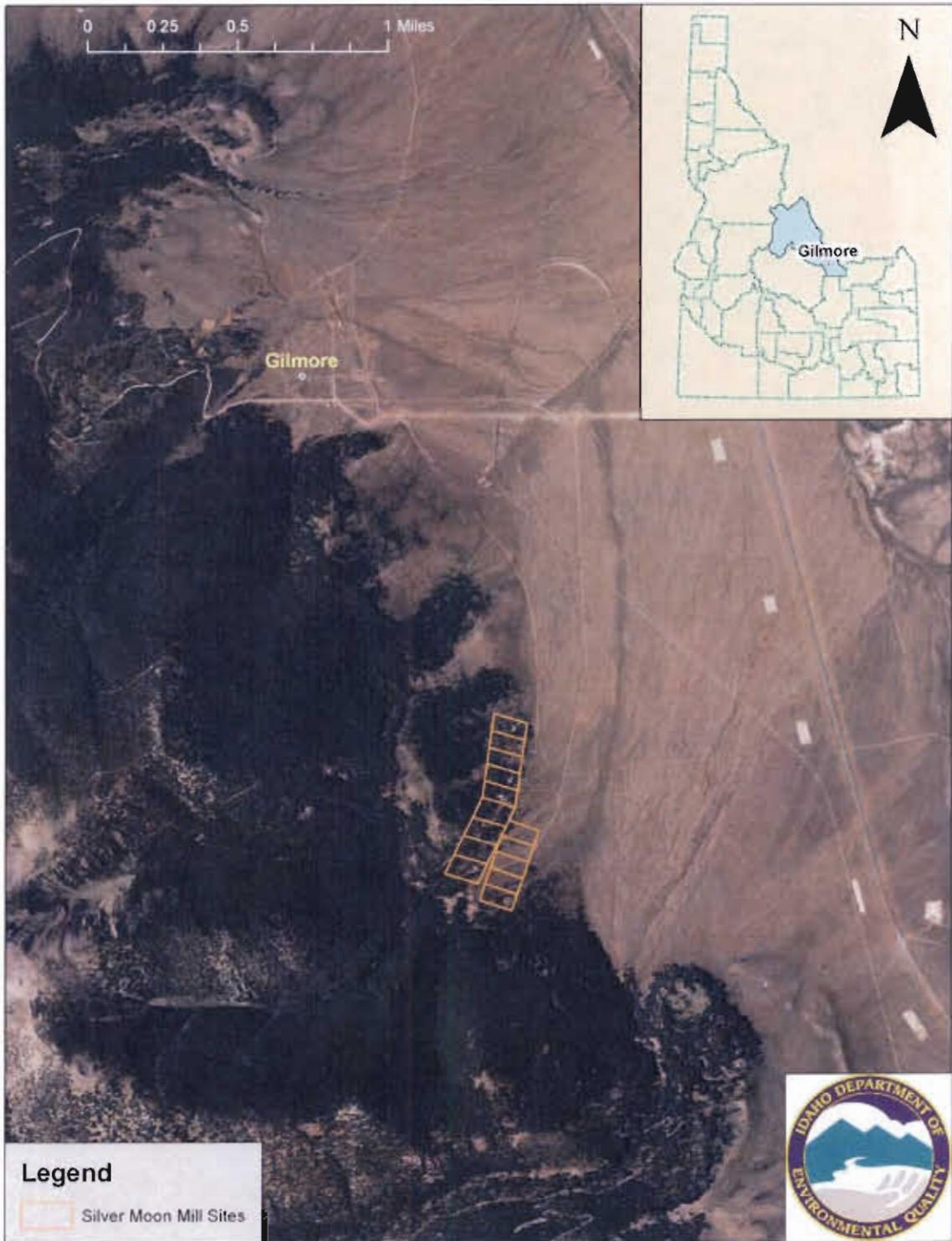


Figure 1. Location of the Silver Moon Mill Sites with Lemhi County 2010 Parcel Data overlay. (Map source: Lemhi County NAIP 2004)

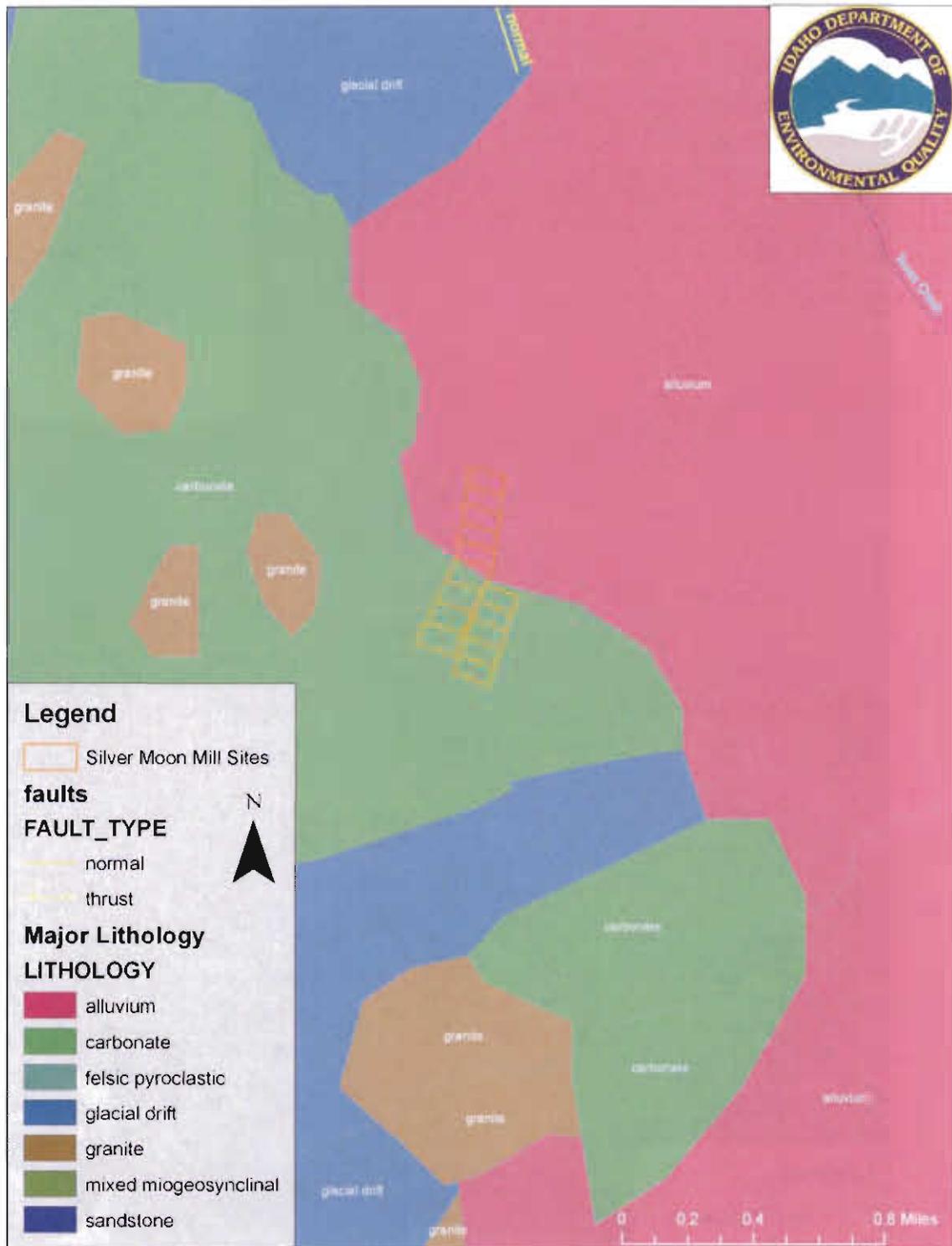


Figure 2. Lithology of the Silver Moon Mill Sites. (Map source: Idaho DEQ ArcSDE 9.2 Geodatabase)

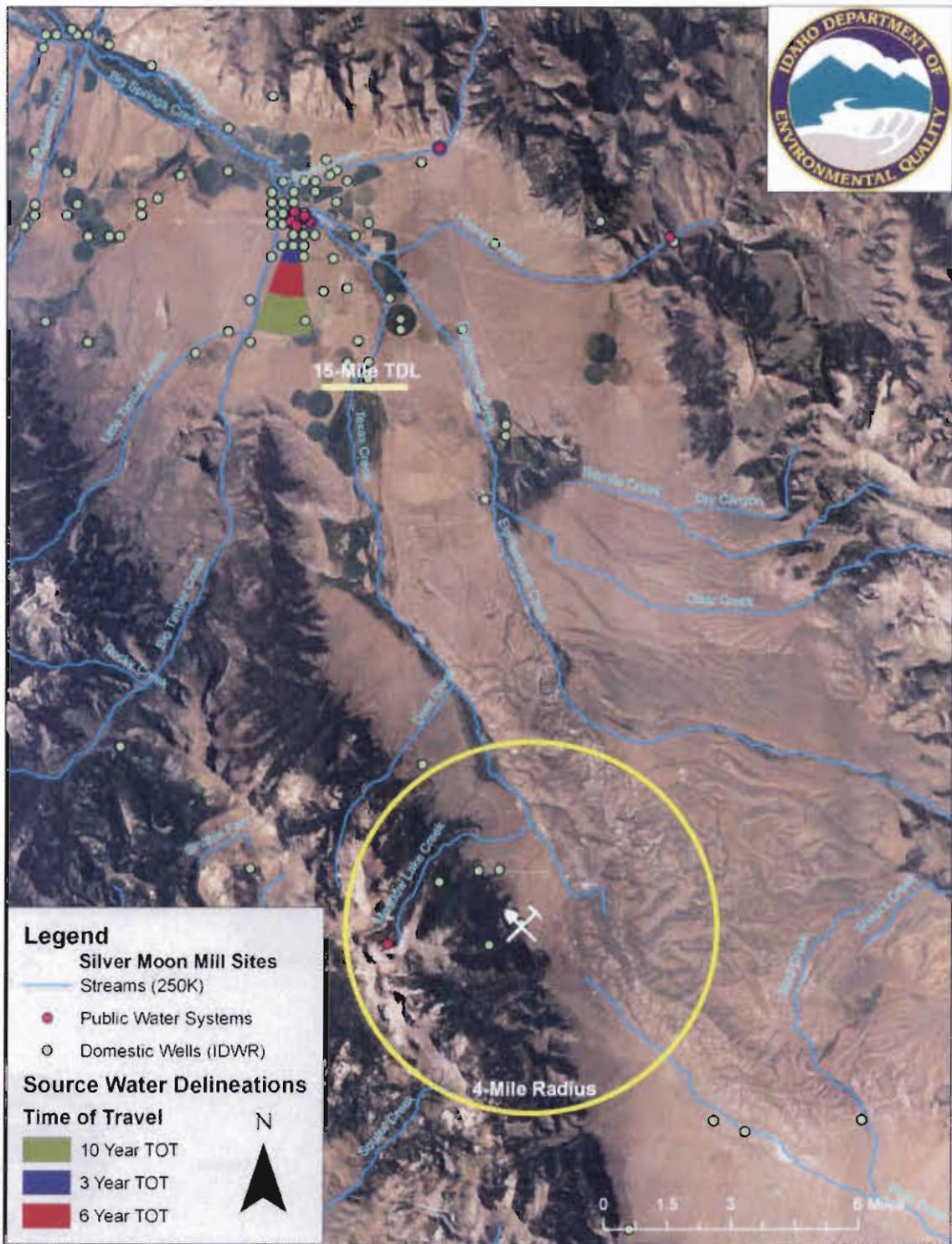


Figure 3. Drinking water well locations and source water delineations. 15-Mile Target Distance Limit (TDL). (Map source: Lemhi County NAIP 2004)

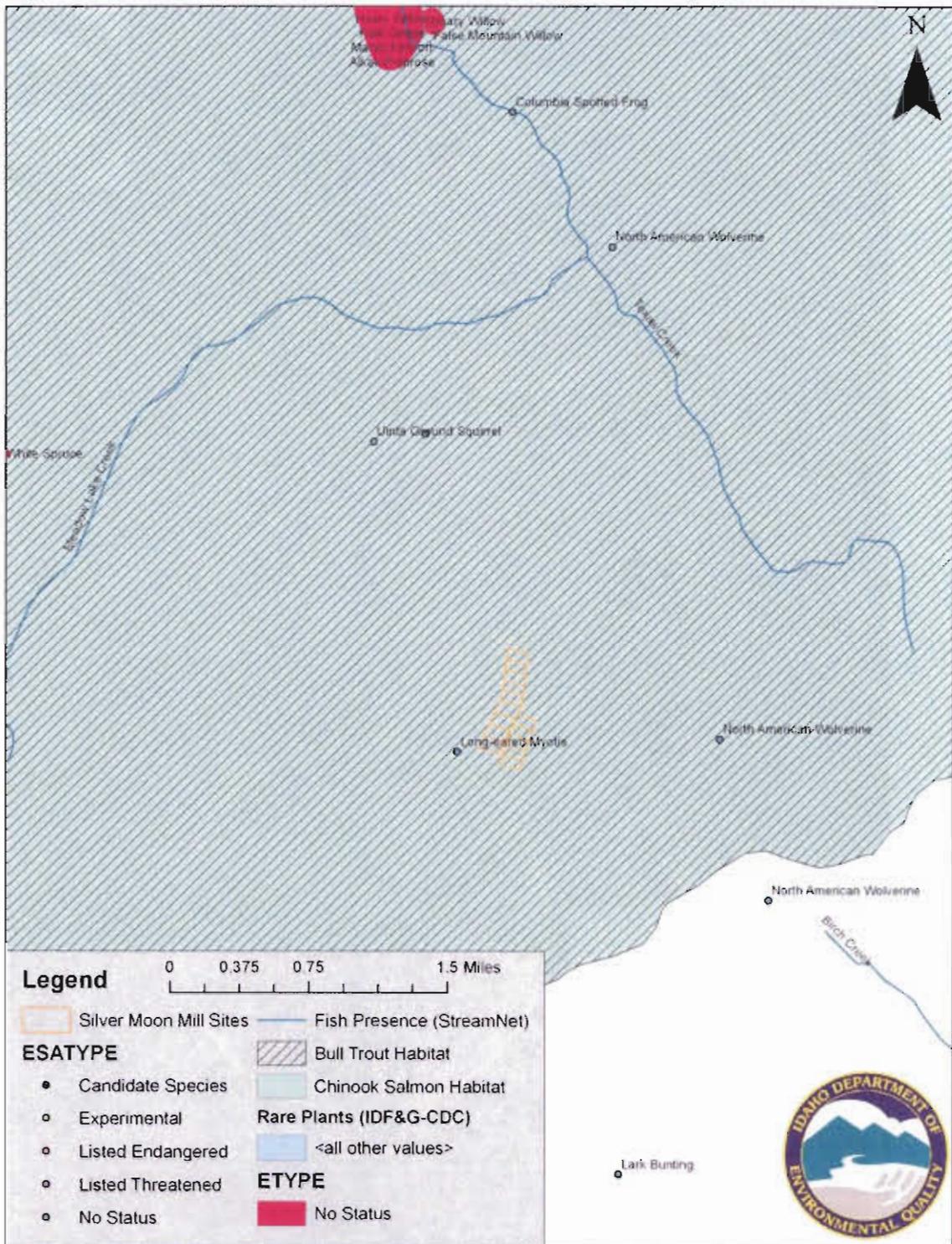


Figure 4. Sensitive species near the Silver Moon Mill Sites. (Map source: Idaho DEQ ArcSDE 9.2 Geodatabase)

## Silver Moon Photo Log and Site Conditions

Silver Moon Gulch and the area just outside it in the Lemhi River Valley contain mixed ownership lands administered by the USDA Forest Service and numerous private individuals or families. Within the area is the Silver Moon Mine with 18 unpatented mine claims and the Hecla, Isabel, and Calumet patented claims. Access was granted to several home sites on the Hecla, Isabel, and Calumet claims sites and observations were made of adjacent properties and conditions leading DEQ to recommend No Remedial Actions Planned (NRAP) or any further investigations made of the mill sites.



*Photo 1. Historical Marker for the Gilmore Mining area of the Texas Mining District. (B. Schuld 5/12/10)*



*Photo 2. Much of the Texas Gilmore area has been subdivided or is being subdivided and sold for recreational residential development.  
(B. Schuld 5/12/10)*



*Photo 3. Much of the Texas Gilmore area has been subdivided or is being subdivided and sold for recreational residential development.  
(B. Schuld 5/12/10)*

## Lots For Sale in Gilmore, Idaho

The shaded lots are available to purchase.\*

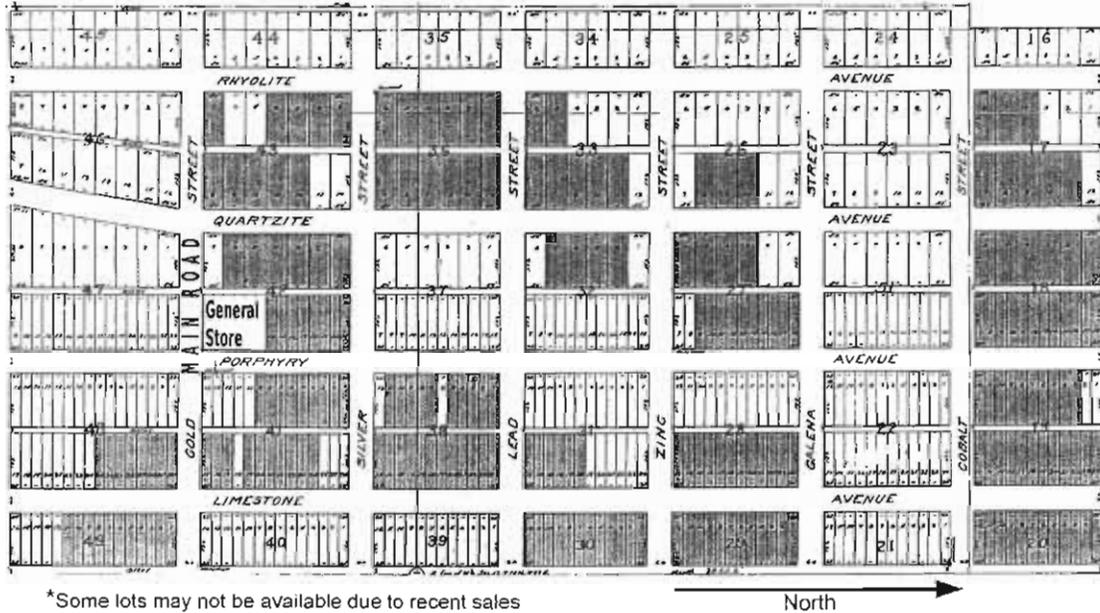
Pick your lot(s) and contact us to purchase. Small lots are 25' by 132'. Large lots are 50' by 132'.

Small lots are \$3500. Owner will finance with \$500 down and \$50 a month.  
Large lots are \$7000. Owner will finance with \$1000 down and \$100 a month.

No Credit Checks.

Contact us for more information or to purchase.  
www.meadowlakelandcompany.com

Justin Jay  
801-609-8440 435-467-2047



\*Some lots may not be available due to recent sales

North

*Figure 1. Flyer promoting lots for sale in Gilmore.*



*Photo 4. Silver Moon Mine bunkhouse and office on USDA administered lands. (B Schuld 5/12/10)*



*Photo 5. Historic mine office for the Silver Moon Mine.  
(B. Schuld 5/12/10)*



*Photo 6. Historic mine office for the Silver Moon Mine.  
(B. Schuld 5/12/10)*



*Photo 7. Dangerous Open Adit #1 Silver Moon Mine Lat 44.434300°  
Long ~113.26500°. (B. Schuld 5/12/10)*

Silver Moon Mine Adit #1 is open and poses a significant physical hazard. However, the waste dump contains less than 100 cubic yards of waste rock dominated by dolomite with little evidence of sulfides. It does not constitute human health or ecological risks due to heavy metals.



*Photo 8. Silver Moon Mine Adit #2 is an open and dangerous physical hazard.  
Lat. 44.43417° Long ~113.26500°. (B. Schuld 5/12/10)*

Silver Moon Mine Adit #2 is open and poses a significant physical hazard. However, the waste dump contains less than 100 cubic yards of waste rock dominated by dolomite with little evidence of sulfides. It does not constitute human health or ecological risks due to heavy metals.



*Photo 9. Silver Moon Mine Adit #3 is an open and dangerous physical hazard.  
Lat. 44.43385° Long 113.26400°. (B. Schuld 5/12/10)*

Silver Moon Mine Adit #3 is open and poses a significant physical hazard. However, the waste dump contains less than 1,000 cubic yards of waste rock dominated by dolomite with little evidence of sulfides. It does not constitute human health or ecological risks due to heavy metals.



*Photo 10. Silver Moon Mine Waste Dump #1 is the site of the closed Shaft #1  
(above). (B. Schuld 7/20/10)*

Waste Dump #1 is the largest of the Silver Moon Mine Waste dumps and contains country rock derived from driving Shaft #1 and at least two adits located west of Shaft #1. The waste dump covers approximately three acres and contains over 10,000 cubic yards of material.

A composite waste sample (SMWD1SS1) from seven surficial sites was collected on Waste Dump #1. After removal of the first few inches of debris and organic matter, approximately 1 lb of sample was extracted from each of the sites and placed in a stainless steel bowl. The samples were mixed and then sieved through a 9 mesh screen. Approximately 30 percent passed the 9 mesh screen. The other 70 percent was typically +1/2-inch to three inches in size. However, there was a large volume or percentage of material on the dump 4 to 24 inches in size. Little or no massive sulfides were noted on the dump and the material was dominated by highly altered dolomite (marble).



*Photo 11. Silver Moon Shaft #1 and headframe backfilled. (B. Schuld 7/20/10)*



*Photo 12. Caved adit(s) behind (west) Silver Moon Shaft #1 and headframe. (B. Schuld 7/20/10)*



*Photo 13. North half of Silver Moon Waste Dump #1. (B. Schuld 7/20/10)*



*Photo 14. Silver Moon Shaft #1 and headframe. (B. Schuld 7/20/10)*



*Photo 15. Remnants of hunting camp near Silver Moon Shaft #2 approximately 300 feet north of Silver Moon Shaft #1. (B. Schuld 7/20/10)*

Numerous uses of the area were evident including residential development, off road vehicle (ORV) touring of historical mines, hunting, fishing, and camping.



*Photo 16. Caved adit or stope adjacent to Silver Moon Shaft #2. (B. Schuld 7/20/10)*



*Photo 17. Collapsed Silver Moon Mine Shaft #2 Lat 44.43370° Long -113.26400°. (B. Schuld 7/20/10)*



*Photo 18. Open adit and waste dump in spur to Silver Moon Gulch on USDA administered lands Lat 44.434600° Long -113.26500°. (B. Schuld 7/20/10)*



*Photo 19. Unknown open adit and dump, containing less than 500 cubic yards, was sampled (UKADISS1) Lat 44.43454° Long -113.26600°. (B. Schuld 7/20/10)*

There was evidence of people digging in the waste dump labeled UKWD1.



*Photo 20. Open adit and waste dump in spur to Silver Moon Gulch on USDA administered lands Lat 44.434600° Long -113.26500°. (B. Schuld 7/20/10)*



*Photo 21. Open adit and waste dump in spur to Silver Moon Gulch on USDA administered lands Lat 44.434600° Long -113.26500°. (B. Schuld 7/20/10)*



*Photo 22. Unnamed open adit on USDA administered lands Lat 44.43957° Long -113.26690°. (B. Schuld 7/20/10)*



*Photo 23. Unnamed open adit on USDA administered lands Lat 44.43957° Long 113.26690°. (B. Schuld 7/20/10)*



*Photo 24. Unnamed open shaft on USDA administered lands in spur to Silver Moon Gulch at Lat 44.44097° Long 113.26640°. (B. Schuld)*

Due to the number of open dangerous adits and shafts found on the lands administered by the USDA Forest Service, DEQ will recommend a mine opening inventory be completed by the USDA and, where appropriate, access is restricted since several were found immediately adjacent to heavily used ORV trails and dispersed campsites. DEQ is not recommending the historic significance be destroyed, but rather the physical risks are managed.



*Photo 26. Silver Moon Gulch background soil sample (SMBGSS1) Lat 44.43197° Long -113.26500°. (B. Schuld 7/20/10)*

Silver Moon Gulch was sampled for background analysis approximately 500 feet above the mine workings and development. The sample SMBGSS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.



*Photo 27. The Silver Moon Mine Decline has been closed and retrofitted with a bat gate Lat 44.43238 Long -113.26100. (B. Schuld 5/12/10)*

The dump surrounding the Silver Moon Decline was very large (> 5,000 cubic yards) and has been significantly altered by earth moving equipment. Therefore, it was not possible to determine how much material was country rock extracted from the excavation or was ore material. A composite sample was collected using a similar methodology as on Waste Dump #1.

Seven random sites were selected, sampled, and composited for total metals analysis. Sample SMDSS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.



*Photo 28. Silver Moon caved Adit #6 and Waste Dump #6. (B. Schuld 7/20/10)*

Silver Moon Waste Dump #6 appeared to be very well vegetated. However, there were several areas where massive sulfides were apparent in heavily altered and stained dolomite. Therefore sample SMWD6SS1 was collected at this location. Sample SMWD6SS1 was buff or brown colored, contained less than 10 percent organics, and had >60 percent passing the 9 mesh sieve. The -9 mesh fraction was bagged and submitted for total metals.



*Photo 29. Bruce Horton's cabin and site of domestic well sampling for ground water quality associated with Silver Moon Mine workings and mineralization. Lat 44.43499° Long -113.26000° (B. Schuld 7/20/10)*

Three patented claims (Hecla, Isabel and Calumet) are located just outside of and to the north of Silver Moon Gulch. These claims have been subdivided into 14 home sites of approximately 5 acres each. The individual parcels are designated on the Lemhi County Tax Roll as RP99000020005 H – K, and RP99000020005 N – W (See Ownership Table 1, attached).

Access was somewhat restricted, so direct observations were made on only three of the 14 home sites on the Hecla, Isabel, and Calumet claims. Indirect observations on the remaining home sites were made from public roads bordering the properties. On the three sites inspected by DEQ, there was no evidence to any volumes of hazardous or deleterious wastes warranting cleanup or management. Observations of the remaining 11 home sites led DEQ to conclude these properties did not contain any large volumes of wastes requiring management. Therefore, DEQ has concluded the three claims should be designated NRAPs.

Although there are several deep domestic wells located in the area, access was only given to Mr. Bruce Horton's. His property is located on the Hecla claim, immediately outside of Silver Moon Gulch and down gradient from the surface and underground mine workings. Mr. Horton's well is approximately 500' deep. Mr. Horton's well was sampled (SMGW1) on 7/20/10. Initially the well was run for approximately 10 minutes to allow the pump and local storage to be purged. Sample containers and filtering towers were rinsed three times with well water to cleanse them of contaminants. A sample was collected and acidified for analysis of total metals concentrations. A second sample was collected and filtered through a 45 µ filter and pressurized tower, placed in a rinsed container and acidified. Field parameters were also collected at the well head using a calibrated Horiba and rinsed reservoir. Field parameters are:

<b>Parameters</b>	<b>Horton Well</b>
pH	7.75 std. units
Specific Conductance	0.298 µsiemen/cm
Turbidity	<10 NTUs
Dissolved Oxygen	10.63 mg/L
Temperature	11.5°C
Salinity	.01%

There was no available background source for ground water.

IDAHO DEPARTMENT OF WATER RESOURCES  
WELL DRILLER'S REPORT

74

Office Use Only  
Well ID No. \_\_\_\_\_  
Inspected by \_\_\_\_\_  
Twp. \_\_\_\_\_ Rge. \_\_\_\_\_ Sec. \_\_\_\_\_  
1/4 1/4 1/4  
Lat: \_\_\_\_\_ Long: \_\_\_\_\_

1. WELL TAG NO. D 0020730  
DRILLING PERMIT NO. \_\_\_\_\_  
Water Right or Injection Well No. \_\_\_\_\_

2. OWNER:  
Name Bruce Horton  
Address 230 East Shelby St  
City Tetonia Falls State Id Zip 83402

3. LOCATION OF WELL by legal description:  
You must provide address or Lot, Blk, Sub. or Directions to well.  
Twp. 13 North  or South   
Rge. 27 East  or West   
Sec. 29 1/4 SE 1/4 NW 1/4  
Gov'l Lot \_\_\_\_\_ County Latah  
Lat: \_\_\_\_\_ Long: \_\_\_\_\_  
Address of Well Site Silver Moon Gulch  
City Galena  
Blk. \_\_\_\_\_ Sub. Name Silver Moon

4. USE:  
 Domestic  Municipal  Monitor  Irrigation  
 Thermal  Injection  Other \_\_\_\_\_

5. TYPE OF WORK check all that apply (Replacement etc.)  
 New Well  Modify  Abandonment  Other \_\_\_\_\_

6. DRILL METHOD:  
 Air Rotary  Cable  Mud Rotary  Other \_\_\_\_\_

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Bentonite</u>	<u>0</u>	<u>18</u>		

Was drive shoe used?  Y  N Shoe Depth(s) 96 FT  
Was drive shoe seal tested?  Y  N How? \_\_\_\_\_

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6"</u>	<u>18"</u>	<u>96"</u>	<u>250</u>	<u>Steel</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<u>4 1/2"</u>	<u>30"</u>	<u>500"</u>	<u>250</u>	<u>Alu.</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		<u>80"</u>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Length of Headpipe \_\_\_\_\_ Length of Tailpipe \_\_\_\_\_  
Packer  Y  N Type \_\_\_\_\_

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method Greenlaw Saw  
Screen Type & Method of Installation \_\_\_\_\_

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>490</u>	<u>100</u>	<u>48"</u>	<u>3 per</u>	<u>4 1/2"</u>	<u>Alu.</u>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
			<u>FT</u>			<input type="checkbox"/>	<input type="checkbox"/>

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:  
300 ft. below ground • Artesian pressure \_\_\_\_\_ lb.  
Depth flow encountered \_\_\_\_\_ ft. Describe access port or control devices: Well Cap

12. WELL TESTS:  
 Pump  Bailor  Air  Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
<u>5 gpm</u>	<u>N/A</u>	<u>490 FT</u>	<u>3 1/2 hrs</u>

Water Temp. Cold Bottom hole temp. Cold  
Water Quality test or comments: None  
Depth first Water Encounter 295'

13. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>10"</u>	<u>0</u>	<u>2</u>	<u>Top soil</u>		<input checked="" type="checkbox"/>
	<u>2</u>	<u>10</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
	<u>10</u>	<u>18</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
<u>6"</u>	<u>18</u>	<u>30</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
	<u>30</u>	<u>40</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
	<u>40</u>	<u>80</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
	<u>80</u>	<u>90</u>	<u>Clay</u>		<input checked="" type="checkbox"/>
	<u>90</u>	<u>93</u>	<u>Shale Rock</u>		<input checked="" type="checkbox"/>
	<u>93</u>	<u>100</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>
	<u>100</u>	<u>160</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>
	<u>160</u>	<u>200</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>
	<u>200</u>	<u>300</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>
	<u>300</u>	<u>400</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>
	<u>400</u>	<u>500</u>	<u>Solid Rock</u>		<input checked="" type="checkbox"/>

RECEIVED

FEB 14 2007

Department of Water Resources  
Eastern Region

Completed Depth 500 FT (Measurable)  
Date: Started 7-6-05 Completed 7-8-05

14. DRILLER'S CERTIFICATION  
I/We certify that all minimum well construction standards were complied with at the time the rig was removed

Company Name JAFECO Firm No. 504  
Principal Driller and Driller or Operator Jeremy Justice Date 7-10-05  
Operator I \_\_\_\_\_ Date \_\_\_\_\_  
Principal Driller and Rig Operator Required.  
Operator I must have signature of Driller/Operator II.

marked 2/14/05

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## **Appendix B. Laboratory Sample Reports**

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# CHAIN OF CUSTODY RECORD

SVL Analytical, Inc. • One Government Gulch • Kellogg, ID 83837 • (208) 784-1258 • FAX: (208) 783-0891

Page 1 of 1

WOG0719

FOR SVL USE ONLY  
SVL JOB #

TEMP on Receipt:

Table 1. -- Matrix Type

- 1 = Surface Water, 2 = Ground Water
- 3 = Soil/Sediment, 4 = Rinsate, 5 = Oil
- 6 = Waste, 7 = Other

Report to Company: Id, Dept of Envir. Quality  
 Contact: Bruce Schold  
 Address: 1410 N Hilton  
Boise ID 83706  
 Phone Number: 208 841 8179  
 FAX Number: 208 373 0154  
 E-mail: bruce.schold@deg.idaho.gov

Invoice Sent To: \_\_\_\_\_  
 Contact: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 Phone Number: \_\_\_\_\_  
 FAX Number: \_\_\_\_\_  
 PO#: \_\_\_\_\_

Project Name: Texas Culinary Mining Dist  
 Sampler's Signature: [Signature]

Indicate State of sample origination: \_\_\_\_\_

USACE?  Yes  No

Sample ID	Collection		Misc.	Preservative(s)						Other (Specify)	Analyses Required	Rush Instructions (Days)	Comments			
	Date	Time		Matrix Type (From Table 1)	No. of Containers	Unpreserved	HNO <sub>3</sub> Filtered	HNO <sub>3</sub> Unfiltered	HCl					H <sub>2</sub> SO <sub>4</sub>	NaOH	
1 SMWD1SS1	7/20	9:00	3	1	X											
2 SM BG SS 1	7/20	10:00	3	1	X											
3 UK AD 1 SS 1	7/20	11:00	3	1	X											
4 SM D SS 1	7/20	12:00	3	1	X											
5 SM WD 6 SS 1	7/20	13:00	3	1	X											
6 GT AD SS 1	7/21	16:00	3	1	X											
7 AM AD 1 SS 1	7/22	8:00	3	1	X											
8 UK AD SS 1	7/22	10:00	3	1	X											
9 GM BG SS 1	7/22	11:00	3	1	X											
10																

Relinquished by: Bruce Date: 7/25/10 Time: 12:00  
 Received by: [Signature] Date: 7/27/10 Time: 12:50

\* Sample Reject:  Return  Dispose  Store (30 Days)

\* SVL DID NOT RECEIVE THIS SAMPLE OF 7/27/10

White: LAB COPY Yellow: CUSTOMER COPY

SVL-COC 9/05



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
SMWD1SS1	W0G0719-01	Soil	20-Jul-10 09:00	BS	27-Jul-2010
SMBGSS1	W0G0719-02	Soil	20-Jul-10 10:00	BS	27-Jul-2010
SMDSS1	W0G0719-03	Soil	20-Jul-10 12:00	BS	27-Jul-2010
SMWD6SS1	W0G0719-04	Soil	20-Jul-10 13:00	BS	27-Jul-2010
GTADSS1	W0G0719-05	Soil	21-Jul-10 16:00	BS	27-Jul-2010
AMAD1SS1	W0G0719-06	Soil	22-Jul-10 08:00	BS	27-Jul-2010
UKADSS1	W0G0719-07	Soil	22-Jul-10 10:00	BS	27-Jul-2010
GMBGSS1	W0G0719-08	Soil	22-Jul-10 11:00	BS	27-Jul-2010

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.

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

Fax (208) 783-0891

IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **SMWD1SS1**

SVL Sample ID: **W0G0719-01 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Jul-10 09:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	90.7	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:14	
EPA 6010B	Arsenic	112	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:14	
EPA 6010B	Barium	623	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:14	
EPA 6010B	Cadmium	4.58	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:14	
EPA 6010B	Chromium	17.2	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:14	
EPA 6010B	Copper	121	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:14	
EPA 6010B	Iron	16200	mg/kg	6.0	1.0		W031189	DG	08/10/10 11:13	
EPA 6010B	Lead	4850	mg/kg	0.75	0.36		W031189	DG	08/10/10 11:14	
EPA 6010B	Manganese	6320	mg/kg	0.40	0.06		W031189	DG	08/10/10 13:27	
EPA 6010B	Selenium	24.4	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:14	
EPA 6010B	Silver	39.6	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:14	
EPA 6010B	Zinc	930	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:14	
EPA 7471A	Mercury	2.13	mg/kg	0.330	0.095	10	W032137	JAA	08/05/10 15:19	D2
<b>Percent Solids</b>										
Percent Solids	% Solids	96.6	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **SMBGSS1**

SVL Sample ID: **W0G0719-02 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Jul-10 10:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:32	
EPA 6010B	Arsenic	18.0	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:32	
EPA 6010B	Barium	358	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:31	
EPA 6010B	Cadmium	0.75	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:31	
EPA 6010B	Chromium	22.1	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:31	
EPA 6010B	Copper	18.8	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:31	
EPA 6010B	Iron	17700	mg/kg	6.0	1.0		W031189	DG	08/10/10 11:30	
EPA 6010B	Lead	102	mg/kg	0.75	0.36		W031189	DG	08/10/10 11:32	
EPA 6010B	Manganese	913	mg/kg	0.40	0.06		W031189	DG	08/10/10 13:42	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:32	
EPA 6010B	Silver	0.85	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:31	
EPA 6010B	Zinc	191	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:31	
EPA 7471A	Mercury	0.063	mg/kg	0.033	0.010		W032137	JAA	08/05/10 13:03	
<b>Percent Solids</b>										
Percent Solids	% Solids	94.7	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **SMDSS1**

SVL Sample ID: **W0G0719-03 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Jul-10 12:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	145	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:37	
EPA 6010B	Arsenic	201	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:37	
EPA 6010B	Barium	2610	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:37	
EPA 6010B	Cadmium	9.04	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:37	
EPA 6010B	Chromium	62.2	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:37	
EPA 6010B	Copper	217	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:37	
EPA 6010B	Iron	26600	mg/kg	6.0	1.0		W031189	DG	08/10/10 11:36	
EPA 6010B	Lead	7570	mg/kg	0.75	0.36		W031189	DG	08/10/10 11:37	
EPA 6010B	Manganese	17300	mg/kg	4.00	0.65	10	W031189	DG	08/10/10 13:48	D2
EPA 6010B	Selenium	4.6	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:37	
EPA 6010B	Silver	69.7	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:37	
EPA 6010B	Zinc	1550	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:37	
EPA 7471A	Mercury	6.28	mg/kg	0.330	0.095	10	W032137	JAA	08/05/10 15:24	D2
<b>Percent Solids</b>										
Percent Solids	% Solids	97.8	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **SMWD6SS1**

SVL Sample ID: **W0G0719-04 (Soil)**

Sample Report Page 1 of 1

Sampled: 20-Jul-10 13:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	56.1	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:43	
EPA 6010B	Arsenic	106	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:43	
EPA 6010B	Barium	543	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:43	
EPA 6010B	Cadmium	6.64	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:43	
EPA 6010B	Chromium	21.6	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:43	
EPA 6010B	Copper	68.1	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:43	
EPA 6010B	Iron	16500	mg/kg	6.0	1.0		W031189	DG	08/10/10 11:42	
EPA 6010B	Lead	1230	mg/kg	0.75	0.36		W031189	DG	08/10/10 11:43	
EPA 6010B	Manganese	2640	mg/kg	0.40	0.06		W031189	DG	08/10/10 13:53	
EPA 6010B	Selenium	23.4	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:43	
EPA 6010B	Silver	2.46	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:43	
EPA 6010B	Zinc	1140	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:43	
EPA 7471A	Mercury	0.210	mg/kg	0.033	0.010		W032137	JAA	08/05/10 13:09	
<b>Percent Solids</b>										
Percent Solids	% Solids	97.3	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **GTADSS1**

SVL Sample ID: **W0G0719-05 (Soil)**

Sample Report Page 1 of 1

Sampled: 21-Jul-10 16:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	43.5	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:49	
EPA 6010B	Arsenic	237	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:49	
EPA 6010B	Barium	497	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:49	
EPA 6010B	Cadmium	23.8	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:49	
EPA 6010B	Chromium	12.4	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:49	
EPA 6010B	Copper	394	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:49	
EPA 6010B	Iron	47900	mg/kg	6.0	1.0		W031189	DG	08/10/10 11:47	
EPA 6010B	Lead	14800	mg/kg	7.50	3.60	10	W031189	DG	08/10/10 14:00	D2
EPA 6010B	Manganese	10400	mg/kg	4.00	0.65	10	W031189	DG	08/10/10 13:59	D2
EPA 6010B	Selenium	13.6	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:49	
EPA 6010B	Silver	8.89	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:49	
EPA 6010B	Zinc	7300	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:49	
EPA 7471A	Mercury	0.593	mg/kg	0.033	0.010		W032137	JAA	08/05/10 13:10	
<b>Percent Solids</b>										
Percent Solids	% Solids	95.3	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **AMAD1SS1**  
SVL Sample ID: **W0G0719-06 (Soil)**

Sampled: 22-Jul-10 08:00  
Received: 27-Jul-10  
Sampled By: BS

**Sample Report Page 1 of 1**

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W031189	DG	08/10/10 11:55	
EPA 6010B	Arsenic	346	mg/kg	2.5	0.5		W031189	DG	08/10/10 11:55	
EPA 6010B	Barium	2220	mg/kg	0.20	0.02		W031189	DG	08/10/10 11:55	
EPA 6010B	Cadmium	6.86	mg/kg	0.20	0.03		W031189	DG	08/10/10 11:55	
EPA 6010B	Chromium	18.7	mg/kg	0.60	0.07		W031189	DG	08/10/10 11:55	
EPA 6010B	Copper	56.5	mg/kg	1.00	0.21		W031189	DG	08/10/10 11:55	
EPA 6010B	Iron	143000	mg/kg	60.0	10.3	10	W031189	DG	08/10/10 14:04	D2
EPA 6010B	Lead	2590	mg/kg	0.75	0.36		W031189	DG	08/10/10 11:55	
EPA 6010B	Manganese	32600	mg/kg	4.00	0.65	10	W031189	DG	08/10/10 14:04	D2
EPA 6010B	Selenium	6.0	mg/kg	4.0	1.4		W031189	DG	08/10/10 11:55	
EPA 6010B	Silver	9.54	mg/kg	0.50	0.04		W031189	DG	08/10/10 11:55	
EPA 6010B	Zinc	2820	mg/kg	1.00	0.22		W031189	DG	08/10/10 11:55	
EPA 7471A	Mercury	1.03	mg/kg	0.033	0.010		W032137	JAA	08/05/10 13:12	
<b>Percent Solids</b>										
Percent Solids	% Solids	98.3	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **UKADSS1**  
SVL Sample ID: **W0G0719-07 (Soil)**

Sampled: 22-Jul-10 10:00  
Received: 27-Jul-10  
Sampled By: BS

**Sample Report Page 1 of 1**

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	2.3	mg/kg	2.0	0.3		W031189	DG	08/10/10 12:13	
EPA 6010B	Arsenic	51.5	mg/kg	2.5	0.5		W031189	DG	08/10/10 12:13	
EPA 6010B	Barium	842	mg/kg	0.20	0.02		W031189	DG	08/10/10 12:12	
EPA 6010B	Cadmium	1.38	mg/kg	0.20	0.03		W031189	DG	08/10/10 12:12	
EPA 6010B	Chromium	12.9	mg/kg	0.60	0.07		W031189	DG	08/10/10 12:12	
EPA 6010B	Copper	108	mg/kg	1.00	0.21		W031189	DG	08/10/10 12:12	
EPA 6010B	Iron	19600	mg/kg	6.0	1.0		W031189	DG	08/10/10 12:11	
EPA 6010B	Lead	848	mg/kg	0.75	0.36		W031189	DG	08/10/10 12:12	
EPA 6010B	Manganese	1970	mg/kg	0.40	0.06		W031189	DG	08/10/10 14:21	
EPA 6010B	Selenium	9.6	mg/kg	4.0	1.4		W031189	DG	08/10/10 12:13	
EPA 6010B	Silver	6.88	mg/kg	0.50	0.04		W031189	DG	08/10/10 12:12	
EPA 6010B	Zinc	2330	mg/kg	1.00	0.22		W031189	DG	08/10/10 12:12	
EPA 7471A	Mercury	3.50	mg/kg	0.330	0.095	10	W032137	JAA	08/05/10 15:25	D2
<b>Percent Solids</b>										
Percent Solids	% Solids	90.1	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



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Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

Client Sample ID: **GMBGSS1**

SVL Sample ID: **W0G0719-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 22-Jul-10 11:00  
Received: 27-Jul-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W031189	DG	08/10/10 12:19	
EPA 6010B	Arsenic	24.4	mg/kg	2.5	0.5		W031189	DG	08/10/10 12:19	
EPA 6010B	Barium	67.6	mg/kg	0.20	0.02		W031189	DG	08/10/10 12:19	
EPA 6010B	Cadmium	0.70	mg/kg	0.20	0.03		W031189	DG	08/10/10 12:19	
EPA 6010B	Chromium	11.4	mg/kg	0.60	0.07		W031189	DG	08/10/10 12:19	
EPA 6010B	Copper	17.2	mg/kg	1.00	0.21		W031189	DG	08/10/10 12:19	
EPA 6010B	Iron	12100	mg/kg	6.0	1.0		W031189	DG	08/10/10 12:17	
EPA 6010B	Lead	151	mg/kg	0.75	0.36		W031189	DG	08/10/10 12:19	
EPA 6010B	Manganese	717	mg/kg	0.40	0.06		W031189	DG	08/10/10 14:26	
EPA 6010B	Selenium	5.7	mg/kg	4.0	1.4		W031189	DG	08/10/10 12:19	
EPA 6010B	Silver	0.65	mg/kg	0.50	0.04		W031189	DG	08/10/10 12:19	
EPA 6010B	Zinc	165	mg/kg	1.00	0.22		W031189	DG	08/10/10 12:19	
EPA 7471A	Mercury	0.075	mg/kg	0.033	0.010		W032137	JAA	08/05/10 13:20	
<b>Percent Solids</b>										
Percent Solids	% Solids	98.1	%	0.1			W031188	DP	07/29/10 09:44	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

**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 6010B	Antimony	mg/kg	<2.0	0.3	2.0	W031189	10-Aug-10	
EPA 6010B	Arsenic	mg/kg	<2.5	0.5	2.5	W031189	10-Aug-10	
EPA 6010B	Barium	mg/kg	<0.20	0.02	0.20	W031189	10-Aug-10	
EPA 6010B	Cadmium	mg/kg	<0.20	0.03	0.20	W031189	10-Aug-10	
EPA 6010B	Chromium	mg/kg	<0.60	0.07	0.60	W031189	10-Aug-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W031189	10-Aug-10	
EPA 6010B	Iron	mg/kg	<6.0	1.0	6.0	W031189	10-Aug-10	
EPA 6010B	Lead	mg/kg	<0.75	0.36	0.75	W031189	10-Aug-10	
EPA 6010B	Manganese	mg/kg	<0.40	0.06	0.40	W031189	10-Aug-10	
EPA 6010B	Selenium	mg/kg	<4.0	1.4	4.0	W031189	10-Aug-10	
EPA 6010B	Silver	mg/kg	<0.50	0.04	0.50	W031189	10-Aug-10	
EPA 6010B	Zinc	mg/kg	<1.00	0.22	1.00	W031189	10-Aug-10	
EPA 7471A	Mercury	mg/kg	<0.033	0.010	0.033	W032137	05-Aug-10	

**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 6010B	Antimony	mg/kg	85.3	100	85.3	80 - 120	W031189	10-Aug-10	
EPA 6010B	Arsenic	mg/kg	84.0	100	84.0	80 - 120	W031189	10-Aug-10	
EPA 6010B	Barium	mg/kg	94.0	100	94.0	80 - 120	W031189	10-Aug-10	
EPA 6010B	Cadmium	mg/kg	87.0	100	87.0	80 - 120	W031189	10-Aug-10	
EPA 6010B	Chromium	mg/kg	104	100	104	80 - 120	W031189	10-Aug-10	
EPA 6010B	Copper	mg/kg	98.5	100	98.5	80 - 120	W031189	10-Aug-10	
EPA 6010B	Iron	mg/kg	947	1000	94.7	80 - 120	W031189	10-Aug-10	
EPA 6010B	Lead	mg/kg	93.1	100	93.1	80 - 120	W031189	10-Aug-10	
EPA 6010B	Manganese	mg/kg	102	100	102	80 - 120	W031189	10-Aug-10	
EPA 6010B	Selenium	mg/kg	81.4	100	81.4	80 - 120	W031189	10-Aug-10	
EPA 6010B	Silver	mg/kg	4.50	5.00	90.0	80 - 120	W031189	10-Aug-10	
EPA 6010B	Zinc	mg/kg	89.9	100	89.9	80 - 120	W031189	10-Aug-10	
EPA 7471A	Mercury	mg/kg	0.885	0.833	106	80 - 120	W032137	05-Aug-10	

**Quality Control - MATRIX SPIKE Data**

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

EPA 6010B	Antimony	mg/kg	134	90.7	100	43.8	75 - 125	W031189	10-Aug-10	M2
EPA 6010B	Arsenic	mg/kg	207	112	100	95.3	75 - 125	W031189	10-Aug-10	
EPA 6010B	Barium	mg/kg	649	623	100	R > 4S	75 - 125	W031189	10-Aug-10	M3
EPA 6010B	Cadmium	mg/kg	82.1	4.58	100	77.5	75 - 125	W031189	10-Aug-10	
EPA 6010B	Chromium	mg/kg	120	17.2	100	103	75 - 125	W031189	10-Aug-10	
EPA 6010B	Copper	mg/kg	215	121	100	93.7	75 - 125	W031189	10-Aug-10	
EPA 6010B	Iron	mg/kg	17600	16200	1000	R > 4S	75 - 125	W031189	10-Aug-10	M3
EPA 6010B	Lead	mg/kg	4050	4850	100	R > 4S	75 - 125	W031189	10-Aug-10	M3
EPA 6010B	Manganese	mg/kg	4870	6320	100	R > 4S	75 - 125	W031189	10-Aug-10	M3
EPA 6010B	Selenium	mg/kg	114	24.4	100	89.8	75 - 125	W031189	10-Aug-10	
EPA 6010B	Silver	mg/kg	38.5	39.6	5.00	R > 4S	75 - 125	W031189	10-Aug-10	M2
EPA 6010B	Zinc	mg/kg	922	930	100	R > 4S	75 - 125	W031189	10-Aug-10	M3
EPA 7471A	Mercury	mg/kg	2.73	2.13	0.167	R > 4S	75 - 125	W032137	05-Aug-10	D2,M1



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0G0719**  
Reported: 10-Aug-10 15:52

**Quality Control - MATRIX SPIKE DUPLICATE Data**

Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	mg/kg	147	134	100	9.2	20	W031189	10-Aug-10	
EPA 6010B	Arsenic	mg/kg	213	207	100	2.8	20	W031189	10-Aug-10	
EPA 6010B	Barium	mg/kg	692	649	100	6.4	20	W031189	10-Aug-10	
EPA 6010B	Cadmium	mg/kg	82.0	82.1	100	0.1	20	W031189	10-Aug-10	
EPA 6010B	Chromium	mg/kg	119	120	100	1.2	20	W031189	10-Aug-10	
EPA 6010B	Copper	mg/kg	220	215	100	2.4	20	W031189	10-Aug-10	
EPA 6010B	Iron	mg/kg	18400	17600	1000	4.6	20	W031189	10-Aug-10	
EPA 6010B	Lead	mg/kg	4500	4050	100	10.5	20	W031189	10-Aug-10	
EPA 6010B	Manganese	mg/kg	5770	4870	100	17.0	20	W031189	10-Aug-10	
EPA 6010B	Selenium	mg/kg	112	114	100	2.3	20	W031189	10-Aug-10	
EPA 6010B	Silver	mg/kg	39.8	38.5	5.00	3.4	20	W031189	10-Aug-10	
EPA 6010B	Zinc	mg/kg	965	922	100	4.6	20	W031189	10-Aug-10	
EPA 7471A	Mercury	mg/kg	2.28	2.73	0.167	17.9	20	W032137	05-Aug-10	D2,M3

**Quality Control - POST DIGESTION SPIKE Data**

Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	mg/kg	177	90.7	100	86.5	75 - 125	W031189	10-Aug-10	
EPA 6010B	Silver	mg/kg	42.7	39.6	5.00	62.8	75 - 125	W031189	10-Aug-10	M2

**Notes and Definitions**

- D2 Sample required dilution due to high concentration of target analyte.
- M1 Matrix spike recovery was high, but the LCS recovery was acceptable.
- 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
- R > 4S % recovery not applicable, sample concentration more than four times greater than spike level
- <RL A result is less than the reporting limit
- MRL Method Reporting Limit
- MDL Method Detection Limit
- N/A Not Applicable



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Sampled By	Date Received
LCSW1	W0H0231-01	Surface Water	29-Jul-10 10:30	BS	09-Aug-2010
JCPPEW1	W0H0231-02	Surface Water	28-Jul-10 11:19	TE	09-Aug-2010
SLADSW1	W0H0231-03	Surface Water	28-Jul-10 12:00	TE	09-Aug-2010
BHBGSW1	W0H0231-04	Surface Water	27-Jul-10 13:35	TE	09-Aug-2010
SPSW1	W0H0231-05	Surface Water	30-Jul-10 14:30	BS	09-Aug-2010
SPSW2	W0H0231-06	Surface Water	27-Jul-10 14:00	RH	09-Aug-2010
SMGW1	W0H0231-07	Surface Water	20-Jul-10 13:05	RH	09-Aug-2010
BHBGSD1	W0H0231-08	Soil	27-Jul-10 13:30	DS	09-Aug-2010
MLWD1SS1	W0H0231-09	Soil	28-Jul-10 09:20	TE	09-Aug-2010
SPSD2	W0H0231-10	Soil	27-Jul-10 14:05	RH	09-Aug-2010
JCSD1	W0H0231-11	Soil	28-Jul-10 11:19	DS	09-Aug-2010
LCSD1	W0H0231-12	Soil	29-Jul-10 10:35	BS	09-Aug-2010
SPSD1	W0H0231-13	Soil	30-Jul-10 14:35	BS	09-Aug-2010
BHBGSS1	W0H0231-14	Soil	27-Jul-10 13:40	TE	09-Aug-2010

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.

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

(Q6) SVL received the following containers outside of published EPA guidelines for preservation temperatures (0-6°C).

The guidelines do not pertain to nitric-preserved metals.

**Default Cooler (Received Temperature: 10.0°C)**

Labnumber	Container	Client ID	Labnumber	Container	Client ID
W0H0231-01 A	Nitric HDPE	LCSW1	W0H0231-02 A	Nitric HDPE	JCPPEW1
W0H0231-03 A	Nitric HDPE	SLADSW1	W0H0231-04 A	Nitric HDPE	BHBGSW1
W0H0231-05 A	Nitric HDPE	SPSW1	W0H0231-06 A	Nitric HDPE	SPSW2
W0H0231-07 A	Nitric HDPE	SMGW1	W0H0231-07 B	Filtered nitric HDPE	SMGW1
W0H0231-08 A	Bag, cloth	BHBGSD1	W0H0231-09 A	Bag, cloth	MLWD1SS1
W0H0231-10 A	Bag, cloth	SPSD2	W0H0231-11 A	Bag, cloth	JCSD1
W0H0231-12 A	Bag, cloth	LCSD1	W0H0231-13 A	Bag, cloth	SPSD1
W0H0231-14 A	Bag, cloth	BHBGSS1			



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **LCSW1**

SVL Sample ID: **W0H0231-01 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 29-Jul-10 10:30  
Received: 09-Aug-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W034083	JAA	08/17/10 14:16	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:06	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:06	
EPA 6010B	<b>Barium</b>	0.0032	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:06	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:06	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:06	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:06	
EPA 6010B	Iron	< 0.060	mg/L	0.060	0.027		W033252	DT	09/01/10 12:05	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:06	
EPA 6010B	Manganese	< 0.0040	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:05	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:06	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:06	
EPA 6010B	Zinc	< 0.0100	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:06	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **JCPPESW1**

SVL Sample ID: **W0H0231-02 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 28-Jul-10 11:19  
Received: 09-Aug-10  
Sampled By: TE

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033228	JAA	08/13/10 08:36	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:11	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:11	
EPA 6010B	<b>Barium</b>	0.0055	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:11	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:11	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:11	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:11	
EPA 6010B	Iron	< 0.060	mg/L	0.060	0.027		W033252	DT	09/01/10 12:10	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:11	
EPA 6010B	Manganese	< 0.0040	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:10	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:11	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:11	
EPA 6010B	Zinc	< 0.0100	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:11	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SLADSW1**

SVL Sample ID: **W0H0231-03 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 28-Jul-10 12:00  
Received: 09-Aug-10  
Sampled By: TE

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033228	JAA	08/13/10 08:41	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:17	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:17	
EPA 6010B	<b>Barium</b>	0.0126	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:17	
EPA 6010B	<b>Cadmium</b>	0.0033	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:17	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:17	
EPA 6010B	<b>Copper</b>	0.047	mg/L	0.010	0.005		W033252	DT	09/01/10 12:16	
EPA 6010B	<b>Iron</b>	1.54	mg/L	0.060	0.027		W033252	DT	09/01/10 12:15	
EPA 6010B	<b>Lead</b>	0.268	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:17	
EPA 6010B	<b>Manganese</b>	0.0343	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:15	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:17	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:16	
EPA 6010B	<b>Zinc</b>	0.0896	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:17	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **BHBGSW1**

SVL Sample ID: **W0H0231-04 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 27-Jul-10 13:35  
Received: 09-Aug-10  
Sampled By: TE

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033228	JAA	08/13/10 08:43	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:33	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:33	
EPA 6010B	<b>Barium</b>	0.0157	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:33	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:33	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:33	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:32	
EPA 6010B	<b>Iron</b>	0.762	mg/L	0.060	0.027		W033252	DT	09/01/10 12:31	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:33	
EPA 6010B	<b>Manganese</b>	0.0494	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:31	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:33	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:32	
EPA 6010B	Zinc	< 0.0100	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:33	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SPSW1**

SVL Sample ID: **W0H0231-05 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 30-Jul-10 14:30  
Received: 09-Aug-10  
Sampled By: BS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033228	JAA	08/13/10 08:45	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:38	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:38	
EPA 6010B	<b>Barium</b>	0.0228	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:38	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:38	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:38	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:38	
EPA 6010B	<b>Iron</b>	1.05	mg/L	0.060	0.027		W033252	DT	09/01/10 12:37	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:38	
EPA 6010B	<b>Manganese</b>	0.0663	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:37	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:38	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:38	
EPA 6010B	Zinc	< 0.0100	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:38	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SPSW2**

SVL Sample ID: **W0H0231-06 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 27-Jul-10 14:00  
Received: 09-Aug-10  
Sampled By: RH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total)</b>										
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033228	JAA	08/13/10 08:46	
<b>Metals (Total Recoverable)</b>										
EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:43	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:43	
EPA 6010B	<b>Barium</b>	0.0049	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:43	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:43	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:43	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:43	
EPA 6010B	Iron	< 0.060	mg/L	0.060	0.027		W033252	DT	09/01/10 12:42	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:43	
EPA 6010B	Manganese	< 0.0040	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:42	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:43	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:43	
EPA 6010B	Zinc	< 0.0100	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:43	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SMGW1**

SVL Sample ID: **W0H0231-07 (Surface Water)**

Sample Report Page 1 of 1

Sampled: 20-Jul-10 13:05  
Received: 09-Aug-10  
Sampled By: RH

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	0.000065		W033228	JAA	08/13/10 08:48	
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**Metals (Total Recoverable)**

EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.004		W033252	DT	09/01/10 12:59	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.006		W033252	DT	09/01/10 12:59	
EPA 6010B	<b>Barium</b>	0.0836	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:59	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033252	DT	09/01/10 12:59	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033252	DT	09/01/10 12:59	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033252	DT	09/01/10 12:59	
EPA 6010B	<b>Iron</b>	0.107	mg/L	0.060	0.027		W033252	DT	09/01/10 12:58	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033252	DT	09/01/10 12:59	
EPA 6010B	Manganese	< 0.0040	mg/L	0.0040	0.0019		W033252	DT	09/01/10 12:58	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033252	DT	09/01/10 12:59	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0014		W033252	DT	09/01/10 12:59	
EPA 6010B	<b>Zinc</b>	0.619	mg/L	0.0100	0.0019		W033252	DT	09/01/10 12:59	

**Metals (Dissolved)**

EPA 6010B	Antimony	< 0.020	mg/L	0.020	0.005		W033255	DT	08/19/10 13:35	
EPA 6010B	Arsenic	< 0.025	mg/L	0.025	0.005		W033255	DT	08/19/10 13:35	
EPA 6010B	<b>Barium</b>	0.0796	mg/L	0.0020	0.0007		W033255	DT	08/19/10 13:35	
EPA 6010B	Cadmium	< 0.0020	mg/L	0.0020	0.0005		W033255	DT	08/19/10 13:35	
EPA 6010B	Chromium	< 0.0060	mg/L	0.0060	0.0009		W033255	DT	08/19/10 13:35	
EPA 6010B	Copper	< 0.010	mg/L	0.010	0.005		W033255	DT	08/19/10 13:35	
EPA 6010B	Iron	< 0.060	mg/L	0.060	0.018		W033255	DT	08/19/10 13:34	
EPA 6010B	Lead	< 0.0075	mg/L	0.0075	0.0040		W033255	DT	08/19/10 13:35	
EPA 6010B	Manganese	< 0.0040	mg/L	0.0040	0.0019		W033255	DT	08/19/10 13:34	
EPA 6010B	Selenium	< 0.040	mg/L	0.040	0.013		W033255	DT	08/19/10 13:35	
EPA 6010B	Silver	< 0.0050	mg/L	0.0050	0.0012		W033255	DT	08/19/10 13:35	
EPA 6010B	<b>Zinc</b>	0.582	mg/L	0.0100	0.0016		W033255	DT	08/19/10 13:35	
EPA 7470A	Mercury	< 0.00020	mg/L	0.00020	0.000065		W033227	JAA	08/13/10 08:25	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

Fax (208) 783-0891

IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **BHBGSD1**

SVL Sample ID: **W0H0231-08 (Soil)**

Sample Report Page 1 of 1

Sampled: 27-Jul-10 13:30  
Received: 09-Aug-10  
Sampled By: DS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:08	
EPA 6010B	Arsenic	< 2.5	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:08	
EPA 6010B	<b>Barium</b>	12.8	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:07	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:07	
EPA 6010B	<b>Chromium</b>	13.9	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:07	
EPA 6010B	<b>Copper</b>	8.41	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:07	
EPA 6010B	<b>Iron</b>	8620	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:06	
EPA 6010B	<b>Lead</b>	2.07	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:08	
EPA 6010B	<b>Manganese</b>	276	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:06	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:08	
EPA 6010B	Silver	< 0.50	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:07	
EPA 6010B	<b>Zinc</b>	16.2	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:08	
EPA 7471A	<b>Mercury</b>	0.035	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:09	
<b>Percent Solids</b>										
Percent Solids	% Solids	96.8	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **MLWD1SS1**

SVL Sample ID: **W0H0231-09 (Soil)**

Sample Report Page 1 of 1

Sampled: 28-Jul-10 09:20  
Received: 09-Aug-10  
Sampled By: TE

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	19.1	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:13	
EPA 6010B	Arsenic	12.8	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:13	
EPA 6010B	Barium	58.6	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:13	
EPA 6010B	Cadmium	1.04	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:13	
EPA 6010B	Chromium	< 0.60	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:13	
EPA 6010B	Copper	54.0	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:13	
EPA 6010B	Iron	4320	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:11	
EPA 6010B	Lead	311	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:13	
EPA 6010B	Manganese	33.2	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:12	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:13	
EPA 6010B	Silver	9.56	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:13	
EPA 6010B	Zinc	55.4	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:13	
EPA 7471A	Mercury	3.18	mg/kg	0.330	0.095	10	W033173	JAA	08/17/10 13:19	D2
<b>Percent Solids</b>										
Percent Solids	% Solids	95.0	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SPSD2**

SVL Sample ID: **W0H0231-10 (Soil)**

Sample Report Page 1 of 1

Sampled: 27-Jul-10 14:05  
Received: 09-Aug-10  
Sampled By: RH

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	3.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:19	
EPA 6010B	Arsenic	2.7	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:19	
EPA 6010B	Barium	26.2	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:18	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:18	
EPA 6010B	Chromium	9.10	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:18	
EPA 6010B	Copper	10.3	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:18	
EPA 6010B	Iron	6030	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:17	
EPA 6010B	Lead	33.6	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:19	
EPA 6010B	Manganese	103	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:17	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:19	
EPA 6010B	Silver	2.40	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:18	
EPA 6010B	Zinc	35.6	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:18	
EPA 7471A	Mercury	0.528	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:14	
<b>Percent Solids</b>										
Percent Solids	% Solids	95.3	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **JCSD1**

SVL Sample ID: **W0H0231-11 (Soil)**

Sample Report Page 1 of 1

Sampled: 28-Jul-10 11:19  
Received: 09-Aug-10  
Sampled By: DS

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:24	
EPA 6010B	Arsenic	< 2.5	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Barium</b>	16.4	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:24	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Chromium</b>	6.38	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Copper</b>	3.53	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Iron</b>	5190	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:22	
EPA 6010B	<b>Lead</b>	6.69	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Manganese</b>	74.1	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:23	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:24	
EPA 6010B	Silver	< 0.50	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:24	
EPA 6010B	<b>Zinc</b>	10.3	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:24	
EPA 7471A	<b>Mercury</b>	0.052	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:19	
<b>Percent Solids</b>										
Percent Solids	% Solids	96.0	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **LCSD1**  
SVL Sample ID: **W0H0231-12 (Soil)**

Sampled: 29-Jul-10 10:35  
Received: 09-Aug-10  
Sampled By: BS

**Sample Report Page 1 of 1**

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:29	
EPA 6010B	Arsenic	2.7	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:29	
EPA 6010B	Barium	20.0	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:29	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:29	
EPA 6010B	Chromium	3.73	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:29	
EPA 6010B	Copper	6.07	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:29	
EPA 6010B	Iron	4040	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:28	
EPA 6010B	Lead	12.6	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:29	
EPA 6010B	Manganese	204	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:28	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:29	
EPA 6010B	Silver	2.78	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:29	
EPA 6010B	Zinc	16.5	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:29	
EPA 7471A	Mercury	0.088	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:21	
<b>Percent Solids</b>										
Percent Solids	% Solids	92.9	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **SPSD1**  
SVL Sample ID: **W0H0231-13 (Soil)**

Sampled: 30-Jul-10 14:35  
Received: 09-Aug-10  
Sampled By: BS

**Sample Report Page 1 of 1**

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:35	
EPA 6010B	Arsenic	21.0	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:35	
EPA 6010B	Barium	64.1	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:34	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:35	
EPA 6010B	Chromium	3.37	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:35	
EPA 6010B	Copper	4.20	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:34	
EPA 6010B	Iron	9600	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:33	
EPA 6010B	Lead	3.61	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:35	
EPA 6010B	Manganese	65.8	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:33	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:35	
EPA 6010B	Silver	0.56	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:34	
EPA 6010B	Zinc	14.5	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:35	
EPA 7471A	Mercury	< 0.033	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:22	
<b>Percent Solids</b>										
Percent Solids	% Solids	95.3	%	0.1			W034163	DP	08/19/10 11:13	

This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



One Government Gulch - PO Box 929

Kellogg ID 83837-0929

(208) 784-1258

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IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

Client Sample ID: **BHBGSS1**

SVL Sample ID: **W0H0231-14 (Soil)**

Sample Report Page 1 of 1

Sampled: 27-Jul-10 13:40  
Received: 09-Aug-10  
Sampled By: TE

Method	Analyte	Result	Units	RL	MDL	Dilution	Batch	Analyst	Analyzed	Notes
<b>Metals (Total) by EPA 6000/7000 Methods</b>										
EPA 6010B	Antimony	< 2.0	mg/kg	2.0	0.3		W034164	DT	08/30/10 17:40	
EPA 6010B	Arsenic	< 2.5	mg/kg	2.5	0.5		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Barium</b>	31.3	mg/kg	0.20	0.02		W034164	DT	08/30/10 17:40	
EPA 6010B	Cadmium	< 0.20	mg/kg	0.20	0.03		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Chromium</b>	12.5	mg/kg	0.60	0.07		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Copper</b>	9.08	mg/kg	1.00	0.21		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Iron</b>	9230	mg/kg	6.0	1.0		W034164	DT	08/30/10 17:38	
EPA 6010B	<b>Lead</b>	6.54	mg/kg	0.75	0.36		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Manganese</b>	258	mg/kg	0.40	0.06		W034164	DT	08/30/10 17:38	
EPA 6010B	Selenium	< 4.0	mg/kg	4.0	1.4		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Silver</b>	0.55	mg/kg	0.50	0.04		W034164	DT	08/30/10 17:40	
EPA 6010B	<b>Zinc</b>	23.2	mg/kg	1.00	0.22		W034164	DT	08/30/10 17:40	
EPA 7471A	Mercury	< 0.033	mg/kg	0.033	0.010		W033173	JAA	08/17/10 11:24	

**Percent Solids**

Percent Solids	% Solids	90.8	%	0.1			W034163	DP	08/19/10 11:13	
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This data has been reviewed for accuracy and has been authorized for release by the Laboratory Director or designee.

**John Kern**  
Laboratory Director



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

**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	0.000065	0.00020	W033228	13-Aug-10	
EPA 7470A	Mercury	mg/L	<0.00020	0.000065	0.00020	W034083	17-Aug-10	

**Metals (Total) by EPA 6000/7000 Methods**

EPA 6010B	Antimony	mg/kg	<2.0	0.3	2.0	W034164	30-Aug-10	
EPA 6010B	Arsenic	mg/kg	<2.5	0.5	2.5	W034164	30-Aug-10	
EPA 6010B	Barium	mg/kg	<0.20	0.02	0.20	W034164	30-Aug-10	
EPA 6010B	Cadmium	mg/kg	<0.20	0.03	0.20	W034164	30-Aug-10	
EPA 6010B	Chromium	mg/kg	<0.60	0.07	0.60	W034164	30-Aug-10	
EPA 6010B	Copper	mg/kg	<1.00	0.21	1.00	W034164	30-Aug-10	
EPA 6010B	Iron	mg/kg	<6.0	1.0	6.0	W034164	30-Aug-10	
EPA 6010B	Lead	mg/kg	<0.75	0.36	0.75	W034164	30-Aug-10	
EPA 6010B	Manganese	mg/kg	<0.40	0.06	0.40	W034164	30-Aug-10	
EPA 6010B	Selenium	mg/kg	<4.0	1.4	4.0	W034164	30-Aug-10	
EPA 6010B	Silver	mg/kg	<0.50	0.04	0.50	W034164	30-Aug-10	
EPA 6010B	Zinc	mg/kg	<1.00	0.22	1.00	W034164	30-Aug-10	
EPA 7471A	Mercury	mg/kg	<0.033	0.010	0.033	W033173	17-Aug-10	

**Metals (Total Recoverable)**

EPA 6010B	Antimony	mg/L	<0.020	0.004	0.020	W033252	01-Sep-10	
EPA 6010B	Arsenic	mg/L	<0.025	0.006	0.025	W033252	01-Sep-10	
EPA 6010B	Barium	mg/L	<0.0020	0.0005	0.0020	W033252	01-Sep-10	
EPA 6010B	Cadmium	mg/L	<0.0020	0.0005	0.0020	W033252	01-Sep-10	
EPA 6010B	Chromium	mg/L	<0.0060	0.0009	0.0060	W033252	01-Sep-10	
EPA 6010B	Copper	mg/L	<0.010	0.005	0.010	W033252	01-Sep-10	
EPA 6010B	Iron	mg/L	<0.060	0.027	0.060	W033252	01-Sep-10	
EPA 6010B	Lead	mg/L	<0.0075	0.0040	0.0075	W033252	01-Sep-10	
EPA 6010B	Manganese	mg/L	<0.0040	0.0019	0.0040	W033252	01-Sep-10	
EPA 6010B	Selenium	mg/L	<0.040	0.013	0.040	W033252	01-Sep-10	
EPA 6010B	Silver	mg/L	<0.0050	0.0014	0.0050	W033252	01-Sep-10	
EPA 6010B	Zinc	mg/L	<0.0100	0.0019	0.0100	W033252	01-Sep-10	

**Metals (Dissolved)**

EPA 6010B	Antimony	mg/L	<0.020	0.005	0.020	W033255	19-Aug-10	
EPA 6010B	Arsenic	mg/L	<0.025	0.005	0.025	W033255	19-Aug-10	
EPA 6010B	Barium	mg/L	<0.0020	0.0007	0.0020	W033255	19-Aug-10	
EPA 6010B	Cadmium	mg/L	<0.0020	0.0005	0.0020	W033255	19-Aug-10	
EPA 6010B	Chromium	mg/L	<0.0060	0.0009	0.0060	W033255	19-Aug-10	
EPA 6010B	Copper	mg/L	<0.010	0.005	0.010	W033255	19-Aug-10	
EPA 6010B	Iron	mg/L	<0.060	0.018	0.060	W033255	19-Aug-10	
EPA 6010B	Lead	mg/L	<0.0075	0.0040	0.0075	W033255	19-Aug-10	
EPA 6010B	Manganese	mg/L	<0.0040	0.0019	0.0040	W033255	19-Aug-10	
EPA 6010B	Selenium	mg/L	<0.040	0.013	0.040	W033255	19-Aug-10	
EPA 6010B	Silver	mg/L	<0.0050	0.0012	0.0050	W033255	19-Aug-10	
EPA 6010B	Zinc	mg/L	<0.0100	0.0016	0.0100	W033255	19-Aug-10	
EPA 7470A	Mercury	mg/L	<0.00020	0.000065	0.00020	W033227	13-Aug-10	



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

**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	0.00450	0.00500	90.0	80 - 120	W033228	13-Aug-10	
EPA 7470A	Mercury	mg/L	0.00520	0.00500	104	80 - 120	W034083	17-Aug-10	

**Metals (Total) by EPA 6000/7000 Methods**

EPA 6010B	Antimony	mg/kg	93.0	100	93.0	80 - 120	W034164	30-Aug-10	
EPA 6010B	Arsenic	mg/kg	90.8	100	90.8	80 - 120	W034164	30-Aug-10	
EPA 6010B	Barium	mg/kg	96.5	100	96.5	80 - 120	W034164	30-Aug-10	
EPA 6010B	Cadmium	mg/kg	94.3	100	94.3	80 - 120	W034164	30-Aug-10	
EPA 6010B	Chromium	mg/kg	96.7	100	96.7	80 - 120	W034164	30-Aug-10	
EPA 6010B	Copper	mg/kg	95.3	100	95.3	80 - 120	W034164	30-Aug-10	
EPA 6010B	Iron	mg/kg	944	1000	94.4	80 - 120	W034164	30-Aug-10	
EPA 6010B	Lead	mg/kg	94.2	100	94.2	80 - 120	W034164	30-Aug-10	
EPA 6010B	Manganese	mg/kg	97.9	100	97.9	80 - 120	W034164	30-Aug-10	
EPA 6010B	Selenium	mg/kg	90.1	100	90.1	80 - 120	W034164	30-Aug-10	
EPA 6010B	Silver	mg/kg	4.85	5.00	97.0	80 - 120	W034164	30-Aug-10	
EPA 6010B	Zinc	mg/kg	91.9	100	91.9	80 - 120	W034164	30-Aug-10	
EPA 7471A	Mercury	mg/kg	0.845	0.833	101	80 - 120	W033173	17-Aug-10	

**Metals (Total Recoverable)**

EPA 6010B	Antimony	mg/L	1.04	1.00	104	80 - 120	W033252	01-Sep-10	
EPA 6010B	Arsenic	mg/L	1.03	1.00	103	80 - 120	W033252	01-Sep-10	
EPA 6010B	Barium	mg/L	1.09	1.00	109	80 - 120	W033252	01-Sep-10	
EPA 6010B	Cadmium	mg/L	1.06	1.00	106	80 - 120	W033252	01-Sep-10	
EPA 6010B	Chromium	mg/L	1.07	1.00	107	80 - 120	W033252	01-Sep-10	
EPA 6010B	Copper	mg/L	1.06	1.00	106	80 - 120	W033252	01-Sep-10	
EPA 6010B	Iron	mg/L	10.2	10.0	102	80 - 120	W033252	01-Sep-10	
EPA 6010B	Lead	mg/L	1.04	1.00	104	80 - 120	W033252	01-Sep-10	
EPA 6010B	Manganese	mg/L	1.04	1.00	104	80 - 120	W033252	01-Sep-10	
EPA 6010B	Selenium	mg/L	1.04	1.00	104	80 - 120	W033252	01-Sep-10	
EPA 6010B	Silver	mg/L	0.0547	0.0500	109	80 - 120	W033252	01-Sep-10	
EPA 6010B	Zinc	mg/L	1.05	1.00	105	80 - 120	W033252	01-Sep-10	

**Metals (Dissolved)**

EPA 6010B	Antimony	mg/L	0.908	1.00	90.8	80 - 120	W033255	19-Aug-10	
EPA 6010B	Arsenic	mg/L	0.897	1.00	89.7	80 - 120	W033255	19-Aug-10	
EPA 6010B	Barium	mg/L	0.936	1.00	93.6	80 - 120	W033255	19-Aug-10	
EPA 6010B	Cadmium	mg/L	0.905	1.00	90.5	80 - 120	W033255	19-Aug-10	
EPA 6010B	Chromium	mg/L	0.927	1.00	92.7	80 - 120	W033255	19-Aug-10	
EPA 6010B	Copper	mg/L	0.945	1.00	94.5	80 - 120	W033255	19-Aug-10	
EPA 6010B	Iron	mg/L	9.27	10.0	92.7	80 - 120	W033255	19-Aug-10	
EPA 6010B	Lead	mg/L	0.920	1.00	92.0	80 - 120	W033255	19-Aug-10	
EPA 6010B	Manganese	mg/L	0.924	1.00	92.4	80 - 120	W033255	19-Aug-10	
EPA 6010B	Selenium	mg/L	0.891	1.00	89.1	80 - 120	W033255	19-Aug-10	
EPA 6010B	Silver	mg/L	0.0469	0.0500	93.7	80 - 120	W033255	19-Aug-10	
EPA 6010B	Zinc	mg/L	0.895	1.00	89.5	80 - 120	W033255	19-Aug-10	
EPA 7470A	Mercury	mg/L	0.00431	0.00500	86.2	80 - 120	W033227	13-Aug-10	



IDEQ (Boise) 1410 N. Hilton Boise, ID 83706	<b>Project Name: Boise</b> Work Order: <b>W0H0231</b> Reported: 02-Sep-10 14:54
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Quality Control - MATRIX SPIKE Data										
Method	Analyte	Units	Spike Result	Sample Result (R)	Spike Level (S)	% Rec.	Acceptance Limits	Batch ID	Analyzed	Notes

**Metals (Total)**

EPA 7470A	Mercury	mg/L	0.00086	<0.00020	0.00100	86.0	75 - 125	W033228	13-Aug-10	
EPA 7470A	Mercury	mg/L	0.00107	<0.00020	0.00100	107	75 - 125	W034083	17-Aug-10	

**Metals (Total) by EPA 6000/7000 Methods**

EPA 6010B	Antimony	mg/kg	67.1	5.8	100	61.3	75 - 125	W034164	30-Aug-10	M2
EPA 6010B	Arsenic	mg/kg	623	469	100	R > 4S	75 - 125	W034164	30-Aug-10	M3
EPA 6010B	Barium	mg/kg	1870	1520	100	R > 4S	75 - 125	W034164	30-Aug-10	M3
EPA 6010B	Cadmium	mg/kg	95.0	0.91	100	94.1	75 - 125	W034164	30-Aug-10	
EPA 6010B	Chromium	mg/kg	111	6.60	100	104	75 - 125	W034164	30-Aug-10	
EPA 6010B	Copper	mg/kg	109	11.0	100	98.0	75 - 125	W034164	30-Aug-10	
EPA 6010B	Iron	mg/kg	7840	6360	1000	R > 4S	75 - 125	W034164	30-Aug-10	M3
EPA 6010B	Lead	mg/kg	130	32.2	100	98.0	75 - 125	W034164	30-Aug-10	
EPA 6010B	Manganese	mg/kg	301	190	100	111	75 - 125	W034164	30-Aug-10	
EPA 6010B	Selenium	mg/kg	94.6	<4.0	100	94.6	75 - 125	W034164	30-Aug-10	
EPA 6010B	Silver	mg/kg	5.61	<0.50	5.00	102	75 - 125	W034164	30-Aug-10	
EPA 6010B	Zinc	mg/kg	241	151	100	90.0	75 - 125	W034164	30-Aug-10	
EPA 7471A	Mercury	mg/kg	0.190	0.035	0.167	93.0	75 - 125	W033173	17-Aug-10	

**Metals (Total Recoverable)**

EPA 6010B	Antimony	mg/L	0.946	<0.020	1.00	94.6	75 - 125	W033252	01-Sep-10	
EPA 6010B	Arsenic	mg/L	0.928	<0.025	1.00	92.8	75 - 125	W033252	01-Sep-10	
EPA 6010B	Barium	mg/L	1.01	0.0126	1.00	99.8	75 - 125	W033252	01-Sep-10	
EPA 6010B	Cadmium	mg/L	0.966	0.0033	1.00	96.3	75 - 125	W033252	01-Sep-10	
EPA 6010B	Chromium	mg/L	0.985	<0.0060	1.00	98.5	75 - 125	W033252	01-Sep-10	
EPA 6010B	Copper	mg/L	1.04	0.047	1.00	99.2	75 - 125	W033252	01-Sep-10	
EPA 6010B	Iron	mg/L	12.2	1.54	10.0	106	75 - 125	W033252	01-Sep-10	
EPA 6010B	Lead	mg/L	1.21	0.268	1.00	93.8	75 - 125	W033252	01-Sep-10	
EPA 6010B	Manganese	mg/L	1.13	0.0343	1.00	110	75 - 125	W033252	01-Sep-10	
EPA 6010B	Selenium	mg/L	0.925	<0.040	1.00	92.5	75 - 125	W033252	01-Sep-10	
EPA 6010B	Silver	mg/L	0.0513	<0.0050	0.0500	103	75 - 125	W033252	01-Sep-10	
EPA 6010B	Zinc	mg/L	1.04	0.0896	1.00	94.8	75 - 125	W033252	01-Sep-10	

**Metals (Dissolved)**

EPA 6010B	Antimony	mg/L	1.03	<0.020	1.00	101	75 - 125	W033255	19-Aug-10	
EPA 6010B	Arsenic	mg/L	1.03	<0.025	1.00	102	75 - 125	W033255	19-Aug-10	
EPA 6010B	Barium	mg/L	1.04	0.0450	1.00	100	75 - 125	W033255	19-Aug-10	
EPA 6010B	Cadmium	mg/L	0.963	<0.0020	1.00	96.3	75 - 125	W033255	19-Aug-10	
EPA 6010B	Chromium	mg/L	0.983	<0.0060	1.00	98.1	75 - 125	W033255	19-Aug-10	
EPA 6010B	Copper	mg/L	1.04	<0.010	1.00	103	75 - 125	W033255	19-Aug-10	
EPA 6010B	Iron	mg/L	10.1	0.321	10.0	98.2	75 - 125	W033255	19-Aug-10	
EPA 6010B	Lead	mg/L	0.980	<0.0075	1.00	97.5	75 - 125	W033255	19-Aug-10	
EPA 6010B	Manganese	mg/L	1.06	0.0776	1.00	98.3	75 - 125	W033255	19-Aug-10	
EPA 6010B	Selenium	mg/L	1.03	<0.040	1.00	103	75 - 125	W033255	19-Aug-10	
EPA 6010B	Silver	mg/L	0.0518	<0.0050	0.0500	104	75 - 125	W033255	19-Aug-10	
EPA 6010B	Zinc	mg/L	0.957	<0.0100	1.00	95.0	75 - 125	W033255	19-Aug-10	
EPA 7470A	Mercury	mg/L	0.00094	<0.00020	0.00100	94.0	75 - 125	W033227	13-Aug-10	



IDEQ (Boise) 1410 N. Hilton Boise, ID 83706	<b>Project Name: Boise</b> Work Order: <b>W0H0231</b> Reported: 02-Sep-10 14:54
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Quality Control - MATRIX SPIKE DUPLICATE Data										
Method	Analyte	Units	MSD Result	Spike Result	Spike Level	RPD	RPD Limit	Batch ID	Analyzed	Notes

**Metals (Total)**

EPA 7470A	Mercury	mg/L	0.00085	0.00086	0.00100	1.2	20	W033228	13-Aug-10	
EPA 7470A	Mercury	mg/L	0.00108	0.00107	0.00100	0.9	20	W034083	17-Aug-10	

**Metals (Total) by EPA 6000/7000 Methods**

EPA 6010B	Antimony	mg/kg	66.4	67.1	100	1.0	20	W034164	30-Aug-10	
EPA 6010B	Arsenic	mg/kg	627	623	100	0.6	20	W034164	30-Aug-10	
EPA 6010B	Barium	mg/kg	1900	1870	100	1.6	20	W034164	30-Aug-10	
EPA 6010B	Cadmium	mg/kg	94.9	95.0	100	0.1	20	W034164	30-Aug-10	
EPA 6010B	Chromium	mg/kg	111	111	100	0.2	20	W034164	30-Aug-10	
EPA 6010B	Copper	mg/kg	110	109	100	0.7	20	W034164	30-Aug-10	
EPA 6010B	Iron	mg/kg	7940	7840	1000	1.4	20	W034164	30-Aug-10	
EPA 6010B	Lead	mg/kg	132	130	100	1.2	20	W034164	30-Aug-10	
EPA 6010B	Manganese	mg/kg	305	301	100	1.4	20	W034164	30-Aug-10	
EPA 6010B	Selenium	mg/kg	96.0	94.6	100	1.5	20	W034164	30-Aug-10	
EPA 6010B	Silver	mg/kg	5.59	5.61	5.00	0.4	20	W034164	30-Aug-10	
EPA 6010B	Zinc	mg/kg	244	241	100	1.4	20	W034164	30-Aug-10	
EPA 7471A	Mercury	mg/kg	0.177	0.190	0.167	7.3	20	W033173	17-Aug-10	

**Metals (Total Recoverable)**

EPA 6010B	Antimony	mg/L	0.964	0.946	1.00	2.0	20	W033252	01-Sep-10	
EPA 6010B	Arsenic	mg/L	0.940	0.928	1.00	1.4	20	W033252	01-Sep-10	
EPA 6010B	Barium	mg/L	1.07	1.01	1.00	6.1	20	W033252	01-Sep-10	
EPA 6010B	Cadmium	mg/L	1.03	0.966	1.00	6.0	20	W033252	01-Sep-10	
EPA 6010B	Chromium	mg/L	1.05	0.985	1.00	6.1	20	W033252	01-Sep-10	
EPA 6010B	Copper	mg/L	1.11	1.04	1.00	6.5	20	W033252	01-Sep-10	
EPA 6010B	Iron	mg/L	11.6	12.2	10.0	5.1	20	W033252	01-Sep-10	
EPA 6010B	Lead	mg/L	1.22	1.21	1.00	1.5	20	W033252	01-Sep-10	
EPA 6010B	Manganese	mg/L	1.08	1.13	1.00	4.8	20	W033252	01-Sep-10	
EPA 6010B	Selenium	mg/L	0.934	0.925	1.00	1.0	20	W033252	01-Sep-10	
EPA 6010B	Silver	mg/L	0.0541	0.0513	0.0500	5.2	20	W033252	01-Sep-10	
EPA 6010B	Zinc	mg/L	1.10	1.04	1.00	6.3	20	W033252	01-Sep-10	

**Metals (Dissolved)**

EPA 6010B	Antimony	mg/L	1.02	1.03	1.00	0.2	20	W033255	19-Aug-10	
EPA 6010B	Arsenic	mg/L	1.03	1.03	1.00	0.2	20	W033255	19-Aug-10	
EPA 6010B	Barium	mg/L	1.04	1.04	1.00	0.0	20	W033255	19-Aug-10	
EPA 6010B	Cadmium	mg/L	0.964	0.963	1.00	0.1	20	W033255	19-Aug-10	
EPA 6010B	Chromium	mg/L	0.982	0.983	1.00	0.1	20	W033255	19-Aug-10	
EPA 6010B	Copper	mg/L	1.05	1.04	1.00	0.8	20	W033255	19-Aug-10	
EPA 6010B	Iron	mg/L	10.0	10.1	10.0	1.3	20	W033255	19-Aug-10	
EPA 6010B	Lead	mg/L	0.977	0.980	1.00	0.3	20	W033255	19-Aug-10	
EPA 6010B	Manganese	mg/L	1.05	1.06	1.00	1.2	20	W033255	19-Aug-10	
EPA 6010B	Selenium	mg/L	1.02	1.03	1.00	0.8	20	W033255	19-Aug-10	
EPA 6010B	Silver	mg/L	0.0515	0.0518	0.0500	0.6	20	W033255	19-Aug-10	
EPA 6010B	Zinc	mg/L	0.958	0.957	1.00	0.1	20	W033255	19-Aug-10	
EPA 7470A	Mercury	mg/L	0.00099	0.00094	0.00100	5.2	20	W033227	13-Aug-10	



IDEQ (Boise)  
1410 N. Hilton  
Boise, ID 83706

**Project Name: Boise**  
Work Order: **W0H0231**  
Reported: 02-Sep-10 14:54

**Quality Control - POST DIGESTION SPIKE Data**

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

EPA 6010B	Antimony	mg/kg	95.2	5.8	100	89.4	75 - 125	W034164	30-Aug-10	
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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
R > 4S	% recovery not applicable, sample concentration more than four times greater than spike level
<RL	A result is less than the reporting limit
MRL	Method Reporting Limit
MDL	Method Detection Limit
N/A	Not Applicable