# Ohio Mine

**(aka Linderman Property, Ohio Group & Ohio Patented Mining Claim)**

# Preliminary Assessment Report

Blaine County
State of Idaho

## Department of Environmental Quality

November 2007

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

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

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

November 29, 2007

Mr. Anthony Rooney
P.O. Box 2332
Hailey, Idaho 83350

RE: Site Assessment of the **Ohio** Mine and Claim.

Dear Mr. Rooney:

The Idaho Department of Environmental Quality (IDEQ) has completed a review of historical mining data and geological information for the above referenced mine and claim. Subsequent to that review, IDEQ conducted a site visit of the Ohio claim (property). During the site visit, mining facilities were mapped and sampled to complete the analysis necessary to complete a final Preliminary Assessment (PA) report. Based on IDEQ's assessment IDEQ has determined that under the current conditions and uses no remedial actions are necessary at this property to protect human health or the environment. There are, however, significant physical hazards, particularly mine openings, at the site that should be managed appropriately.

Preliminary assessments are conducted according to the Federal Comprehensive Environmental Response, Compensation and Liabilities Act. The reasons to complete a Preliminary Assessment include:

1) To identify those sites which are not CERCLA caliber because they do not pose a threat to public health or the environment (No Remedial Action Planned);

2) To determine if there is a need for removal actions or other programmatic management of sites;

3) To determine if a Site Investigation, which is a more detailed site characterization, is needed; and/or

4) To gather data to facilitate later evaluation of the release through the Hazard Ranking System (HRS)

IDEQ has also completed PAs under contract with the U.S. Environmental Protection Agency in order to identify risks to human health and the environment, and to make recommendations to land owners regarding how risks might be managed under current site conditions and in future use scenarios.

Based on existing conditions and uses, historic information, data observations made during the site visit, and analysis of the mine wastes, potential pathways of contaminants to receptors, and potential exposures to ecological and human receptors, IDEQ has determined that No Remedial Action is Planned (NRAP) for this property and mine site. However, should site conditions or uses change in the future, owners of these properties would be well advised to incorporate risk management in their development and/or operating plans.

The Ohio claim has five adits, two of which are partially open, and two inclined shafts, one of which is partially open (see Figure 6-1). Adit #1 is partially open, measuring only 18 feet in length with a 10 foot width at its face. Adit #5 is mostly closed, but each of these workings warrants closure to minimize physical hazards. A well-preserved ore chute marks the crest of Inclined Shaft #2. Though the shaft's collar had collapsed, subsequent excavation or possible erosion has exposed the shaft's cribbing below the collapse. These openings should be closed.

Attached is an "abbreviated" Preliminary Assessment Report of the properties and mine facilities. The report contains copies of historic mining reports, geologic information, data results, and maps of the properties, along with a brief checklist of how IDEQ came to its recommendation that the property status is NRAP.

IDEQ very much appreciates your cooperation and approval for our access, and looks forward to addressing any questions you may have regarding our findings.

Sincerely,

Bruce A. Schuld
Mine Waste Projects Coordinator
Waste Management and Remediation Division

Attachment

cc: Ken Marcie – U.S. Environmental Protection Agency
Megan Stelma – Blaine County
file

## SECTION 1

The ownership and listed owners is not warranted by the Idaho Department of Environmental Quality. The following names and addresses of owners were obtained from the tax rolls at the Blaine County Tax Assessor's Office.

**Ownership**

| Contacts: | Claims and Per Cent Ownership: |
|---|---|
| Jimberly and Anthony Rooney<br>P.O. Box 2332<br>Hailey, Idaho 83350 | Ohio Patent Claim 100% |

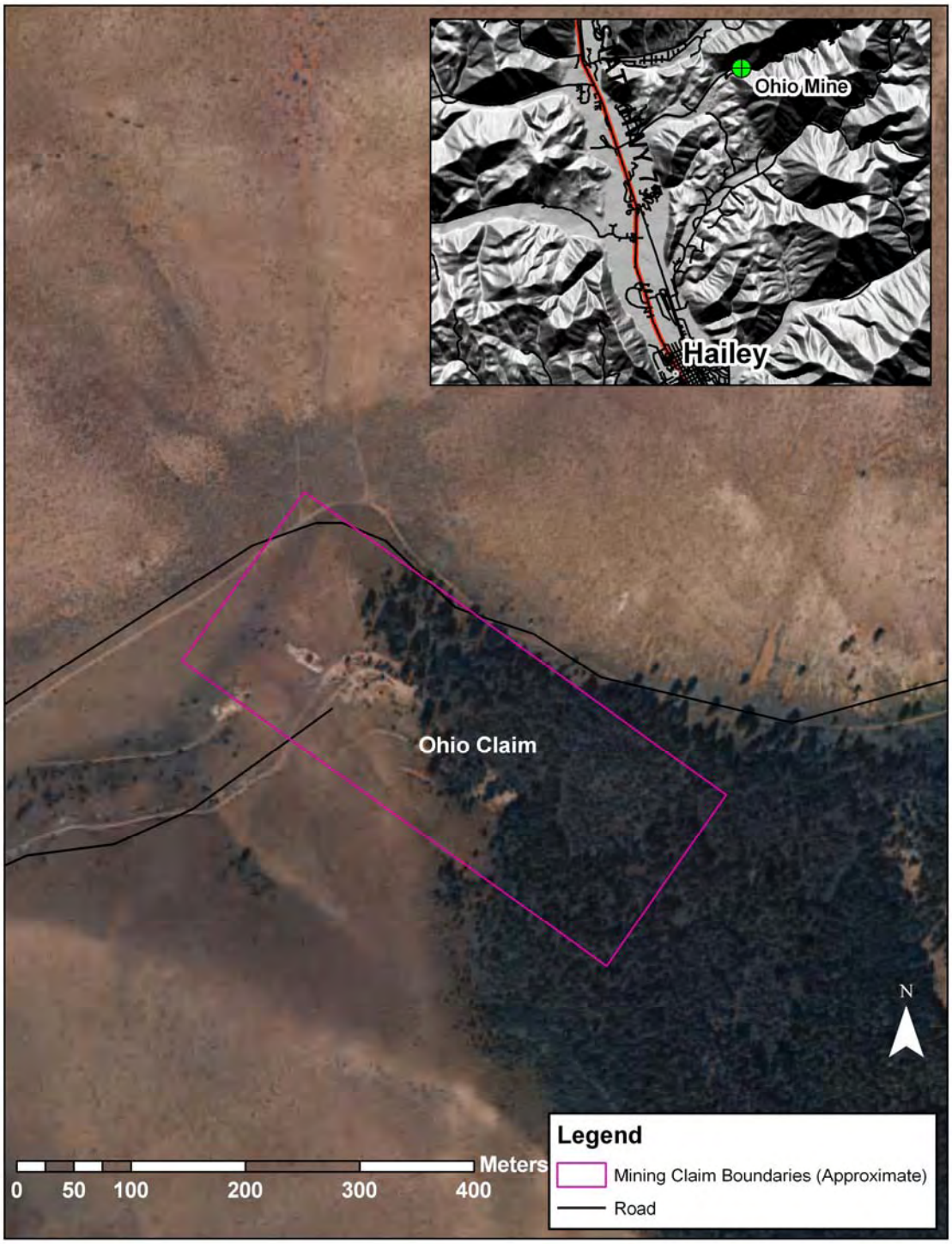



**Figure 1: Location**

## SECTION 2

### Introduction

This document presents the results of the preliminary assessment (PA) of the Ohio mine and claim. The Department of Environmental Quality (DEQ) was contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of preliminary assessments at various mines within the Mineral Hill Mining District in Blaine County, Idaho.

DEQ often receives complaints or information about sites that may be contaminated with hazardous waste. These sites can 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 was also given to mining districts where groups or clusters of sites could 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

Access to assess the Ohio patented mining claim was provided by Mr. and Mrs. Anthony Rooney (owners). Access to the Ohio property is gained by traveling north from Hailey, Idaho on state Highway 75 for approximately 4 miles to the Ohio Gulch Road. The Ohio Gulch Road is paved for 2 miles after which it turns into an unimproved dirt road. Heading northward for approximately 1 mile, the road skirts the eastern perimeter of Blaine County's Ohio Gulch non-municipal landfill, transfer station and impoundments. The old road to the main workings is accessed within 0.25 miles, while the road to the lowest working lies 100 yards beyond. A sharp turn toward the east marks the approximate northern extent of the patent.

## SECTION 3

### Mine Site History

The Ohio mine claim was patented in 1884 by several prominent Wood River miners, including Isaac I. Lewis, but was later acquired by AlonzoW. Linderman. According to the U.S. Geological Survey's (USGS) Mineral Resources DATA SYSTEMS (USGS, 2007), the property was "discovered" in 1925 and the mine operated between 1929 and 1952. The mine produced silver, lead and minor amounts of zinc which generated $3,724 (mindat, 2007).

During the 1950's, Mr. Linderman applied for a contract through the Defense Minerals Exploration Administration (DMEA) program. The files pertaining to that contract (DMEA-4980) remain confidential and were subsequently not available to the IDEQ. However, copies of these records, which often contain underground maps as well as history and production records can be obtained from the USGS by the property's owner.

# SECTION 4

## General Geology

*The Hailey-Bellevue mineral belt is underlain by a varied assemblage of sedimentary and igneous rocks, which, except for volcanics of mid-Tertiary age and some still younger unconsolidated sedimentary rocks, are all older than the ore deposits. The earlier rocks include fairly wide exposures of the Milligen and Wood River formations that host many of the ore deposits in the Wood River region. They also host rather large intrusive bodies of diorite and quartz monzonitic rock which are regarded as outliers of the Idaho batholith. There is a younger group of intrusive rocks which are of more pertinent interest because of their close association with the mineralization.…In addition to the Milligen formation (Mississippian age) and the Wood River formation (Pennsylvanian age), the area contains some strata in and beneath a series of Tertiary volcanics (Oligocene) and much poorly consolidated and unconsolidated slope wash, terrace gravels, and stream alluvium of Quaternary age.*

Anderson, 1950, p. 2

Anderson (p. 7) went on to note that, "The folding within the area is comparatively simple and consequently faulting constitutes the outstanding feature."

Numerous studies of the geology and mineral resources of the Wood River and adjacent areas have been made. Geologic studies have been conducted to investigate mineral deposits (Lindgren, 1900 & 1933; Umpleby et al, 1930; Anderson and Wagner, 1946; Anderson et al, 1950; Hall et al, 1978; Wavra and Hall, 1989; Link and Worl, 2001; Worl and Lewis, 2001); individual formations and units (Hall et al, 1974; Sandberg et al, 1975; Wavra and Hall, 1986; Worl and Johnson, 1995); quadrangles (Batchelder and Hall, 1978; Mitchell et al, 1991; Kiislgaard et al, 2001) and to compile regional information (Rember and Bennett, 1979). Preliminary and environmental assessment investigations have been conducted to assess current and potential impacts from historic mining in the region (Mitchell and Gillerman, 2005; IDEQ, 2002 & 2006; IDEQ & USEPA, 2006 & 2007).

### Stratigraphy and Lithology

Based upon the observed lithology present in outcrop and waste rock dumps, meta-sedimentary rocks representing the Pennsylvanian Wood River Formation dominate the site. The quartzite appears to be the host of the mineralization, though nearby Challis volcanics could have been the likely source.

### Structure

Fryklund (1950, pp. 65-66) noted the following in regards to the structure of the rocks:

*The most obvious and significant structural features of the area are the major faults or fault zones which divide the area into a number of distinct blocks...The age of the oldest faults are to be placed as pre-intrusive and possibly all the major faulting is pre-intrusive...All of the major faults are probably pre-mineral as well as pre-intrusive.*

Umpleby, et al (1930, p. 217) noted a broad anticline southwest of the river: Southwest of the river the beds dip generally westward at inclinations that largely range from 20º to 40º. It's thus

clear that the sediments form a broad anticline, of which the crest almost coincides with the Big Wood River Valley.

## SECTION 5

### Current and Future Potential Beneficial Uses

Current land uses in the area include biking, hiking, hunting, horseback riding and off-road vehicle touring. Currently, there are no indications of active mining operations.

The site has the potential to be developed as an aggregate source and/or residential property.

## SECTION 6

### Site Conditions and Waste Characterization

Generally speaking, the mine workings on the Ohio patent are easily visible from Ohio Gulch road and readily accessible via old mine roads. There is no evidence of springs or drainage from any of the open or caved adits. There is no evidence, in the ephemeral drains immediately beneath the workings, of riparian or wetland communities. No water samples were collected at or near these claims.

Accuracy for the location of mine openings and waste dumps on the claim is questionable because mapping was conducted using GPS, county maps, and patented plat maps, none of which have been tied together by a land survey. Therefore, IDEQ does not warrant any of the maps, or diagrams contained in this Preliminary Assessment.

Most of the workings of the Ohio are assumed to be very shallow as the dumps that remain on the hillside are very small (less than 50 – 250 cubic yards). Though the waste dump at Inclined Shaft #2 contains less than 1,500 cubic yards, and there were not any visible sulfides present. None of the waste dumps contain significant sulfide mineralization, and that may be indicative there was minimal ore production. Consequently, representative soil samples were not collected from this site.

The Ohio claim has five adits, two of which are partially open, and two inclined shafts, one of which is partially open (see Figure 6-1). Adit #1 is partially open, measuring only 18 feet in length with a 10 foot width at its face. Adit #5 is mostly closed, but each of these workings warrants closure to minimize health hazards. A well-preserved ore chute marks the crest of Inclined Shaft #2. Though the shaft's collar had collapsed, subsequent excavation or possible erosion has exposed the shaft's cribbing below the collapse. The opening is partially filled and poses a significant physical hazard.

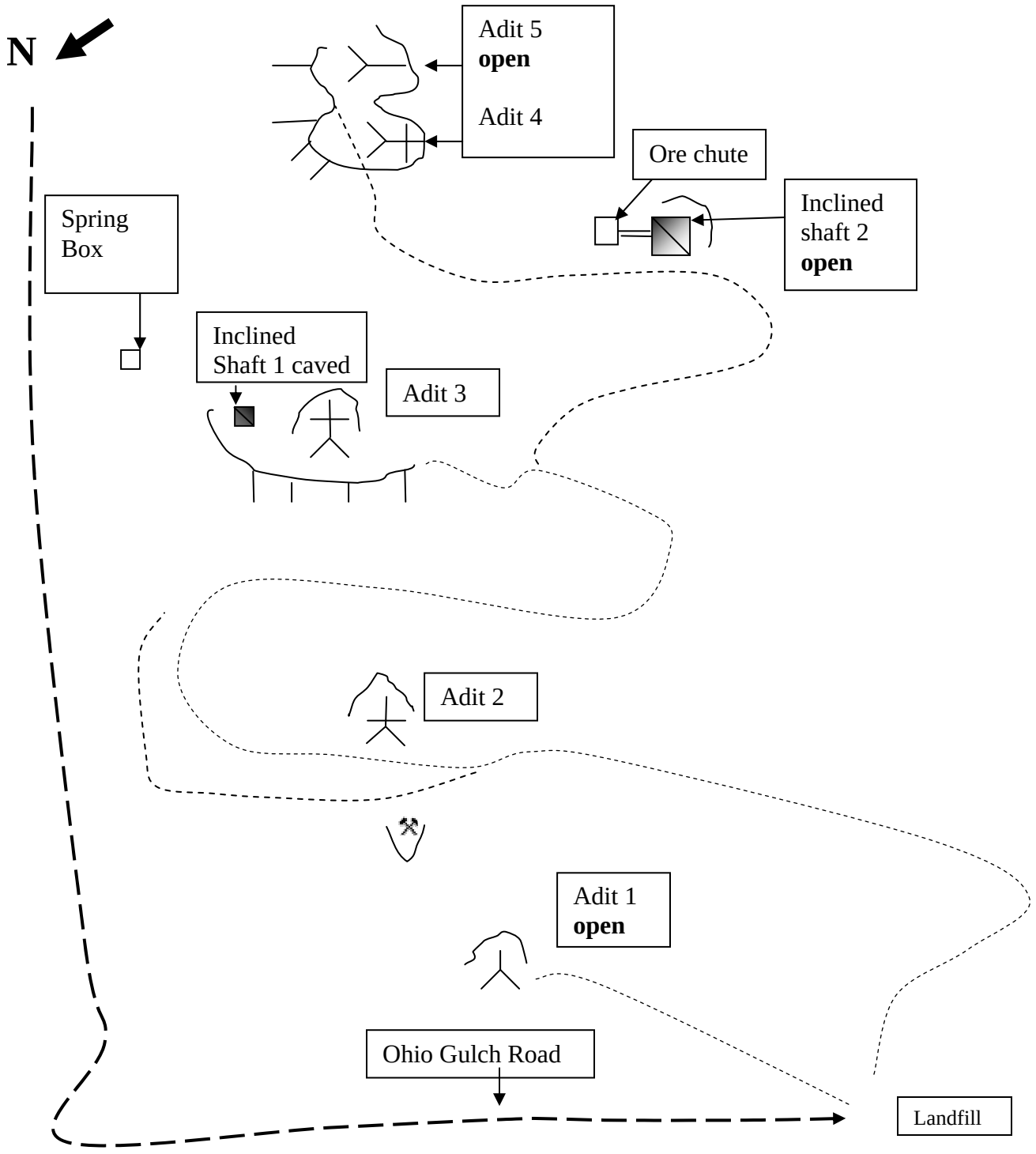



**Figure 6-1**
**Ohio Group**
**sketch**

**Ohio Patented Claim Photos**



*Overview of Ohio Group workings: Adit #1 on lower road at right; Inclined Shaft #2 waste dump, above upper road at left.*



*Collapsed portal of Adit #1; no visible sulfide mineralization, minimal waste dump*



*Ore chute above Inclined Shaft #2, waste dumps amid road cuts, Inclined Shaft #1 and adits at lower left below chute*



*Caved Inclined Shaft # 1*



*Collapsed portal of Adit # 4*



*Inclined Shaft # 2, partially open between outcrops, collapsed structure (foreground left)*



*Ore chute, shaft caved at lower right*



*Inclined Shaft # 2, open beyond caved collar*

**SECTION 7**

## Pathway and Environmental Hazards

No precipitation data is available for the Ohio. Therefore, precipitation data, maintained from 1948 through 1988, was used from a recording station located 3 miles north-northwest from Hailey at an elevation of 5,350 feet amsl. The mean annual precipitation is 15.89 inches, and the 100-year, 24-hour event is 2.68 inches (WRCC, 2007).

There are not any residences, schools or day-care facilities within 200 feet. The nearest residence is located approximately 1.75 miles southwest on Ohio Gulch Road. The Ohio Gulch Transfer Station which operates six days per week is located approximately 0.9 miles southwest from the mine.

## Air Pathway

The nearest permanent residence is located approximately 1.75 miles southwest on Ohio Gulch Road. The Ohio site is readily accessible by vehicular traffic. Evidence of motorcycle and all-terrain vehicle (ATV) activity is apparent near the southeastern perimeter of the landfill. The Ohio's waste dumps are consolidated, generally comprising quartzite, with very minor sulfides evident. The site does not appear to contain any millworks or tailings. Though access to the property is unrestricted and ATV activity presumed, the likelihood of aerial dispersal from the former waste rock dumps appears remote.

## Soil Pathway

Occasional exposure to the waste rock at the Ohio may result from hikers and hunters. However, these occasions are likely all too infrequent to result in adverse affects.

## Surface Water Pathway

The Ohio workings lie within the Ohio Gulch ephemeral drainage. The drainage could not be readily discerned due to continuing construction activities at the Ohio Gulch Transfer Station and landfill. The closest perennial stream is the Big Wood River, located approximately 3 miles away, though no direct pathway connection was noted. Runoff water from the gulch appears to be directed into the Hiawatha Canal which supplies local irrigation needs, recharges the aquifer and to a lesser extent reaches the Big Wood River (Hailey, 2007).

## Groundwater

Potential human health risks may be the result of contamination of public and private drinking water supplies. Generally speaking sources of contamination of drinking water systems was thought likely to occur along two types of sources and three pathways. The first pathway is when heavy metals are leached from mine waste piles, enter ephemeral or perennial drains and then contaminate an area's shallow ground water system. The second pathway is when heavy metals leach from the local ore bodies and are transported through the geologic structure to the shallow ground water. Lastly, 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 Preliminary Assessments, Source Water Assessments (completed for local public drinking water supplies) were used to identify any known affects to those systems. Furthermore, because the wells employed in these systems use the same shallow aquifer, and are located very close to the numerous private wells, the results of the source water assessments has be used to evaluate the probability that contaminants that enter public drinking water supplies also enter private water supplies.

Source water assessments provide information on the potential contaminant threats to public drinking water sources. In the Big Wood River Valley Idaho, most of those sources (>95%) are ground water (IDEQ 2000). Each source water assessment:

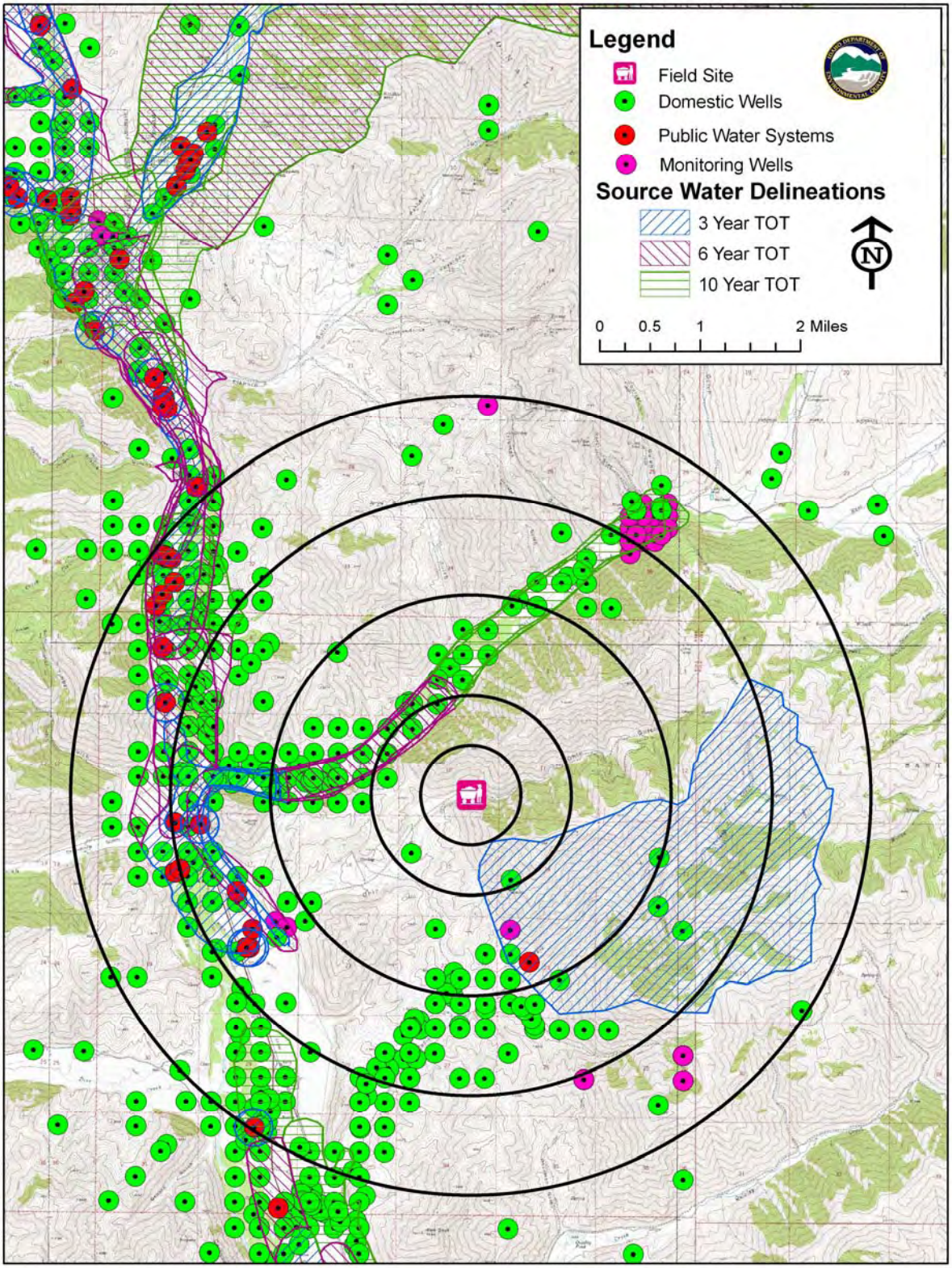
- Defines the zone of contribution, which is that portion of the watershed or subsurface area contributing water to the well or surface water intake (**source area delineation**).

- Identifies the significant potential sources of drinking water contamination in those areas (**contaminant source inventory**).

- Determines the likelihood that the water supply will become contaminated (**susceptibility analysis**).

Each assessment is summarized in a report that describes the above information and provides maps of the location of the public water system, the source area delineation, and the locations of potential contaminant sources. Idaho began developing source water assessments in 1999, and in May 2003 met its obligation under the amendments of the Safe Drinking Water Act by completing delineations for all 2100+ public water systems that were active in Idaho as of August 1999 (IDEQ 2000). Source water assessments for new public drinking water systems are being developed as those systems come online. Each public water system is provided with two copies of its final assessment report. Four source water assessments for drinking water supplies have been used in this Preliminary Assessment Process to evaluate the potential impacts to both public and private drinking water supplies in and around Sun Valley, Ketchum, Hailey and Bellevue.

The information extrapolated from these reports is based on data that existed at the time of their writing, and the professional judgment of IDEQ staff. Although reasonable efforts were made to present accurate information, no guarantees, including expressed or implied warranties of any kind are made with respect to these reports or this Preliminary Assessment by the State of Idaho or any of its agents who also assume no legal responsibility for accuracy of presentation, comments or other information in these publications or this Preliminary Assessment report. The results should not be used as an absolute measure of risk, and they should not be used to undermine public confidence in public drinking water systems.




The Source Area delineation process establishes the physical area around a well or surface water intake that becomes the focal point of the source water assessment. The process includes mapping the boundaries of the zone of contribution (the area contributing water to the well or to

the surface water intake) into time of travel zones (TOT) indicating the number of years necessary for a particle of water to reach a well or surface water intake (IDEQ 2000). The size and shape of the source water assessment area depend on the delineation method used, local hydrogeology, and volume of water pumped from the well or surface water intake.

IDEQ used a refined computer model approved by EPA to determine the 3-year (Zone 1B), 6-year (Zone 2), and 10 year (Zone 3) time of travel associated with the Big Wood River Aquifer and its sources (IDEQ 2000). This process involves collecting, recording, and mapping existing data and geographical information system (GIS) coverage to determine potential contaminant sources (e.g., gas stations) within the delineated source water assessment area. The potential contaminant source inventory is one of three factors used in the susceptibility analysis to evaluate the overall potential risk to the drinking water supply (IDEQ 2000). The inventory process goal is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water or surface water contamination.

This susceptibility analytical process determines the susceptibility of each public water system well or surface water intake to potential contamination within the delineated source water assessment area. It considers hydrogeologic characteristics, land use characteristics, potentially significant contaminant sources, and the physical integrity of the well or surface water intake. The outcome of the process is a relative ranking into one of three susceptibility categories: high, moderate, and low. The rankings can be used to set priorities for drinking water protection efforts (IDEQ 2000).

There are numerous public and private drinking water supplies in the Big Wood River Basin. The Sun Valley Water and Sewer District operates and maintains nine wells in two groupings (IDEQ 2000). The City of Ketchum drinking water system consists of seven wells in two groupings. The City of Hailey's drinking water system consists of six wells and a spring (IDEQ 2000).The City of Bellevue drinking water system consists of two wells and three springs (IDEQ 2000).

Generally speaking, public drinking waters systems in the Big Wood River Valley are rated as moderate to high (IDEQ 2000). Multiple factors affect the likelihood of movement of contaminants from the sources to the aquifer, which lead to this moderate to high score. Soils in the area are poorly to moderately drained. The vadose zone is predominantly gravel, which increases the score. On the valley floors the average depth to ground water is twenty to fifty feet.

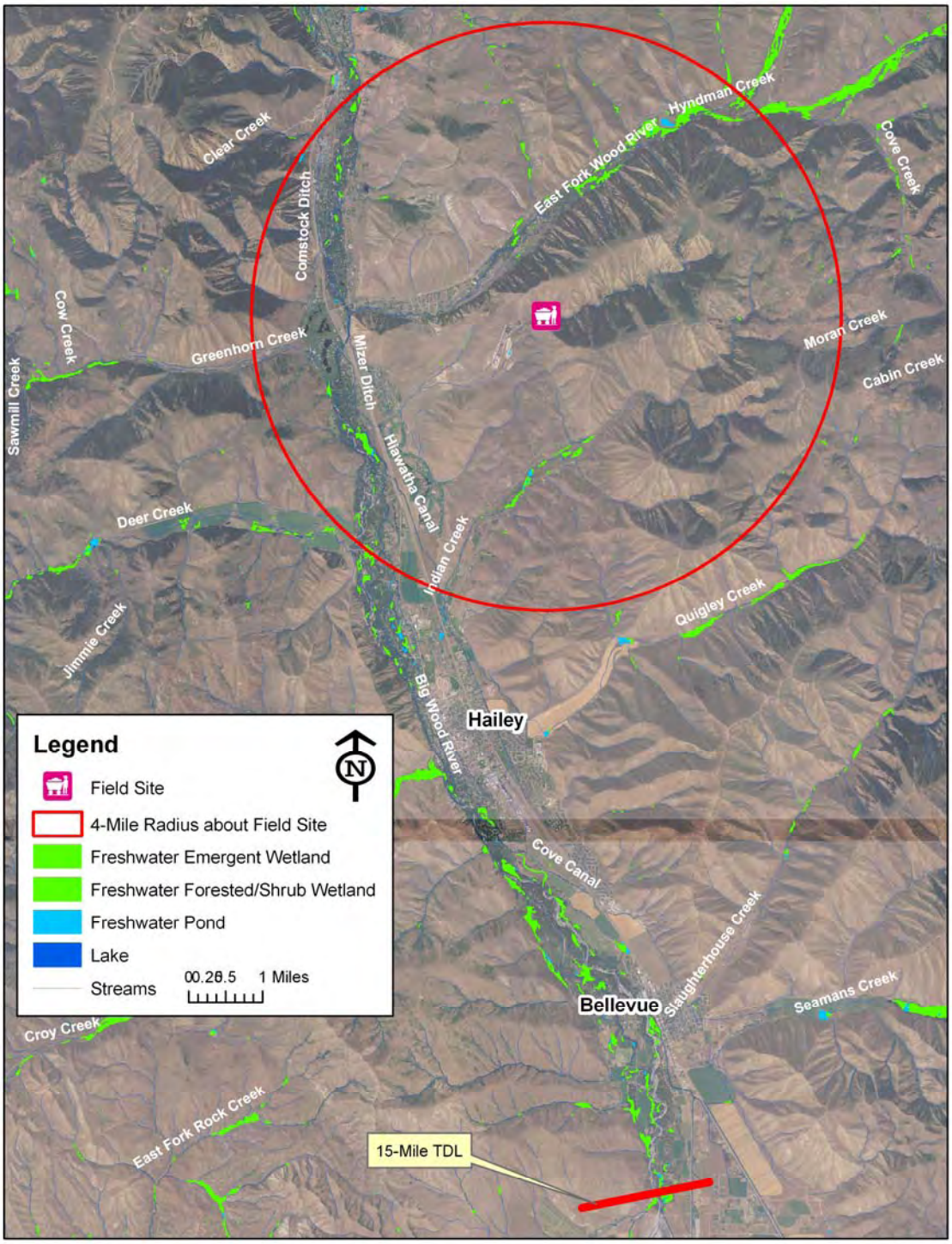
To date, routine water quality monitoring of public drinking water indicates that there are no significant volumes of heavy metals migrating through the regional or localized ground water systems. More specifically, there are no long-term or recurring water chemistry problems in the Sun Valley Water and Sewer District drinking water sources. One well in the Sun Valley system has had one instance (August 1991) when cadmium exceeded the MCLs (IDEQ 2000). There is no current, long term or recurring water chemistry problems in the City of Ketchum's drinking water sources. Arsenic, nickel, antimony, barium, selenium, chromium, cyanide and nitrate have been detected in Ketchum's wells, but all were well below MCLs (IDEQ 2000). There is no long term or recurring water chemistry problems in the City of Hailey's drinking water sources. Manganese, zinc, chromium, and mercury have been detected in Hailey's wells, but all were well

below MCLs (IDEQ 2001). Currently, there is no data that indicates that any metal concentrations have exceeded MCLs in the Bellevue drinking water systems (IDEQ 2000).

**Sensitive Species and Wetlands**

The national data base on wetlands inventories indicates that no jurisdictional wetlands exist within a two mile area below the mine site. Although wetland and riparian communities exist adjacent to the Big Wood River, no wetlands were observed at the site visit. The wetlands immediately below Ohio Gulch do not appear to have suffered any phytotoxic affects, but there are indications of disturbances that may have occurred during residential and agricultural developments along the river. Therefore, there are no indications that adverse affects are the result of developments or drainage from the Ohio Mine.

The site is in the potential wolf range. Because of the wide range for a wolf, the exposure on an individual to these dumps would be limited, and the dose insignificant. Therefore, it does not appear as though the site could cause adverse affects in this sensitive species.




## Conclusions and Recommendations

There are no drinking water intakes within the 15-mile Total Distance Limit (TDL). The following TDL in-water segment was calculated from the lowest elevation workings on the Ohio.

Traversing southwest down Ohio Gulch, the surface water pathway encounters the landfill area at 0.6 miles and ultimately merges with the Hiawatha Canal at 2.25 miles. The Big Wood River continues to the south for the remainder of the 15-mile TDL.

Based on existing conditions and uses, historic information, a mine waste sample was **not** collected during the site visit. Subsequent to our analysis IDEQ has determined that No Remedial Action is Planned (NRAP) for this property.

The Ohio claim has five adits, two of which are partially open, and two inclined shafts, one of which is partially open (see Figure 6-1). Adit #1 is partially open, measuring only 18 feet in length with a 10 foot width at its face. Adit #5 is mostly closed, but each of these workings warrants closure to minimize health hazards. A well-preserved ore chute marks the crest of Inclined Shaft #2. Though the shaft's collar had collapsed, subsequent excavation or possible erosion has exposed the shaft's cribbing below the collapse. The opening is partially filled and poses a significant physical hazard. These openings should be closed.

# References


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