

# **Paymaster & Ironclad Mine Claims**

**(a.k.a. Paymaster patented mining claim)**

## **Preliminary Assessment Report**

Blaine County  
State of Idaho



### **Idaho Department of Environmental Quality**

March 2009

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

March 27, 2009

Mr. Richard B. Meyer  
P.O. Box 627  
Sun Valley, Idaho 83353

RE: Site Assessment of the Paymaster Mine (aka Paymaster Patented Mining Claim)

Dear Mr. Meyer:

The Idaho Department of Environmental Quality (IDEQ) has completed a review of historical mining data and geological information, and subsequent to that review IDEQ conducted a site visit of the Paymaster mine and associated claim(s). During the site visit, mining facilities were mapped and sampled to complete a Preliminary Assessment (PA).

PAs are conducted according to the federal Comprehensive Environmental Response, Compensation and Liabilities Act (CERCLA). The reasons to complete a PA include:

- 1) To identify those sites which are not CERCLIS caliber because they do not pose a threat to public health or the environment (No Remedial Action Planned (NRAP));
- 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 also completed PAs under contract with the U.S. Environmental Protection Agency in order to identify risks to human health and the environment, and make recommendations to land owners regarding how risks might be managed, if necessary.

Based on existing conditions and uses, historic information, and mine waste sample analysis review, the IDEQ has determined that No Remedial Action is Planned (NRAP) for this property. However, based on the historical information regarding mine development and production, IDEQ recommends that your development plans for this site, if any, should incorporate risk management provisions.

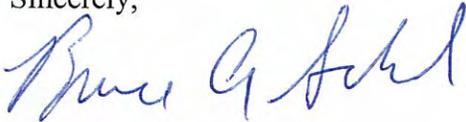
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IDEQ noted one (1) inclined shaft mostly collapsed and at least three (3) very shallow prospects (all caved).

Attached is the Preliminary Assessment Report of the property and mine facilities. The report contains a brief mine history, limited geologic information, maps and additional discussion of observations made at the property. There is also a sample analysis of mine waste dump material and a brief checklist of how IDEQ came to its recommendation that the property status will be 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. Please call me at (208) 373-0554 if you have any comments, questions, or if I may be of any other assistance. We very much appreciate any feedback you can give us relative to our services.

Sincerely,



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

BAS:tg richard meyer paymaster ironclad ltr.doc

#### Attachments

cc: Ken Marcie, U.S. Environmental Protection Agency  
Megan Stelma, Blaine County  
Jeff Gabardi, U.S. Forest Service  
Steve Moore, Bureau of Land Management  
[File](#)  
COF

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## Section 1. Introduction

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This document presents the results of the Preliminary Assessment (PA) of the Paymaster Mine, Paymaster patented mining claim. The Idaho Department of Environmental Quality (IDEQ) was contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of PAs at various mines within the Warm Springs Mining District in Blaine County, Idaho.

IDEQ 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, IDEQ 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](http://www.deq.idaho.gov/waste/prog_issues/mining/pa_program.cfm)

Access to assess the Paymaster Mine was provided by Ms. Lois Meyer in 2007.

## Section 2. Ownership

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### Ownership

Messrs. Richard B. Meyer & Eric Meyer  
P.O. Box 627  
Sun Valley, Idaho 83353

United States of America  
Department of Interior  
U.S. Bureau of Land Management

### Claims

Paymaster

Adjoining public lands

Although it appears that the mine workings are beneath patented mining claims, one prospect and associated waste dump material is located on lands administered by the Department of Interior, Bureau of Land Management (BLM). Furthermore, the patented claim is bordered on the west and north by BLM lands.

The Patented Claim evaluated for this PA was selected because of its proximity to the surface expression of the mine workings and its location in the E. Fork Wood River sub-watershed. Part of this claim extends across Paymaster Gulch (Figure 1).

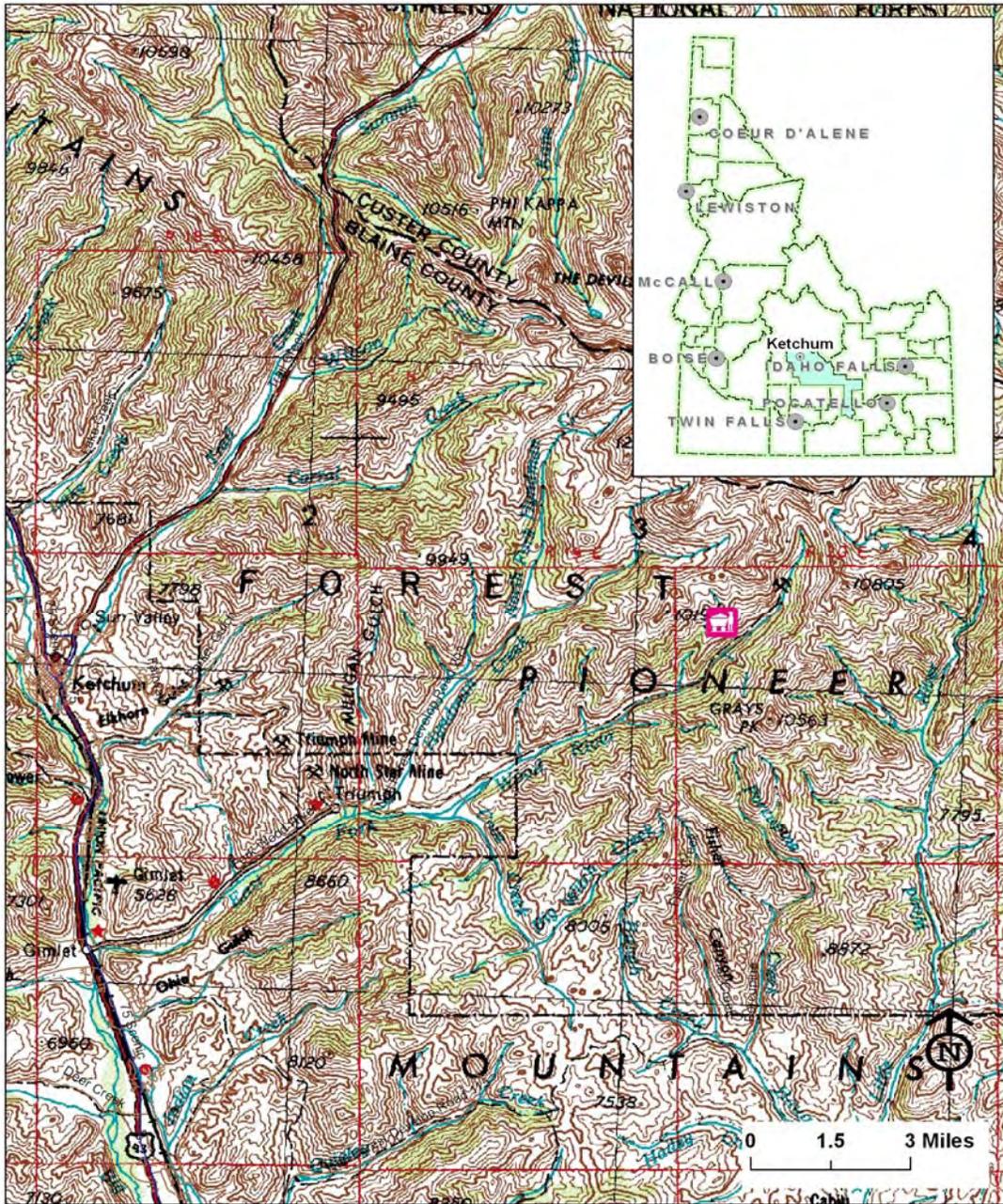


Figure 1: Location Map. (Source: USGS 7.5 Minute Quads)

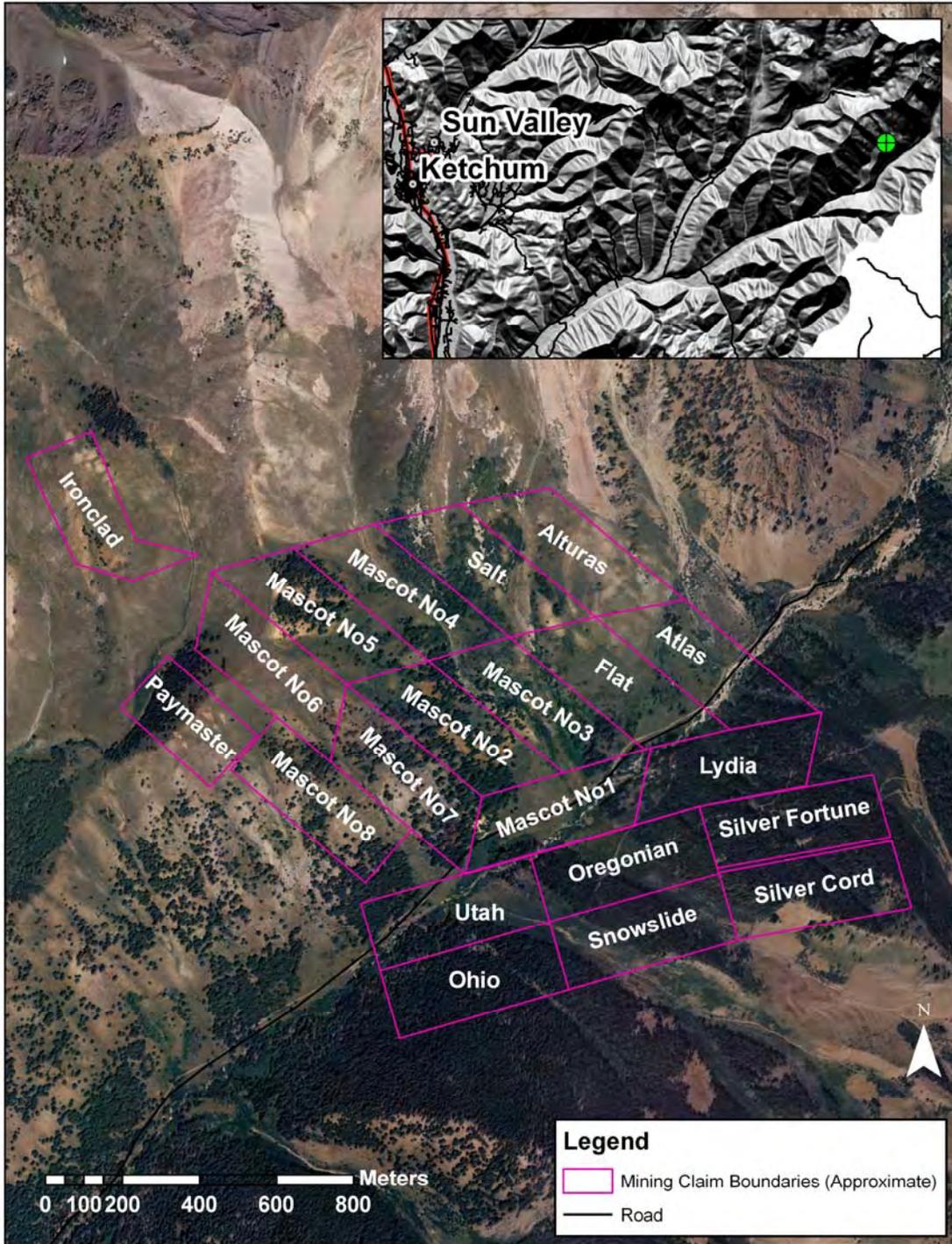


Figure 2: Paymaster Patented Claim. (Source: NAIP 2004)

## Section 3. Site Background

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### Location

The Paymaster Mine is located in the upper reaches of Paymaster Gulch approximately 0.75 miles west of the former Mascot Mine and 12 miles east of Sun Valley, Idaho, in Section 6, Township 4 North, Range 20 East of the Boise Meridian, at Latitude 43° 41' 49.33"N, and Longitude 114° 06' 48.42"W. The Iron Clad patented claim lies to the north of the Paymaster patent (see Figure 2).

### History

The property of the Consolidated Mascot Mines Corporation is on the East Fork of the Big Wood River, about 15 miles northeast of the railroad at Gimlet and 21 miles from Hailey. The company's camp is called Peter. The property comprises 6 patented and 55 unpatented claims, on 35 of which patent has been applied for. It is a consolidation of several prospects and mines. The principal workings are known as the Lydia, Silver Fortune, Paymaster, Iron Clad, Snow Clad, and P K, and the group as a whole is called the Mascot.

The Paymaster deposit was discovered in the late seventies, and high grade oxidized ore was shipped in the eighties from shallow workings in the summit of the ridge west of Peter. It was sent down to the road along the East Fork on an aerial tramway. Some reports credit the mine with a production of \$200,000 and with shipments of carloads of ore containing 400 ounces of silver to the ton. The only available records of shipments are given below. The shipment of December 3, 1886, is credited to the Iron Clad, but presumably came from the Paymaster.

**Table 1. Production of Paymaster mine**  
(From records of E. Daft and Ketchum smelter)

<b>Date</b>	<b>Weight <i>Pounds</i></b>	<b>Lead <i>Percent</i></b>	<b>Silver <i>Fine ounces per ton</i></b>
July 17, 1884	<sup>a</sup> 2,012	54.00	67.40
July 29, 1884	<sup>b</sup> 1,928	55.75	67.93
September 13, 1886	<sup>b</sup> 2,254	34.20	29.00
September 14, 1886	<sup>b</sup> 1,416	60.00	55.50
December 2, 1886	<sup>a</sup> 1,470	54.60	58.40
	9,086	-----	-----

<sup>a</sup> Gross weight

<sup>b</sup> Dry Weight

Considerable magnetite ore from the Iron Clad was shipped to the Pittsburgh & Idaho Smelter at Ketchum in the eighties for use as flux. This ore was sent down the tramway used for the Paymaster ore...The iron ore from both the Iron Clad and the P K is reported to contain gold. That in the P K cut is said to average \$6 to the ton, and one sample from the Iron Clad assayed

\$16 to the ton. A quartz ledge near the Iron Clad workings is reported to contain streaks of free gold.

Mr. Charles Peter, president of the Consolidated Mascot Mines Corporation, started work in October, 1914, and mining under his direction has continued with interruptions since that date...The Iron Clad group was bought in the fall of 1921 and the Paymaster in 1922 (Umpleby et al, 1930, pp. 198-99).

### **Geology**

The youngest sedimentary rocks belong to the Wood River formation, which is composed principally of impure blue limestone with thin beds of black shale, some impure quartzite, and lenses of reddish quartzitic conglomerate. The base of the formation is marked by conglomerate interbedded with quartzite and limestone...Below them is the black carbonaceous argillite with quartzitic and calcareous beds of the Milligen formation. The thickness of this formation exposed here is much less than the average thickness elsewhere, perhaps because of faulting. Below the shale are the limestone and quartzite of the East Fork formation...The lowest formation exposed is the Hyndman, which here is composed principally of white to reddish massive quartzite...dikes of quartz diorite porphyry and soda trachyte cut sedimentary strata on the property.

In the open cuts on the Iron Clad and Mars claims and in outcrops and cuts on near-by claims there are masses of rusty material which appear to represent replacement of limestone and quartzite of the East Fork formation by magnetite, arsenopyrite, quartz, siderite, and probably other minerals. Some of the limestone near the Iron Clad deposit has been almost completely altered to actinolite, and this mineral is probably associated with the iron ore on the P K group. The presence of gold in the iron ore from both places has already been mentioned.

The old Paymaster workings are shallow cuts and irregular burrows on the crest of the ridge...There are several rather poorly defined deposits, and the early miners merely gouged out the readily accessible more or less oxidized material near the surface and then ceased their activities. The minerals noted in the workings are limonite, smithsonite, and other oxidization products, galena, quartz, and calcite. The smithsonite was presumably derived from sphalerite (ibid, p. 200).

Geological relationships are illustrated in Figure 3.

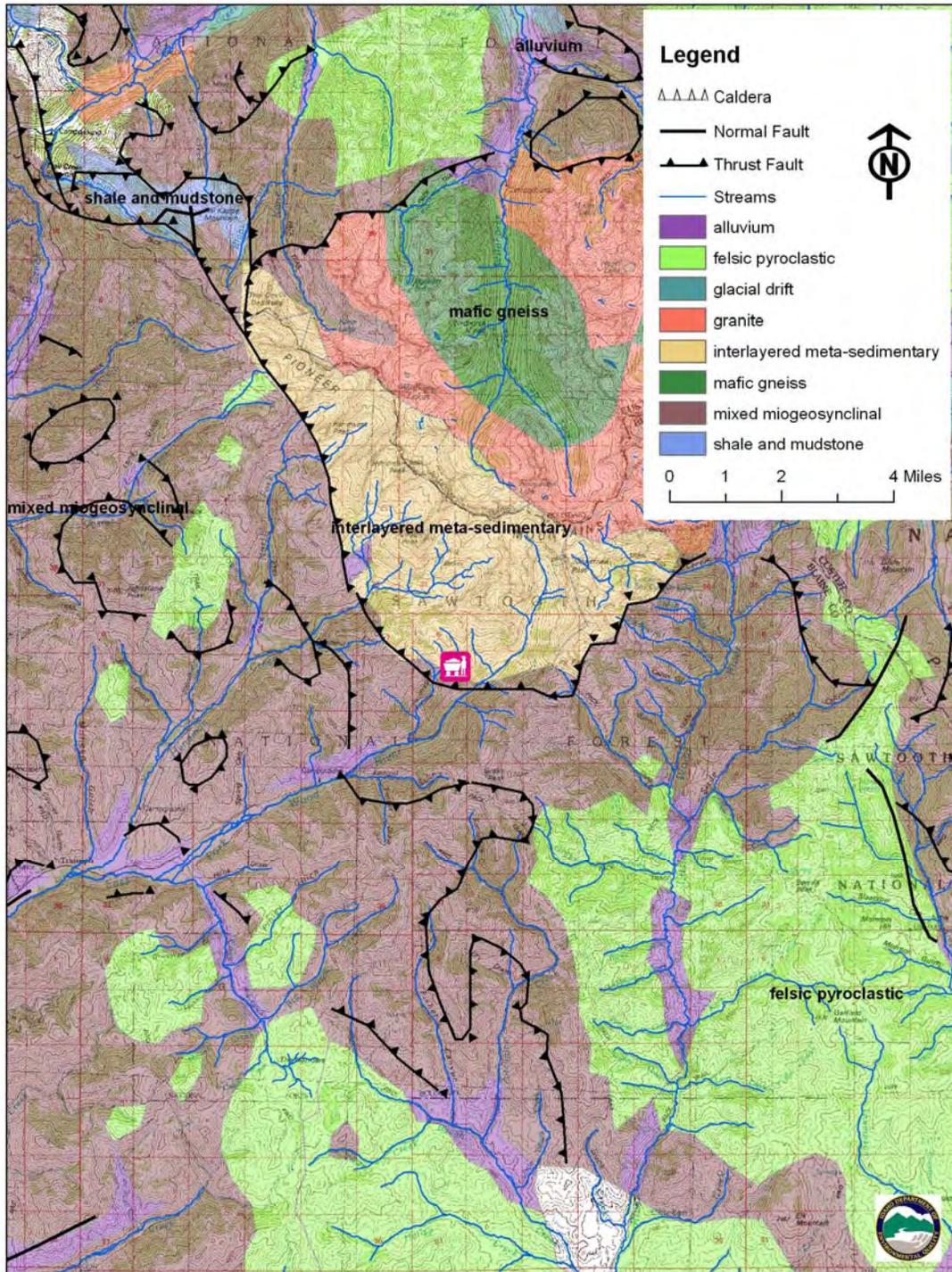


Figure 3. Geologic Map of Paymaster Patented Claim Area. (Source: USGS 7.5 Minute Quads)

## **Section 4. Current Site Conditions**

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The Paymaster Mine is situated on along the crest of the ridge, separating Paymaster Gulch and the East Fork of the Big Wood River. As described by Umpleby and others (1930), the workings consist of shallow cuts, one possibly an inclined shaft, and three distinct prospects. The waste dumps are very small, as befitting their historic depth. The workings occupy the hillside, varying in elevation from approximately 8,850 to 8,950 feet amsl.

The Iron Clad Mine is located on the north side of Paymaster Gulch, north-northwest of the Paymaster. Prior permission to assess the Iron Clad was not received from the owner, so this property was not accessed. The lower portion of the Iron Clad claim was photographed from adjacent public lands. The working was marginally visible, but did not appear to issue any discharge. Iron staining was extremely evident near the open cut and associated waste rock.

## Section 5. Current and Potential Future Uses

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The site is on private property, but the lands to the west are public and currently used for recreation (bike riding, hiking and hunting). A narrow wedge of public land separates the Paymaster patent from the adjoining Mascot claims, probably due to original surveying errors.

The Paymaster can be accessed from the East Fork Road via a pack trail located at the mouth of Paymaster Gulch. Following the trail for approximately 1.7 miles until it forks. The lower fork continues up the gulch for a short distance before reaching a small meadow situated adjacent to the Paymaster, between the Iron Clad and Mascot claims. A partially built log cabin was noted near the edge of the meadow, possibly located on the Mascot #6 claim. The construction area was not occupied at the time of the site visit (Photo 1).

The upper fork climbs for another 0.25 miles through the timber to the crest of the ridge. Here, a very narrow trail, little more than a game trail, leads up the ridge to the Paymaster workings. The pack trail continues over the ridge toward the East Fork, possibly connecting to the Sunshine tunnel at the Mascot Mine. A sketch (not to scale) is included to orient the reader with various features on and adjacent to the Paymaster.

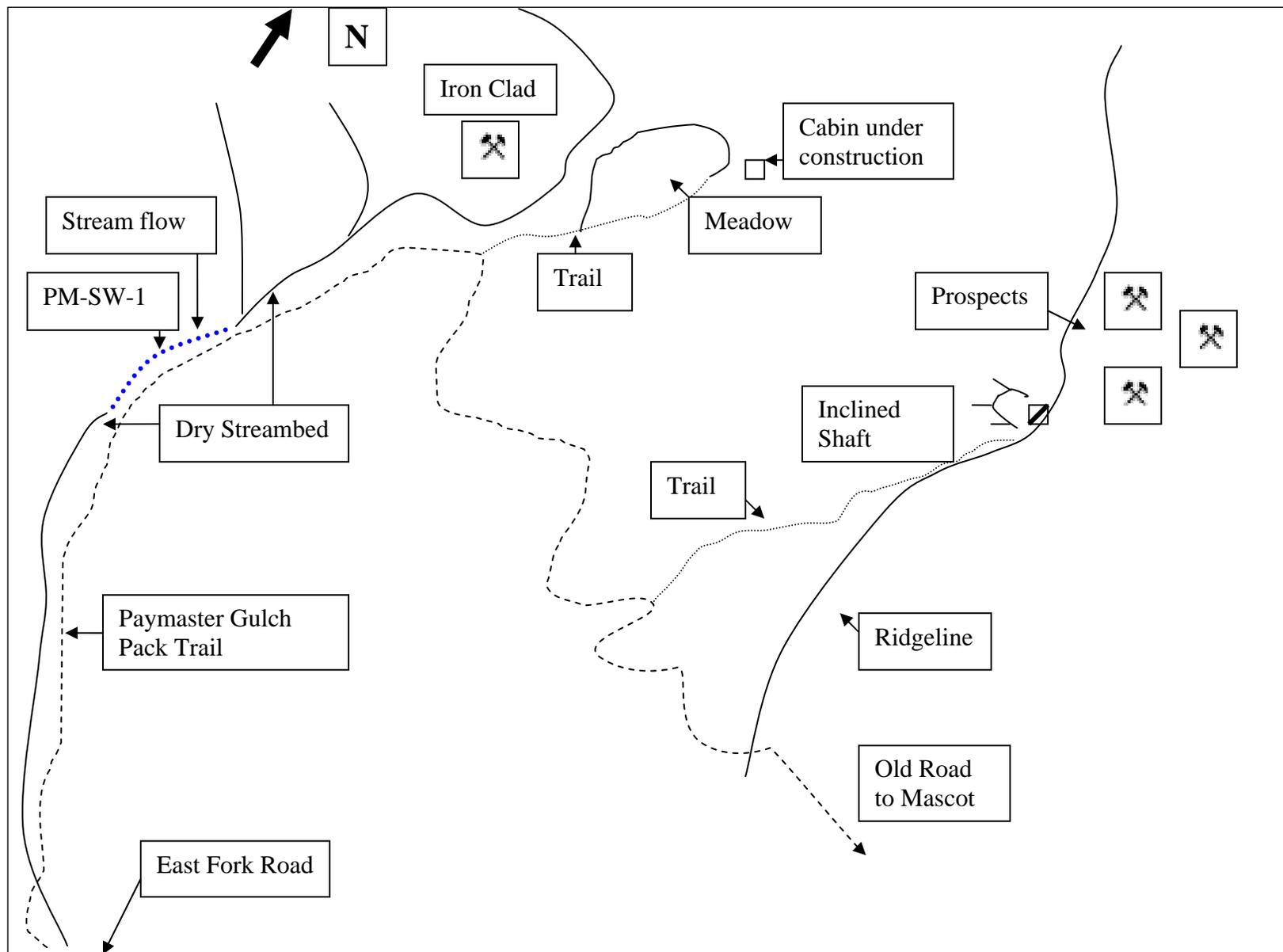


**Photo 1. View to southeast across Paymaster Gulch; partially constructed cabin (center, right) at lower edge of tree line, workings on crest of the lower ridge above trees.**



**Photo 2. View to north-northwest from USFS boundary toward Iron Clad; iron oxide (red) staining visible near lower workings.**

Figure 4: Sketch of site.



## Section 6. Sources

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As mentioned by Umpleby (1930), the Paymaster Mine's workings appear to have been located in pockets of mineralization, as evidenced by very small (<100 cubic yards) waste dumps on the steep hillside and ridge. The first working encountered was identified as a collapsed inclined shaft (Photo 2). The waste dump contained less than 100 cubic yards of material and sulfide mineralization was not apparent. Three additional workings were located approximately 90 meters to the northeast, immediately below the ridge (Photo 3). These shallow prospect "holes" were collapsed and the corresponding dump material was spread down the steep slope as veneer. Very minor mineralization was noted, though iron oxide staining was apparent. Owing to the lack of massive sulfide mineralization and the very small volume of waste dump material, no sampling activity was conducted.



**Photo 3. View to southeast; possibly a collapsed inclined shaft. Very small waste dump, no apparent massive sulfide mineralization.**



**Photo 4. View to east; three prospects near the crest of the ridge, waste dump volumes appear larger, owing to steepness of slope, iron oxide present.**

## **Section 7. Pathways and Receptors**

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No precipitation data is available for the Paymaster. Therefore, precipitation data, maintained from 1948 through 1972, was used from a recording station located approximately 1.0 mile south from Sun Valley at an elevation of 5,980 feet amsl. The mean annual precipitation is 17.26 inches, and the 100-year, 24-hour event is 2.16 inches (WRCC, 2007).

There are not any residences, schools or day-care facilities within 200 feet. The cabin under construction lies northwest, approximately 500 feet. However, when completed, this structure will probably be occupied on a seasonal basis. Two seasonal residences are located along the East Fork Road on Mascot mine patented claims; 0.5 miles to the southeast and 0.75 miles to the east, respectively. Additional residences are located along the East Fork Road (year-round and/or vacation properties), downstream towards Triumph.

### **Air**

Concentrations of metals in wind borne fugitive dust have been the driving force behind cleanups in the former mining properties of the Wood River area, particularly at the Triumph Mine Site. However, the Paymaster's waste dumps are well consolidated and moderately vegetative, where slope stability allows. Consequently, the likelihood of aerial dispersion of particulates is expected to be very minor.

### **Groundwater**

During the cleanup activities of the nearby Triumph mine, the first concerns were related to potential human health risks as a result of contamination of public and private drinking water supplies. Generally speaking, contamination of drinking water systems was thought likely to occur from two types of sources (ore bodies and waste dumps) and along three pathways, as illustrated by the following three scenarios. First, heavy metals are leached from mine waste 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 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 the systems use the same shallow aquifer, and are located very close to the numerous private wells, the results of the source water assessments has been used to evaluate the probability that contaminants entering 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.

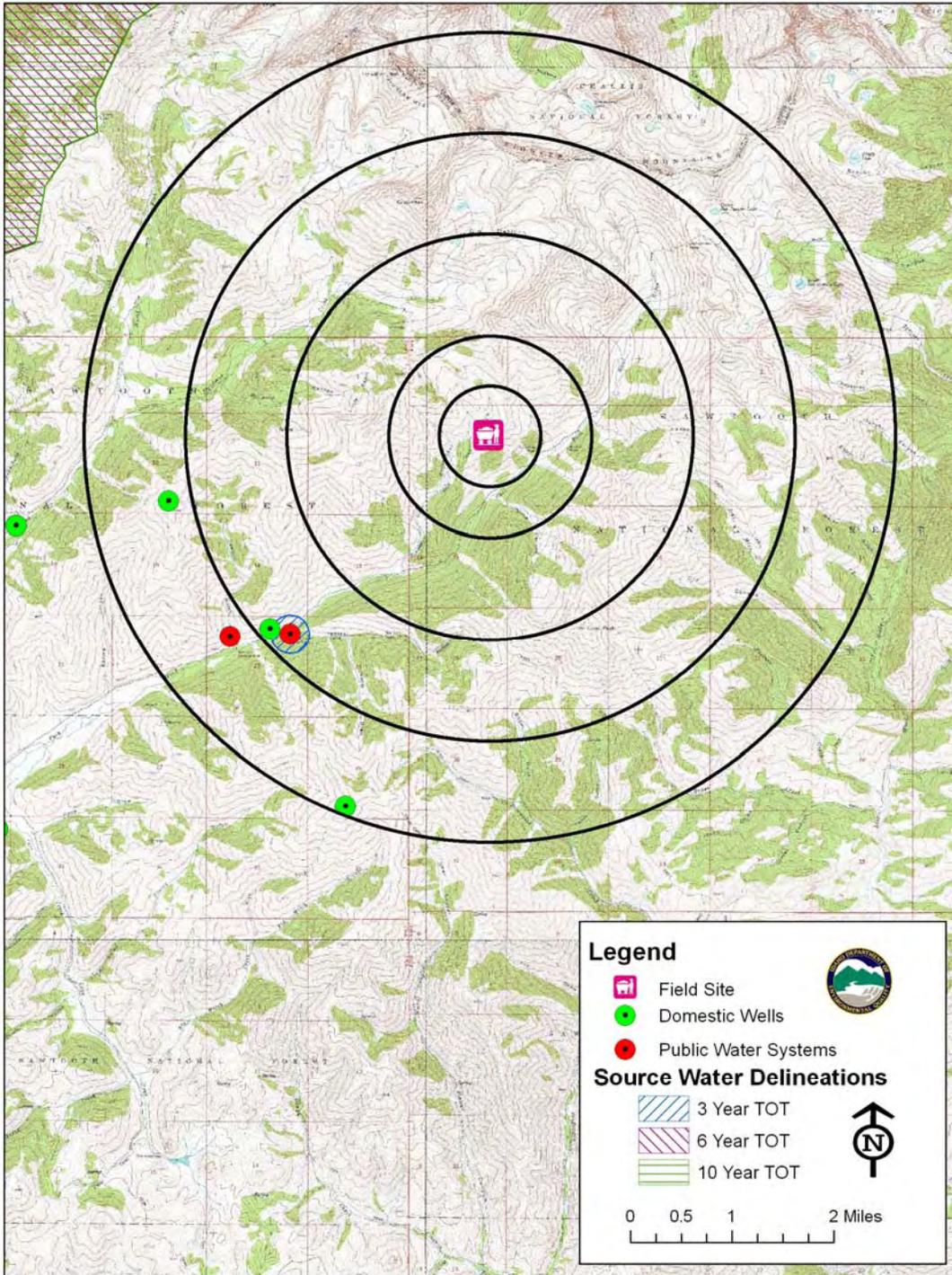
The Source Area delineation process establishes the physical area around a well or surface water intake that becomes the focal point of the source water assessment. The process includes mapping the boundaries of the zone of contribution to the area contributing water to the well or to the surface water 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 depends 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). These relationships are illustrated in Figure 5.

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).



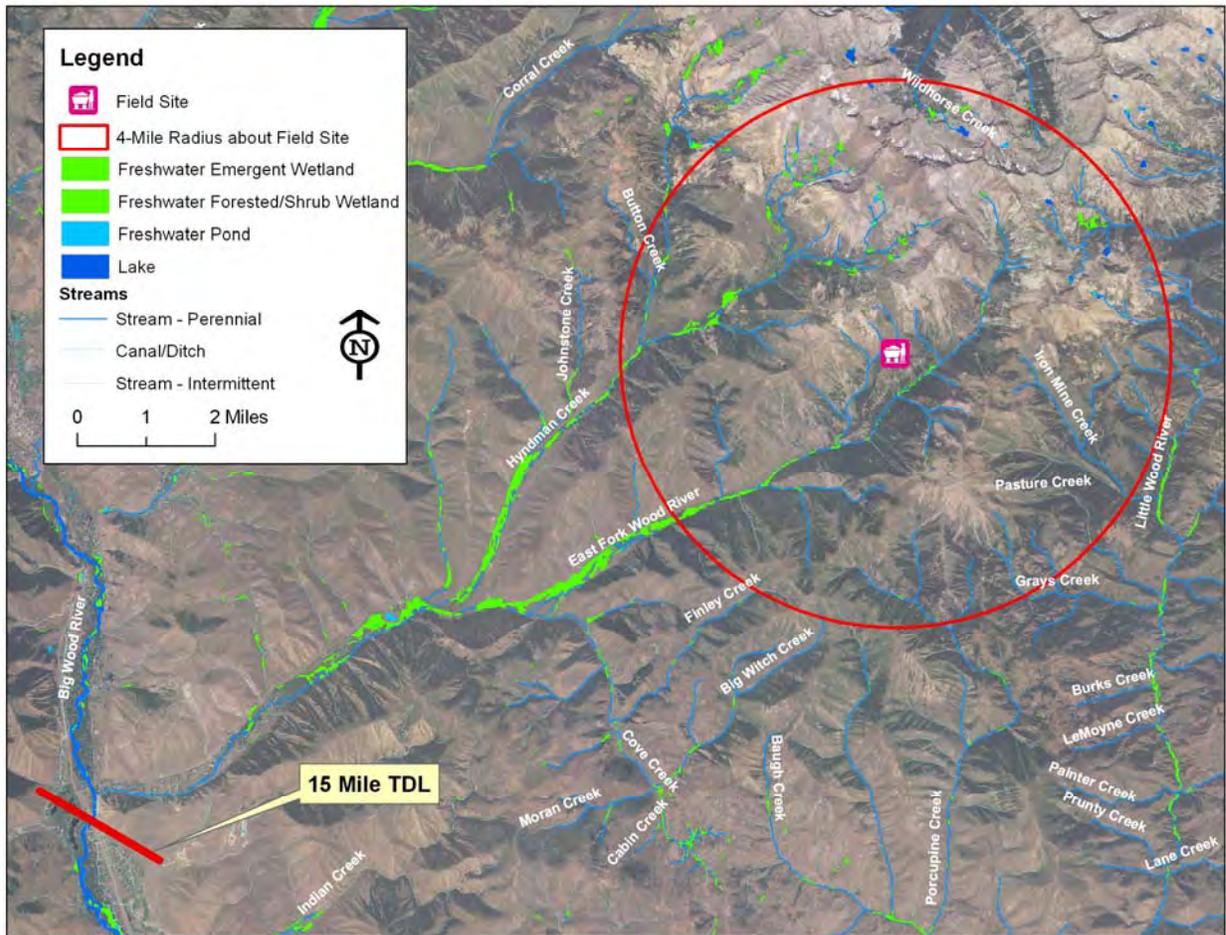
**Figure 5. Domestic wells and public water system wells located within a 4-mile radius of the Paymaster Claim. (Source: USGS 7.5 Minute Quads)**

Generally speaking, public drinking water 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 not any 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 any metal concentrations have exceeded MCLs in the Bellevue drinking water systems (IDEQ 2000).

### **Surface Water**

Most of the Paymaster's workings lie on the east side of a high ridge overlooking the perennial East Fork of the Big Wood River. The inclined shaft and associated waste dump lie in Paymaster Gulch, an ephemeral drain. None of the collapsed mine workings showed evidence of drainage. However, a seep or spring was emanating in Paymaster Gulch, approximately 0.25 miles west of the inclined shaft. The surface water flows for a few hundred meters before infiltrating into the alluvium and gravels. IDEQ collected a water sample [PM SW 1] from this surface water expression. The water sample did not exceed any primary or secondary water quality standards.



**Figure 6. Surface water 15-mile Target Distance Limit (TDL) from the preliminary assessment site. (Source NAIP 2004)**

### **Sensitive Species and Wetlands**

The national wetland database indicates that wetlands exist along the East Fork of the Big Wood River below the Paymaster Mine (see Figure 6). Aspen groves and fir tree stands, near workings, particularly along west side of the ridge, do not appear to have suffered any phytotoxic affects. Although disturbances may have occurred during residential developments elsewhere within the East Fork of the Big Wood River, adverse effects were not apparent at the Paymaster.

Several species of concern are documented within the 4-mile radius (see Figure 7), including the North American Wolverine. The site is also within the potential Gray Wolf range. Since wolves range over a wide area, exposure to heavy metals at the site and potentially within the adjacent stream/pond may be limited, thus minimizing any dose. Therefore, it does not appear as though the site could cause adverse affects to this sensitive species.

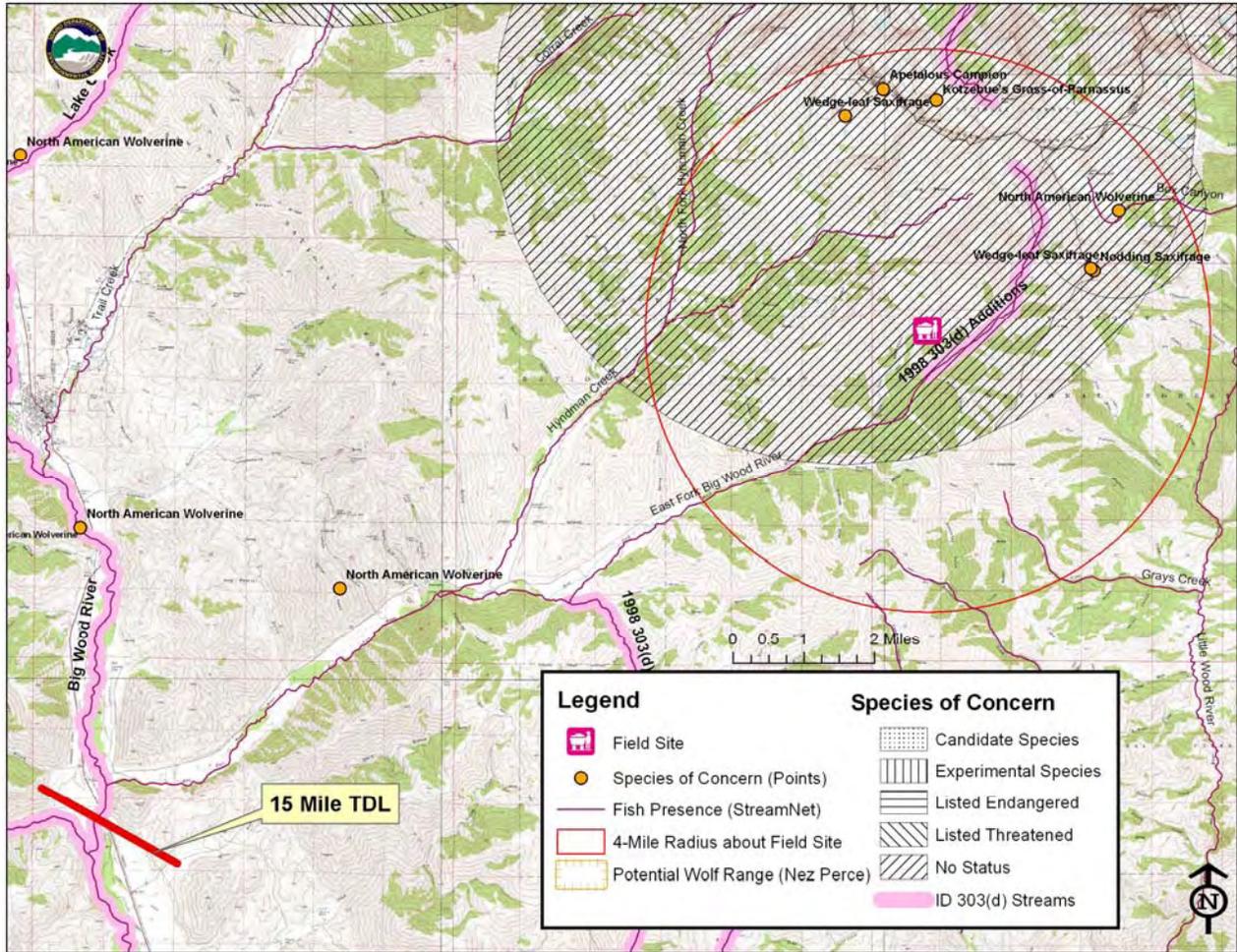


Figure 7. Sensitive species identified in the vicinity of the preliminary assessment site. (Source NAIP 2004)

## **Section 8. Conclusions and Recommendations**

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Based on existing conditions and uses, historic information, and surface water sample analysis; the IDEQ has determined that No Remedial Action is Planned (NRAP) for this property.

However, IDEQ recommends that prior to development plans for any residential use; additional site characterization should be conducted to better evaluate potential risk management issues.

The Paymaster claim has at least three prospects and one possible inclined shaft, all of which are collapsed. None of these workings are very extensive and sulfide mineralization is not readily apparent.

## References

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Idaho Department of Environmental Quality. 2000. City of Bellevue (PWS 5070004) Source Water Assessment Final Report.

Umpleby, J.B., Westgate, L.G., and Ross, C.P., 1930, *Geology and ore deposits of the Wood River region, Idaho, with a description of the Minnie Moore and nearby mines by Hewett*, USGS Bulletin 814, 250 p.

Western Regional Climate Center (WRCC), 2007. <http://www.wrcc.dri.edu/cgi-bin/cliGCSstP.pl?id8906>