Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Forest Service Lands (Region 1), Idaho Panhandle National Forest: Volume V, Section C: Coeur d'Alene River Drainage Surrounding the Coeur d'Alene Mining District (Excluding the Prichard Creek and Eagle Creek Drainages), Secondary Properties

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Field Inspection conducted by Earl Bennett,
John Kauffman, and William Rember
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1.0 PROJECT OVERVIEW

1.1 INTRODUCTION

In order to fulfill its obligations under the Clean Water Act and related legislation, the Northern Region of the United States Forest Service (USFS) needs to identify and characterize the abandoned and inactive mines with environmental, health, and/or safety problems that are on or could impact National Forest Service-administered lands. The Northern Region of the USFS administers National Forest lands in the northern part of Idaho, Montana, and parts of North and South Dakota. The Idaho Geological Survey (IGS) is the lead state agency for the collection, interpretation, and distribution of information about the geology and mineral resources of Idaho. The USFS and the IGS, having determined that an inventory and preliminary characterization of abandoned and inactive mines in Idaho would be beneficial to both agencies, have entered into a series of participating agreements to accomplish this work. The first forest inventoried was the Panhandle National Forest. Volume III and Volume V (Sections A through D) present the results of the work done in the Coeur d’Alene River basin, excluding properties in the Prichard-Eagle Creek drainage (which are covered in Volumes I and IV). Appendix E contains a list of all reports prepared for this project. For continuity, the general design of this report follows that used by the Montana Bureau of Mines and Geology for similar studies in Montana.

1.2 PROJECT OBJECTIVES

In 1992, the USFS and IGS entered into an agreement to inventory abandoned and inactive mines on or affecting Forest Service lands in Idaho. Work on the initial phase of the project included developing a computerized database of all such mines and prospects and plotting the locations of these properties on National Forest base maps. Phase 2 work conducted the following year provided the Forest Service with screening forms containing site information from the database and map overlays at 7.5-minute scale for areas of dense mining activity. Phase 3 started in the summer of 1996 and included field examination of properties in the Prichard Creek and Eagle Creek basins (Summit mining district) in Shoshone County, field examination of properties in the Gold Creek drainage (Lakeview mining district) in Bonner County, and preparation of reports discussing the ownership and operational history of selected mines. Field work in the summer of 1997 covered properties in the Coeur d’Alene River basin surrounding the Coeur d’Alene mining district that had not been examined the previous summer.

The overall objectives of this inventory and preliminary characterization process, as defined by the USFS, are to:

1. Systematically identify all mine sites with possible human health, environmental, and/or safety related problems that either are on or affecting National Forest Service lands.

2. Identify the human health and environmental risks at each location based on site characterization factors (see Section 1.5), including screening-level soil and water samples.
taken and analyzed in accordance with Environmental Protection Agency (EPA) protocols and quality control procedures.

3. Based on site characterization factors, identify those sites that are not affecting National Forest Service lands and that can therefore be eliminated from further consideration.

4. Cooperate with other state and federal agencies, and integrate the Northern Region program with their programs.

5. Develop and maintain a data file of site information that will allow the Region to pro-actively respond to governmental and public interest group concerns.

In addition to the USFS objectives outlined above, the IGS objectives include gathering new information associated with these abandoned and inactive mines. The Survey's enabling legislation (Sections 47-201–47-204 of the Idaho Code) designates the IGS as the lead state agency for the collection, interpretation, and distribution of all geologic and minerals data for Idaho.

1.3 ABANDONED AND INACTIVE MINES DEFINED

For the purposes of this study, mines, mills, or other processing facilities related to mineral extraction and/or processing are defined as abandoned or inactive as follows:

A mine is considered abandoned if there are no identifiable owners or operators for the facilities, or if the facilities have reverted to federal ownership.

A mine is considered to be inactive if there is an identifiable owner or operator of the facility, but the facility is not currently operating and there are no approved authorizations or permits to operate.

1.4 HEALTH AND ENVIRONMENTAL PROBLEMS AT MINES

A variety of safety, health, and environmental problems may occur at abandoned and inactive mines. These include metals that contaminate ground water, surface water, and soils; airborne dust from abandoned tailings impoundments; eroding mine and mill waste materials that contribute excessive amounts of sediment to surface waters; unstable waste piles with the potential for catastrophic failure; and physical hazards associated with mine openings and dilapidated structures. The most important environmental hazard is the contamination of both surface and subsurface water by metals, acid mine drainage, or sediment loading.

Metals are often transported from a mine by water (ground water discharge or surface runoff) and may be dissolved, suspended, or carried as part of the bedload. When sulfides are present, acid water can form; this, in turn, increases the solubility of metals. This condition, known as acid mine drainage (AMD), is a significant source of metal releases at some mine sites in Idaho.
1.4.1 Acid Mine Drainage

Trexler and others (1975) identified six factors that govern the formation of metal-laden acid mine waters. They are:

1) availability of acid-producing minerals, particularly pyrite,
2) presence of oxygen,
3) moisture in the atmosphere,
4) availability of leachable heavy metals,
5) availability of water to transport the dissolved constituents, and
6) mine characteristics, which affect movement of air and water through the mine workings.

These factors occur not only within the mines themselves, but also within mine dumps and mill tailings piles, making these waste materials potential sources of contamination as well. Formation of acid mine drainage can be reduced if minerals such as calcite, which can neutralize acidity, are present (Trexler and others, 1975; Marvin and others, 1995).

Acid mine drainage is formed by the oxidation and dissolution of sulfides, particularly pyrite (FeS₂) and pyrrhotite (Fe₁₋ₓS). Other sulfides play a minor role in acid generation. Oxidation of iron sulfides forms sulfuric acid (H₂SO₄), sulfate ions (SO₄²⁻), and reduced iron (Fe²⁺). When sulfide-bearing rock is mined, the sulfide minerals are exposed to atmospheric oxygen and oxygen-bearing water. Consequently, the sulfide minerals are oxidized, and acid mine waters are produced (Trexler and others, 1975; Marvin and others, 1995).

The oxidation of the reduced iron is the step that limits how much acid will form. The rate of this reaction can be greatly increased by iron-oxidizing bacteria (Thiobacillus ferrooxidans). The oxidized iron produced by biological activity promotes further oxidation and dissolution of pyrite, pyrrhotite, and marcasite (FeS₂, a dimorph of pyrite) (Trexler and others, 1975; Marvin and others, 1995).

Once formed, the acid can dissolve other sulfide minerals to produce high concentrations of copper, lead, zinc, and other metals. Minerals that can contribute heavy metals to acid mine drainage include arsenopyrite, FeAsS; chalcopyrite, CuFeS₂; galena, PbS; tetrahedrite, (CuFe)₁₂Sb₄S₁₃; and sphalerite, (Zn, Fe)S. Aluminum can be leached by the dissolution of aluminosilicates common in soils and waste material found in Idaho. The dissolution of any given metal is controlled by the solubility of that metal (Trexler and others, 1975; Marvin and others, 1995).

1.4.2 Solubility of Selected Metals

The following information is paraphrased from Marvin and others (1995, p. 5-6). This report cites the following references as sources for this material: Lindsay (1979), Stumm and Morgan (1981), Hem (1985), and Maest and Metesh (1993).
At a pH above 2.2, ferric hydroxide \([\text{Fe(OH)}_3]\) produces a brownish orange color in surface waters and forms a precipitate with a similar color on rocks in affected streams. If other metals, such as copper, lead, cadmium, zinc, and aluminum, are present in the source rock, they may also precipitate with or adsorb onto the ferric hydroxide (Stumm and Morgan, 1981). Alunite \([\text{KAl}_2(\text{SO}_4)_2(\text{OH})_6]\) and jarosite \([\text{KFe}_3(\text{SO}_4)_2(\text{OH})_6]\) will precipitate at a pH of less than 4, depending on \(\text{SO}_4^{\text{2-}}\) and \(\text{K}^+\) activities (Lindsay, 1979).

Under acidic conditions, the solubility of the metal controls how much will be released into the environment:

**Manganese** solubility is strongly controlled by the redox state and is limited by the presence of minerals such as pyrolusite and manganite; under reducing conditions, pyrolusite \([\text{MnO}_2]\) dissolves and manganite \([\text{MnO(OH)}]\) precipitates. Manganese is found in mineralized environments as rhodochrosite \([\text{MnCO}_3]\) and its weathering products.

**Aluminum** solubility is most often controlled by alunite \([\text{KAl}_3(\text{SO}_4)_2(\text{OH})_6]\) or by gibbsite \([\text{Al(OH)}_3]\), depending on pH. Aluminum is one of the most common elements in rock-forming minerals such as feldspars, micas, and clays.

**Arsenic** tends to precipitate and adsorb with iron at low pH and de-sorb or dissolve at higher pH. Once oxidized, arsenic will be found in solution in higher pH waters. When the pH is between 3 and 7, the dominant arsenic compound is a monovalent arsenate, \(\text{H}_2\text{AsO}_4\). Arsenic is abundant in metallic mineral deposits as arsenopyrite \([\text{FeAsS}]\), enargite \([\text{Cu}_3\text{AsS}_4]\), tennantite \([\text{Cu}_{12}\text{As}_4\text{S}_{13}]\), and other minerals.

**Cadmium** solubility data are limited. When the pH of soils is above 7.5, the solubility of cadmium is controlled by the carbonate species octavite \([\text{CdCO}_3]\); when the pH of the soil is below 6, cadmium solubility is controlled by strengite \([\text{Cd}_5(\text{PO}_4)_2]\). Octavite is the dominant control on the solubility of cadmium in soils. In water, at low partial pressures of \(\text{H}_2\text{S}\), \(\text{CdCO}_3\) is easily reduced to \(\text{CdS}\).

**Copper** solubility in natural waters is controlled primarily by the amount of carbonate present; malachite \([\text{Cu}_2(\text{OH})_2\text{CO}_3]\) and azurite \([\text{Cu}_2(\text{OH})_2(\text{CO}_3)_2]\) form when \(\text{CO}_3^{\text{2-}}\) ions are available in sufficient concentrations. In soil, copper combines readily with iron to form cupric ferrite. Other compounds, such as sulfate and phosphates, may also control copper solubility in soils. Copper is present in many ore minerals, including chalcopyrite \([\text{CuFeS}_2]\), bornite \([\text{Cu}_2\text{FeS}_4]\), chalcocite \([\text{Cu}_2\text{S}]\), and tetrahedrite \([\text{Cu}_{12}\text{Sb}_4\text{S}_{13}]\).
**Mercury** readily vaporizes under atmospheric conditions and thus is most often found in concentrations well below the 25 μg/L equilibrium concentration. The most stable form of mercury in soil is its elemental form. Mercury is found in low temperature hydrothermal ores as cinnabar [HgS], in epithermal (hot springs) deposits as native mercury, and as native mercury in man-made deposits where mercury was used to process gold ores.

**Lead** concentrations in natural waters are controlled by the formation of lead carbonate, which has an equilibrium concentration of 50 μg/L when the pH is between 7.5 and 8.5. As with other metals, concentrations in solution increase with decreasing pH. In sulfate soils with a pH of less than 6, the formation of anglesite determines how much lead will remain in solution. The formation of cerussite, a lead carbonate, controls solubility in buffered soils. Lead occurs in the common ore mineral galena [PbS].

**Zinc** solubility is controlled by the formation of zinc hydroxide and zinc carbonate in natural waters. When the pH is above 8, the equilibrium concentration of zinc in water with a high bicarbonate content is less than 100 μg/L. Franklinite may control solubility at pH less than 5 in water and soils, and its formation is strongly affected by sulfate concentrations. Thus, production of sulfate from acid mine drainage may ultimately control the solubility of zinc in water affected by mining. Sphalerite [ZnS] is common in mineralized systems.

1.4.3 The Use of pH and Specific Conductivity to Identify Water Quality Problems

Specific conductance (SC) and pH provide a rapid way to distinguish many "problem" mine sites from those that have no adverse water-related impacts. As a rough screening tool, low pH (<6.0) and high SC (variable) usually occur at sites with problems; neutral or higher pH and low SC indicate sites that are less likely to have serious problems.

Limiting data collection only to pH and SC largely ignores the various controls on solubility and can lead to overlooking some types of problems. Arsenic, for example, is most mobile in waters with higher pH values (>7), and its concentration is strongly dependent on the presence of dissolved iron. Cadmium and lead may also exceed standards in waters with pH values within acceptable limits.

Reliance on SC as an indicator of site conditions can also be misleading in certain situations. The SC value of a sample represents 55 to 75 percent of the total dissolved solids (TDS), depending on the concentration of sulfate. Also, it is necessary to have a statistically significant amount of SC data for a study area in order to define what constitutes a high or low SC value.

In some cases, a water sample with a near-neutral pH and a moderate SC could have one or more dissolved metal species that may exceed standards. The complete evaluation of a mine site for
adverse impacts on water and soil should include the collection of samples for analysis of metals, cations, and anions.

1.5 METHODOLOGY

1.5.1 Data Sources

The IGS began compiling a database of mining properties in Idaho in 1979. This work has continued to date, and the database (now digital) contains information on some 8,700 mines and prospects. All or parts of the following databases and information sources have been integrated into this digital information system:

1. the Mineral Industry Location Subsystem (MILS) database (U.S. Bureau of Mines)
2. the Mineral Resources Data System (MRDS) database (U.S. Geological Survey)
3. published compilations of mines and prospects data
4. state publications on Idaho mineral deposits
6. IGS mineral property files
7. all mines and prospects noted on the appropriate USGS 7.5-minute quadrangle maps
8. data held in private collections or company information.

Most of the data for this project were collated with existing data in the IGS Mines and Prospects digital database. As noted, this is the most complete compilation available for information on Idaho's mining properties. The IGS continues to update the database, which now contains an estimated 85-90 percent of the mining properties in the state. During the field visits, the IGS located some (but not many) mines and prospects for which no previous information existed. Also, a very few mines listed in the database were not found.

1.5.2 Pre-field Screening

Field crews visited almost all the mine sites in the study area, emphasizing the properties with the potential to release hazardous substances and those for which there was not enough information available to make that determination without a field visit. The IGS and the USFS developed screening criteria (Table 1.5-1) which they used to determine if a site had the potential to release hazardous substances or posed other environmental or safety hazards. The first page of the Field Form (Appendix A) contains the screening criteria. If any of the answers were "yes" or unknown, the site was visited. Personal knowledge of a site and published information were used initially to answer the questions. Forest Service mineral specialists used these criteria to "screen out" several sites using their knowledge of an area.

Mine sites which were not visited were retained in the database along with the data source(s) that were consulted. However, if these sites were close to a visited site, the geologist usually looked at them to verify that the screening information was correct.
Placer mines were not studied as part of this project. Although mercury was used in amalgamating free gold in placer mines, the complex nature of placer deposits makes detection of mercury difficult and is beyond the scope of this inventory. Due to their oxidized nature, placer deposits are not likely to contain other anomalous concentrations of heavy metals.

Table 1.5-1. Screening Criteria (answer Yes or No to each item).

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Screening Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Mill site or tailings present.</td>
</tr>
<tr>
<td></td>
<td>2. Adits with discharge or evidence of discharge.</td>
</tr>
<tr>
<td></td>
<td>3. Evidence of or strong likelihood for metal leaching or AMD (water stains,</td>
</tr>
<tr>
<td></td>
<td>stressed or lack of vegetation, waste below water table, etc.)</td>
</tr>
<tr>
<td></td>
<td>4. Mine waste in floodplain or shows signs of water erosion.</td>
</tr>
<tr>
<td></td>
<td>5. Residences, high public use area, or environmentally sensitive area (as listed</td>
</tr>
<tr>
<td></td>
<td>in HRS) within 200 feet of the disturbance.</td>
</tr>
<tr>
<td></td>
<td>6. Hazardous wastes/materials (chemical containers, explosives, etc.)</td>
</tr>
<tr>
<td></td>
<td>7. Open adits/shafts, highwalls, or hazardous structures/debris.</td>
</tr>
</tbody>
</table>

If the answers to criteria 1 through 6 were all "NO" (based on literature, personal knowledge, or a site visit), the site was not investigated further.

1.5.3 Field Inspection Procedures

The sites which could not be screened out by using the criteria in Table 1.5-1 were visited by an IGS geologist. At sites for which little geologic or mining data existed, geologists characterized the geology, collected samples for geochemical analysis, evaluated the deposit, and described surface workings and processing facilities present. All information required to fill in the Field Questionnaire (Appendix A) was gathered.

When it was determined that a site had a possible environmental problem, more sampling and description were required. Information was collected concerning environmental degradation, hazardous mine openings, the presence of structures, and land ownership. After the potential problems were described, appropriate soil and water samples were collected. All site locations were refined using conventional field methods, and each site was located by latitude and longitude and by Township, Range, and Section. If previously determined, these values were checked and corrected, as needed.

On public lands, sites with ground-water discharge, flowing surface water, or contaminated soils (as indicated by impacts on vegetation) were mapped. Sketch maps show locations of the workings, exposed geology, dumps, tailings, and surface water and geologic sample locations. Oblique aerial photographs were sometimes substituted or used to supplement the field sketches.
The site was photographically recorded using both still images and videotape. The videotape record proved especially useful for site description and review, and is recommended for future studies.

1.5.3.1 Soil, Rock, and Mine Waste Sampling Procedures

At sites identified as having a potential problem, the geologist collected soil, rock, and waste samples, as appropriate. Sample locations were selected in areas where waste material was obviously impacting natural material. In most cases a composite sample was gathered to get as representative a sample as possible, or multiple samples were collected. All sample sites were located so as to assess conditions on National Forest lands. Three types of samples were collected:

1) select rock, soil, or waste samples—specimens representing a particular material taken for analysis;

2) composite samples—rock and soil taken systematically from a waste dump or tailings pile for analysis, representing the overall composition of material in the source;

3) leach samples—duplicates of selected composite samples (usually waste rock or mill tailings) for testing leachable metals.

The three types of samples were used to examine the value and metal content of dumps and tailings, and to check the availability of metals during leaching when sample sites were exposed to water. Outcrops and waste materials were not sampled extensively enough to provide reliable estimates of tonnages, grades, or economic feasibility.

1.5.3.2 Water Sampling Procedure

As noted, this project focused on the impacts of mining on surface water, ground water, and soils. The reasoning behind this approach was that a mine disturbance may have high total metal concentrations yet may be releasing few metals into the surface water, ground water, or soil. Conversely, another disturbance could have lower total metal content but be releasing metals in concentrations that adversely impact the environment.

The geologist selected and marked water sample sites based on field parameters (SC, pH, temperature) and observations (such as erosion and staining of soils or stream beds). Sample locations were chosen that would provide the best information on the relative impact of the site to surface water and soils. All sites were accurately located on topographic base maps. Surface water samples were collected at all discharge points at the site, as well as samples from upstream and downstream of the site.

At each water sampling site, the temperature, specific conductivity, and pH were measured. A unique sample number was affixed to the sample bottle. Two 125-ml samples were collected.
One sample was left raw and the other was acidified with 0.1N nitric acid. Both samples were stored in a secured ice box. The samples remained under constant refrigeration and security until submitted for analysis.

Since monitoring wells were not installed as part of this investigation, the evaluation of metal contamination of ground water was limited to strategic sampling of surface water and soils. In most cases, background water-quality data at a particular mine site was restricted to upstream surface water samples. However, in some drainages background samples were collected at sites with no visible contamination and no known mining activity upstream from the sampling location. Background soil samples were not collected. Laboratory leach tests were used to determine if metals might be released from mine waste material, which could provide additional insight to possible ground-water contamination.

1.5.4 Analytical Methods

The Analytical Sciences Laboratory at the University of Idaho performed all of the laboratory analyses using the following EPA-approved protocols and quality assurance standards:

Water Samples (acidified and unfiltered)—Total Recoverable Metal Screen (EPA Test 200.7).
Water Samples (acidified and unfiltered)—Arsenic (EPA Test 200.9), Lead (EPA Test 200.9), and Mercury (EPA Test 245.1).
Water Samples (raw and filtered 0.45 micron filter)—Dissolved Metal Screen (EPA Test 200.7).
Soil and Waste Material—Element Screen (EPA Test 3050/6010).
Leachable Metals, TCLP—Metal Screen (EPA Test 1311/6010).

1.5.5 Standards

EPA and various state agencies have developed human health and environmental standards for various metals. In an attempt to put the metal concentrations that were measured into some perspective, they were compared to these developed standards. However, it is understood that the background metal concentrations in mineralized areas may exceed these standards.

1.5.5.1 Water-Quality Standards

The Safe Drinking Water Act (SDWA) directs EPA to develop standards for potable water. Some of these standards are mandatory (primary) and some are desired (secondary). The standards established under the SDWA are often referred to as primary and secondary maximum contaminant levels (MCLs). Similarly, the Clean Water Act (CWA) directs EPA to develop water-quality standards (acute and chronic) that will protect aquatic organisms. These standards may vary with water hardness and are often referred to as the Aquatic Life Standards. The primary and secondary MCLs along with the acute and chronic Aquatic Life Standards for selected metals are listed in Table 1.5-2. As these standards can vary with water hardness, a range of values is given for some elements. Hardness was not measured for this study.
Table 1.5-2. Standards for contaminants in water.

<table>
<thead>
<tr>
<th>Element</th>
<th>Primary MCL (mg/L)</th>
<th>Secondary MCL (mg/L)</th>
<th>Aquatic Life, Acute (mg/L)</th>
<th>Aquatic Life, Chronic (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum</td>
<td>---</td>
<td>0.05-0.2</td>
<td>0.75</td>
<td>0.087</td>
</tr>
<tr>
<td>Arsenic</td>
<td>0.05</td>
<td>---</td>
<td>0.36</td>
<td>0.19</td>
</tr>
<tr>
<td>Barium</td>
<td>2</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Cadmium</td>
<td>0.005</td>
<td>---</td>
<td>0.004/0.009</td>
<td>0.001/0.002</td>
</tr>
<tr>
<td>Chromium</td>
<td>0.1</td>
<td>---</td>
<td>1.7/3.1</td>
<td>0.21/0.37</td>
</tr>
<tr>
<td>Copper</td>
<td>1.3</td>
<td>1</td>
<td>0.018/0.034</td>
<td>0.012/0.021</td>
</tr>
<tr>
<td>Iron</td>
<td>---</td>
<td>0.3</td>
<td>---</td>
<td>1</td>
</tr>
<tr>
<td>Lead</td>
<td>0.015</td>
<td>---</td>
<td>0.082/0.2</td>
<td>0.003/0.008</td>
</tr>
<tr>
<td>Manganese</td>
<td>---</td>
<td>0.05</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Mercury</td>
<td>0.002</td>
<td>---</td>
<td>0.0024</td>
<td>0.000012</td>
</tr>
<tr>
<td>Nickel</td>
<td>0.1</td>
<td>---</td>
<td>1.4/2.5</td>
<td>0.16/0.28</td>
</tr>
<tr>
<td>Zinc</td>
<td>---</td>
<td>5</td>
<td>0.12/0.21</td>
<td>0.11/0.19</td>
</tr>
</tbody>
</table>

1.5.5.2 Soil and Rock Background Standards

It is useful to have some idea about the natural background values of rocks and soils when interpreting geochemical data. Although no whole rock or soil samples were run for this study, an estimate can be made from the analyses presented by Gott and Cathrall (1980). They analyzed both rock samples from the parent formation and soil samples from above the parent material. The median results from these analyses are presented in Tables 1.5-3 and 1.5-4, which show data for the Prichard, Burke, Revett, St. Regis, and Wallace Formations. These samples were analyzed by emission spectrophotometry, a much less accurate technique than we use today. However, due to the large number of analyses, the data is still useful, especially for estimating background values. For example, an average sample of soil above the Prichard Formation might contain 54 ppm (mg/Kg) lead, 140 ppm (mg/Kg) zinc, 21 ppm (mg/Kg) copper, 0.13 ppm (mg/Kg) mercury, and 10 ppm (mg/Kg) arsenic. These data were used by the Environmental Protection Agency as background data for their studies of the Bunker Hill Superfund Site (Nick Ceto, 1997, personal communication).

There are no federal standards for concentrations of metals and other constituents in soils; acceptable limits for such are often based on human and/or environmental risk assessments for an area. Since no assessments of this kind have been done, concentrations of metals in soils were...
Table 1.5-3. Median values of metals in rock samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Rock Unit</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prichard Formation</td>
<td>Burke Formation</td>
<td>Revett Formation</td>
<td>St. Regis Formation</td>
<td>Wallace Formation</td>
</tr>
<tr>
<td>Iron (percent)</td>
<td>3</td>
<td>1.8</td>
<td>1.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.4</td>
<td>0.1</td>
<td>0.05</td>
<td>0.19</td>
<td>0.48</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>0.05</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.3</td>
<td>0.19</td>
<td>0.13</td>
<td>0.19</td>
<td>0.21</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>224</td>
<td>386</td>
<td>381</td>
<td>600</td>
<td>360</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>343</td>
<td>360</td>
<td>235</td>
<td>543</td>
<td>378</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.3</td>
<td>---</td>
<td>---</td>
<td>0.9</td>
<td>0.89</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>5</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>3.9</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>40</td>
<td>13</td>
<td>8.3</td>
<td>20</td>
<td>23.8</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>10</td>
<td>5.5</td>
<td>4.2</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>54</td>
<td>26</td>
<td>20</td>
<td>30</td>
<td>36</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>.01</td>
<td>0.007</td>
<td>0.006</td>
<td>0.007</td>
<td>0.009</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>.03</td>
<td>---</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>22</td>
<td>6.2</td>
<td>8</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>34</td>
<td>14</td>
<td>10</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>60</td>
<td>31</td>
<td>15</td>
<td>20</td>
<td>41</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.4</td>
<td>0.36</td>
<td>0.2</td>
<td>0.2</td>
<td>0.3</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>0.5</td>
<td>0.3</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>109</td>
<td>1.1</td>
<td>1.6</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>727</td>
<td>402</td>
<td>455</td>
<td>839</td>
<td>998</td>
</tr>
</tbody>
</table>
Table 1.5-4. Median values of metals in soil samples from various units of the Belt Supergroup (data from Gott and Cathrall, 1980; ppm = mg/Kg).

<table>
<thead>
<tr>
<th>Element</th>
<th>Prichard Formation</th>
<th>Burke Formation</th>
<th>Revett Formation</th>
<th>St. Regis Formation</th>
<th>Wallace Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (percent)</td>
<td>3.1</td>
<td>3.3</td>
<td>3.8</td>
<td>3.7</td>
<td>3.7</td>
</tr>
<tr>
<td>Magnesium (percent)</td>
<td>0.61</td>
<td>0.60</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Calcium (percent)</td>
<td>0.57</td>
<td>0.59</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Titanium (percent)</td>
<td>0.56</td>
<td>0.49</td>
<td>0.5</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>Manganese (ppm)</td>
<td>1,285</td>
<td>1,373</td>
<td>1,730</td>
<td>1,809</td>
<td>1,377</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>647</td>
<td>647</td>
<td>616</td>
<td>684</td>
<td>586</td>
</tr>
<tr>
<td>Beryllium (ppm)</td>
<td>1.4</td>
<td>1.1</td>
<td>1</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>Cobalt (ppm)</td>
<td>14</td>
<td>10</td>
<td>8.8</td>
<td>9.5</td>
<td>9.4</td>
</tr>
<tr>
<td>Chromium (ppm)</td>
<td>43</td>
<td>32</td>
<td>34</td>
<td>34</td>
<td>32</td>
</tr>
<tr>
<td>Molybdenum (ppm)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Niobium (ppm)</td>
<td>9</td>
<td>9</td>
<td>---</td>
<td>---</td>
<td>8</td>
</tr>
<tr>
<td>Nickel (ppm)</td>
<td>29</td>
<td>21</td>
<td>20</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>Strontium (ppm)</td>
<td>159</td>
<td>178</td>
<td>157</td>
<td>164</td>
<td>154</td>
</tr>
<tr>
<td>Vanadium (ppm)</td>
<td>98</td>
<td>90</td>
<td>97</td>
<td>90</td>
<td>94</td>
</tr>
<tr>
<td>Mercury (ppm)</td>
<td>0.13</td>
<td>0.09</td>
<td>0.08</td>
<td>0.1</td>
<td>0.13</td>
</tr>
<tr>
<td>Copper (ppm)</td>
<td>21</td>
<td>20</td>
<td>29</td>
<td>30</td>
<td>29</td>
</tr>
<tr>
<td>Lead (ppm)</td>
<td>54</td>
<td>35</td>
<td>41</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>Zinc (ppm)</td>
<td>140</td>
<td>89</td>
<td>77</td>
<td>86</td>
<td>115</td>
</tr>
<tr>
<td>Silver (ppm)</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Cadmium (ppm)</td>
<td>1.3</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Arsenic (ppm)</td>
<td>10</td>
<td>8.6</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Antimony (ppm)</td>
<td>1</td>
<td>1</td>
<td>1.8</td>
<td>1.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Sulfur (percent)</td>
<td>0.029</td>
<td>0.035</td>
<td>0.053</td>
<td>0.049</td>
<td>0.046</td>
</tr>
<tr>
<td>No. of Samples</td>
<td>1,705</td>
<td>573</td>
<td>699</td>
<td>1,586</td>
<td>2,298</td>
</tr>
</tbody>
</table>
compared to the limits postulated by the U.S. EPA for the Clark Fork Superfund site (Table 1.5-5). The proposed upper limit for lead in soils is 1,000 mg/Kg to 2,000 mg/Kg, and 80 to 100 mg/Kg for arsenic in residential areas.

Table 1.5-5. Clark Fork Superfund background levels for selected elements.

<table>
<thead>
<tr>
<th>Material</th>
<th>As (mg/Kg)</th>
<th>Cd (mg/Kg)</th>
<th>Pb (mg/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Missoula Lake Bed Sediments</td>
<td>n.a.</td>
<td>0.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1,000.0</td>
</tr>
</tbody>
</table>

1.5.6 Analytical Results

The results of the sample analyses were used to estimate the nature and extent of potential impacts to the environment and human health. Selected results for each site are presented in the discussion; a complete listing of water quality, soil chemistry, and leach test results are presented in Appendix C. It should be noted that the sampling for this study was of a reconnaissance nature only, sufficient for outlining possible problem areas for future study. Sampling density was not sufficient to provide a statistically valid description of any specific site.

The data fields in the current database are presented in Appendix B, and the format (dBase IV) is compatible with the widely used ARC/INFO Geographical Information System (GIS). In addition, all of the field observations and analytical data were entered into a Paradox database, which is compatible with other studies under way by the U.S. Forest Service.

1.5.7 Sample and Site Identification Numbers

All water, tailings, and dump samples were assigned unique numbers. These were constructed according to the following system: 1) an initial letter code identifying the person who took the sample (usually the first letter of the last name); 2) one or two digits for the month (some sample numbers contain a leading zero); 3) two digits for the day on which the sample was taken; 4) the last two digits in the year in which the sample was taken (i.e., “97,” if the samples was taken in 1997); and 5) one to three digits, including leading zeros, identifying the individual sample. Site numbers for properties that did not have a database identification number assigned to them were generated in the same manner.
2.0 COEUR D'ALENE RIVER DRAINAGE SURROUNDING THE COEUR D'ALENE MINING DISTRICT (Part 2 of the discussion of the Coeur d'Alene basin excluding Prichard Creek and Eagle Creek drainages)

2.1 INTRODUCTION

This report describes 132 secondary and minor properties in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district, excluding the drainages of Prichard and Eagle creeks. Only three properties discussed in this volume reported any production, and only one company out of those three had more than 50 tons of total output. The study area extends from the Montana border on the east to Coeur d'Alene Lake on the west and includes Kootenai County north of the Coeur d'Alene River and Shoshone County north of the southern drainage divide for the South Fork of the Coeur d'Alene River. Access to the area is by paved and unpaved roads from the major highways. Interstate 90 provides access to the southern part of the area, and U.S. Highway 95 is near the western boundary. Most of the secondary drainages have dirt roads, especially those with past mining activity.

The study area is in the Wallace and Fernan Districts of the Panhandle National Forest, and most of the land is administered by the U.S. Forest Service (USFS). There are enclaves of private land, mostly on patented mining claims.

The 132 mines and prospects described in this report are located on twenty-three 7.5-minute topographic maps (U.S. Geological Survey). The location of these properties is shown in Figure 2.1-1. Elevations in the study area range from 2,125 feet at Coeur d'Alene Lake to over 6,500 feet on the Idaho-Montana border. The area is heavily forested with dense brush and conifers, and the topography is generally very steep.

2.1.1 Summary of the Coeur d'Alene River Basin Study Area

There were 154 mining properties (Table 2.1.1-1 and Part 1 of this report [Kauffman and others, 1998]) examined in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district. The twenty-two sites with the most significant environmental problems are discussed in Part 1 (Volume III). These properties had either significant environmental problems (usually acid water, high metal loadings in the water, or old mill tailings) or physical hazards (open adits, tunnels, shafts, or pits). The properties with less serious environmental problems or with only physical hazards are covered in Part 2 (Volume V, Sections A through D).

Of the 132 mines in the Coeur d'Alene River drainage discussed in Part 2 (Volume V, Sections A through D), forty-seven have the potential to have an environmental impact on or near USFS lands. Fifteen of these properties have waste dumps in active waterways, twenty-six sites have water discharges that exceed one or more water quality standards, and six properties have both water quality concerns and waste rock impinging on an active waterway. Of the thirty-two sites discussed in this section of the report (Section C of Volume V), nine have the potential to have an
Figure 2.1-1b. Location of properties in the southwest part of the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (U.S. Geological Survey St. Maries 1:100,000-scale map). Properties for all four sections of Volume V are shown on Figures 2.1-1a–2.1-1d.
Figure 2.1-1c. Location of properties in the northeast part of the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (U.S. Geological Survey Thompson Falls 1:100,000-scale map). Properties for all four sections of Volume V are shown on Figures 2.1-1a–2.1-1d.
Figure 2.1-1d. Location of properties in the southeast part of the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (U.S. Geological Survey Wallace 1:100,000-scale map). Properties for all four sections of Volume V are shown on Figures 2.1-1a–2.1-1d.
Table 2.1-1. Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages). The properties are arranged in the order they are discussed in the text, approximately in relative order of importance regarding environmental concerns and/or physical hazards. Properties shown in gray are discussed in Sections B, C, and D of this volume.

Explanation:

- **Site No.**: Idaho Geological Survey file number, or field designation number.
- **Surface Owner**: FS = Forest Service; P = Private; M = mixed Forest Service/Private, or undetermined.
- **Water/Solid Sample**: numbers indicate the number of samples collected.
- **Environmental Concerns**: W = adit water; D = waste dump; T = tailings. Environmental concerns are noted as follows: W - samples of adit water or seeps from waste dumps that exceed one or more water quality standards in the Dissolved Metals Screen, the Total Recoverable Metals Screen, or the arsenic, lead or mercury tests; T or D - tailings or dump samples that exceed background or environmental standards for one or more elements in the Element Screen, and/or tailings or dump samples that show significant leaching of one or more metals in the TCLP for Metals Screen.
- **Physical Conditions**: AO = open adit; AG = open adit, gated; AG(O) = open adit, gated, gate open; AC = caved or otherwise closed adit; SO = open shaft; SC = caved shaft; SO = open stopes; T = trench or dozer cut; P = prospect pit. Numbers indicate number of each type of working at the site; queried when type or condition of workings uncertain or unknown.

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
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<tr>
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<td>Site No.</td>
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<td>Physical Conditions</td>
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<td>WL-433</td>
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<tr>
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<td>IAO</td>
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<td>WL-182</td>
<td>Flagstaff</td>
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<td>WL-304</td>
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<td>WL-223</td>
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<td>WL-226</td>
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<td>Silverton Prospect, upper adit</td>
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<td>Silver Crescent Mine</td>
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<td>WL-263</td>
<td>May Claim Prospect</td>
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<td>WL-446</td>
<td>Little Giant Prospect</td>
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<tr>
<td>WL-448</td>
<td>Carbonate Hill</td>
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</table>
Table 2.1-1 (continued). Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
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<td>Copper Queen</td>
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<td>SP-252</td>
<td>Rockford Group</td>
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<td>1</td>
<td>W ?</td>
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<tr>
<td>SP-154</td>
<td>Rhode Island Prospect</td>
<td>FS</td>
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<td>WL-447</td>
<td>No Name Prospect</td>
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<td>W</td>
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<td>2AO</td>
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</tr>
<tr>
<td>WL-471</td>
<td>Vienna International (Osakis) Prospect</td>
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<td>W</td>
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<td>WL-145</td>
<td>Highlands Aurora Prospect</td>
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<td>W, D</td>
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<td>WL-143</td>
<td>Belmont-Banner Mining Company</td>
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<tr>
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<td>Rainbow No. 2 Prospect</td>
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<tr>
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<td>SP-62</td>
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<td>SP-286</td>
<td>National Mine, No. 1 adit</td>
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<td>WL-98</td>
<td>Rooster Goose Mine</td>
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<tr>
<td>WL-238</td>
<td>Mammoth Prospect</td>
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<td>W</td>
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<tr>
<td>WL-203</td>
<td>Dobson Pass Prospect</td>
<td>M?, P? 1</td>
<td>W</td>
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Table 2.1-1 (continued). Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concentrations</th>
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<td>WL-162</td>
<td>Dudley Group</td>
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<td>W</td>
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<td>WL-252</td>
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<td>W</td>
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<td>SP-37</td>
<td>Rock City Mine</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1T or P</td>
</tr>
<tr>
<td>SP-38</td>
<td>Two Brothers Prospect</td>
<td>FS</td>
<td></td>
<td>1</td>
<td></td>
<td>1AC</td>
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<tr>
<td>SP-39</td>
<td>Lucky Bud Prospect</td>
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<td></td>
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<td></td>
<td>1T</td>
</tr>
<tr>
<td>SP-40</td>
<td>Connie (Dandy) Prospect</td>
<td>FS</td>
<td></td>
<td>1</td>
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<tr>
<td>SP-41</td>
<td>RM Prospect</td>
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<td>1AC</td>
</tr>
<tr>
<td>SP-44</td>
<td>Lower Property Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2-3P 1T</td>
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<tr>
<td>SP-48</td>
<td>Big Elk Group</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AO 1T</td>
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<tr>
<td>SP-49</td>
<td>Unnamed Prospect, trib. to Short Creek, Spyglass Pk. 7.5</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>2T 2P</td>
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<tr>
<td>SP-57</td>
<td>Hamburg-American Prospect</td>
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<td></td>
<td></td>
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<td>SP-61</td>
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<td>FS</td>
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<td></td>
<td>1SC</td>
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<td>SP-83</td>
<td>Kootenai King Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>4T?</td>
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<tr>
<td>SP-92</td>
<td>Lost Cabin Prospect</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>3T or 3AC?</td>
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<tr>
<td>SP-98</td>
<td>Blue Fox</td>
<td>FS</td>
<td></td>
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<tr>
<td>SP-101</td>
<td>McGillivray Prospect</td>
<td>FS</td>
<td></td>
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<tr>
<td>SP-102</td>
<td>Blue Jay</td>
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<td>SP-397</td>
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<td></td>
<td>1SC?</td>
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<tr>
<td>SP-108</td>
<td>King Solomon Prospect</td>
<td>FS</td>
<td></td>
<td></td>
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Table 2.1-1 (continued). Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
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<tr>
<td>SP-115</td>
<td>Maine Standard</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC?</td>
</tr>
<tr>
<td>SP-277</td>
<td>Silver Dale and Big Hill Mine</td>
<td>M?, P?</td>
<td></td>
<td></td>
<td></td>
<td>1T</td>
</tr>
<tr>
<td>SP-274</td>
<td>Wolfson Mine</td>
<td>M</td>
<td>1</td>
<td></td>
<td></td>
<td>1AC</td>
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<tr>
<td>SP-287</td>
<td>Idaho Leadville Group (part)</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>17T</td>
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<tr>
<td>SP-309</td>
<td>Bonanza Gold</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>4T</td>
</tr>
<tr>
<td>WL-176</td>
<td>Capitol Silver-Lead No. 1</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
</tr>
<tr>
<td>WL-204</td>
<td>Silver Mint</td>
<td>FS</td>
<td></td>
<td></td>
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<td>1AC?</td>
</tr>
<tr>
<td>WL-206</td>
<td>Best Chance</td>
<td>FS</td>
<td></td>
<td></td>
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<tr>
<td>WL-213</td>
<td>Belmont Mine</td>
<td>FS</td>
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<tr>
<td>WL-220</td>
<td>Burke Prospect</td>
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<tr>
<td>WL-228</td>
<td>Temple Mining Company, Ltd.</td>
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<tr>
<td>WL-240</td>
<td>Homestake Silver-Lead Prospect</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>1AC</td>
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<tr>
<td>WL-277</td>
<td>Burke Property Prospect</td>
<td>FS</td>
<td></td>
<td></td>
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<td>1AC</td>
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<tr>
<td>WL-282</td>
<td>Champion Gold and Silver Mine</td>
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<td>1</td>
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<td>1AC</td>
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<tr>
<td>WL-292</td>
<td>Silverore-Inspiration</td>
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<tr>
<td>WL-417</td>
<td>Coeur d'Alene Silver-Lead</td>
<td>P</td>
<td></td>
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<tr>
<td>WL-450, B8059706</td>
<td>Carney Prospect</td>
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<td></td>
<td></td>
<td>3 or 4 AC 1P</td>
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<tr>
<td>WL-451</td>
<td>Silver Crown Group</td>
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<tr>
<td>WL-453</td>
<td>Pioneer Mines, Inc.</td>
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<td>1</td>
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<tr>
<td>WL-456</td>
<td>Idaho Copper</td>
<td>P</td>
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<tr>
<td>WL-461</td>
<td>Helvetia Prospect</td>
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<td>1</td>
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<tr>
<td>WL-465</td>
<td>Nonpareil Group</td>
<td>FS</td>
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<td>several P, T</td>
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</table>
Table 2.1-1 (continued). Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
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<tr>
<td>WL-468</td>
<td>Tillicum Prospect</td>
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<td></td>
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<td>1AC</td>
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<tr>
<td>WL-470</td>
<td>Placer Creek Prospect</td>
<td>FS</td>
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<td>1AC 1T? or 2T</td>
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<td>1</td>
<td>D</td>
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<td>1AC</td>
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<tr>
<td>B7189705</td>
<td>Unnamed Prospect, Terror Gulch, Kellogg East 7.5</td>
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<td>1AC</td>
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<tr>
<td>K07229704</td>
<td>Unnamed Prospect, E. Fork of Hayden Creek, Spades Mtn. 7.5</td>
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<td></td>
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<td>1T</td>
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<tr>
<td>K07239701</td>
<td>Unnamed Prospect, trib. of Lewelling Creek, Spades Mtn. 7.5</td>
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<td>1T</td>
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<td>IP 3T 1AC?</td>
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<td>Unnamed Prospect, Stewart Creek, Cataract Peak 7.5</td>
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<td>2</td>
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<td>1AC</td>
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<tr>
<td>R08059701</td>
<td>Unnamed Prospect, Wolf Lodge Creek, Wolf Lodge 7.5</td>
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<td></td>
<td></td>
<td>1AC</td>
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<tr>
<td>K08069703</td>
<td>Unnamed Prospect, W. Fork of Big Creek, Polaris Peak 7.5</td>
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<td>1</td>
<td></td>
<td>W</td>
<td>1AC</td>
</tr>
<tr>
<td>K08069706</td>
<td>Unnamed Prospect, W. Fork of Big Creek, Polaris Peak 7.5</td>
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<td></td>
<td>1T</td>
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<td>SP-286 (K08079708)</td>
<td>National Mine, unnamed adit</td>
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<td>R08139701</td>
<td>Unnamed Prospect, no stream, Wallace 7.5</td>
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<td>1T 1P</td>
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<tr>
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<td>Unnamed Prospect, W. Fork of Big Creek, Polaris Peak 7.5</td>
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<td></td>
<td>1AC</td>
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<tr>
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<td>Unnamed Prospect, W. Fork of Big Creek, Polaris Peak 7.5</td>
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<td></td>
<td>1P</td>
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</table>
Table 2.1-1 (continued). Summary of the secondary and minor sites in the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard and Eagle Creek drainages).

<table>
<thead>
<tr>
<th>Site No.</th>
<th>Mine/Prospect Name</th>
<th>Surface Owner</th>
<th>Water Sample</th>
<th>Solid Sample</th>
<th>Environmental Concerns</th>
<th>Physical Conditions</th>
</tr>
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<tbody>
<tr>
<td>B8139706</td>
<td>Unnamed Prospect, Military Gulch, Burke 7.5</td>
<td>FS</td>
<td></td>
<td></td>
<td></td>
<td>1P</td>
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<td>B8139708</td>
<td>Unnamed Prospect, Military Gulch, Burke 7.5</td>
<td>FS</td>
<td></td>
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<td>1AC</td>
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<td>K08199711</td>
<td>Unnamed Prospect, Sonora Gulch, Burke 7.5</td>
<td>M</td>
<td>1</td>
<td>D</td>
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<td>1AC</td>
</tr>
<tr>
<td>K08209701</td>
<td>Unnamed Prospect, Sonora Gulch, Burke 7.5</td>
<td>M</td>
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<td>1AC</td>
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<tr>
<td>K08209702, K08209703</td>
<td>Unnamed Prospects, Sonora Gulch, Burke 7.5</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>1AC IP</td>
</tr>
<tr>
<td>K08209704</td>
<td>Unnamed Prospect, Canyon Creek, Burke 7.5</td>
<td>M</td>
<td></td>
<td></td>
<td></td>
<td>2AC? or 2T</td>
</tr>
<tr>
<td>WL-272</td>
<td>Sonora Prospect</td>
<td>M</td>
<td>1</td>
<td>1</td>
<td>D, W</td>
<td>2AO 1AC</td>
</tr>
</tbody>
</table>
environmental impact on or near USFS lands. Of these sites, two have dumps that impinged on active waterways, six have water discharges that exceed one or more water quality standards, and one has both water quality concerns and waste rock impinging on an active waterway.

Forty-seven properties discussed in Volume V have open adits or shafts. An additional eight properties have gated openings. Some of the gates are secure, but others could be circumvented by someone determined to enter the adit. Of the thirty-two properties discussed in Section C of Volume V, five have open adits or shafts. Two more have gated openings, both of which appear to be secure.

2.2 GEOLOGY

The most recent general references on the geology of the Coeur d'Alene River basin are Griggs (1973) and Harrison and others (1986). The geology and ore deposits of parts of the area are discussed in Anderson (1940) and Hobbs and others (1965). Additional references include Ransome (1904), Ransome and Calkins (1908), Umpleby and Jones (1923), and Fryklund (1964). Gott and Cathrall (1980) discuss the geochemistry of the Coeur d'Alene district. The geology and mineral deposits of the western part of the drainage are discussed in Anderson (1940). A brief description of the geologic framework of the area follows.

The metal mines in the district are hosted by metasedimentary rocks of the Belt Supergroup of Precambrian age (Figure 2.2-1). The characteristics of the various units comprising the supergroup are shown in Table 3.2.1. One group of mines in the study area are lead-zinc-silver deposits in the Prichard Formation. This formation is broken into an upper and lower part by Hosterman (1956) and Harrison and others (1986). Key references to the Prichard are Cressman (1982) and Cressman (1989). Other important groups of mines include stratabound copper-silver deposits located near the contact between the Revett and St. Regis Formations and lead-silver-zinc deposits located in the transition zone between the Prichard and Burke Formations (Bennett, 1984; Mitchell and Bennett, 1983). Other deposits are in the Wallace Formation.

Igneous rocks include several Cretaceous or Tertiary granitic intrusives near the western edge of the area (Anderson, 1940) and the Gem stocks in the vicinity of Ninemile Creek. Some of the mines in the area are associated with these granitic rocks.

A series of northwest-trending strike-slip faults, including the Thompson Pass, Osburn, and Kellogg faults, are part of the Lewis and Clark line. The Osburn fault separates the Coeur d'Alene district into two halves and follows the South Fork of the Coeur d'Alene River near the southern boundary of the study area. North of the Kellogg fault, a series of faults that trend north-south marks the southern end of the Purcell trench. Folds generally trend north-south or west-northwest, mimicking better known structures in the Coeur d'Alene mining district. The Dobson Pass fault is a major structure that separates the Prichard Formation from the Wallace Formation in the central part of the study area and is a continuation of a major fault that extends up Ninemile Creek north of Wallace, Idaho.
Figure 2.2-1a. Geology of the western part of the Coeur d'Alene River drainage, Idaho (Griggs, 1973). pCQd = Middle Proterozoic quartz diorite or amphibolite; pCp, pCu, pCpl, pCpp, pCpg = Middle Proterozoic Prichard Formation; pCb = Middle Proterozoic Burke Formation; pCrb = Middle Proterozoic Revett Formation; pCrb = Middle Proterozoic Revett and Burke Formations, undivided; pCw, pCwu, pCwl = Middle Proterozoic Wallace Formation; pCsp = Middle Proterozoic Striped Peak Formation; pCl = Middle Proterozoic Libby Formation; Crg = Cambrian Rennie Shale and Gold Creek Quartzite; Cl = Cambrian Lakeview Limestone; Tmm = Tertiary and Mesozoic granite rocks; Td =Miocene and Pliocene Columbia River Basalt and Latah Formation; QTg = Tertiary and Quaternary older gravel deposits; Qp = Pleistocene Palouse Formation; Qgo = Pleistocene older glacial deposits; Qgg = Pleistocene glacial flood deposits; Qgq = Pleistocene younger glacial deposits; Qls = Quaternary landslide deposits; Qal = Holocene alluvium. Properties for all sections of Volume V are shown on Figures 2.2-1a and 2.2-1b.
Figure 2.2-1b. Geology of the eastern part of the Coeur d'Alene River drainage, Idaho (Harrison and others, 1986). Ypu, Ypl = Middle Proterozoic Prichard Formation; Yb = Middle Proterozoic Burke Formation; Yr = Middle Proterozoic Revett Formation; Yw, Ywu, Ywm, Ywl = Middle Proterozoic Wallace Formation; Ysp = Middle Proterozoic Striped Peak Formation; ZYd = Late and Middle Proterozoic mafic dikes and sills; Ks, Kg = Cretaceous granitic rocks; QTg = Tertiary and Quaternary gravel deposits; Qg = Pleistocene glacial, fluvial and flood deposits; Ql = Quaternary lake sediments; Qal = Holocene alluvium. Properties for all four sections of this volume are shown on Figures 2.2-1a and 2.2-1b.
<table>
<thead>
<tr>
<th>Group</th>
<th>Formation</th>
<th>Lithology</th>
<th>Thickness (feet)</th>
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</thead>
<tbody>
<tr>
<td>Missoula</td>
<td>Striped Peak</td>
<td>Interbedded quartzite and argillite with some arenaceous dolomitic beds.</td>
<td>1,500+</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
<td>Purplish gray and pink to greenish gray. Ripple marks, mud cracks common. Top eroded.</td>
<td></td>
</tr>
<tr>
<td>Wallace</td>
<td>Upper part</td>
<td>Mostly medium- to greenish-gray finely laminated argillite. Some arenaceous dolomite and impure quartzite, and minor gray dolomite and limestone in the middle part.</td>
<td>4,500-6,500</td>
</tr>
<tr>
<td></td>
<td>Lower part</td>
<td>Light-gray more or less dolomitic quartzite interbedded with greenish-gray argillite. Ripple marks, mud cracks abundant.</td>
<td></td>
</tr>
<tr>
<td>Ravalli</td>
<td>St. Regis</td>
<td>Light greenish-yellow to light green-gray argillite; thinly laminated. Some carbonate-bearing beds.</td>
<td>1,400-2,000</td>
</tr>
<tr>
<td></td>
<td>Formation</td>
<td>Gradational from thick-bedded pure quartzite at base to interbedded argillite and impure quartzite at top. Red-purple color characteristic; some green-gray argillite. Some carbonate-bearing beds. Ripple marks, mud cracks, and mud-chip breccia common.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper part</td>
<td>Thick-bedded vitreous light yellowish-gray to nearly white pure quartzite. Grades into nearly pure and impure quartzite at bottom and top. Cross-stratification common.</td>
<td>1,200-3,400</td>
</tr>
<tr>
<td>Revett Quartzite</td>
<td></td>
<td>Light greenish-gray impure quartzite. Some pale red and light yellowish-gray pure to nearly pure quartzite. Ripple marks, swash marks, and pseudo-conglomerate.</td>
<td>2,200-3,000</td>
</tr>
<tr>
<td>Burke</td>
<td>Upper part</td>
<td>Interbedded medium-gray argillite and quartzose argillite and light-gray impure to pure quartzite. Some mud cracks and ripple marks.</td>
<td>12,000+</td>
</tr>
<tr>
<td>Formation</td>
<td>Lower part</td>
<td>Thin- to thick-bedded, medium gray argillite and quartzose argillite; laminated in part. Pyrite abundant. some discontinuous quartzite zones. Base buried.</td>
<td></td>
</tr>
</tbody>
</table>
2.3 ECONOMIC GEOLOGY

2.3.1 General Characteristics of the Ore

The metal mines in the district are hosted by metasedimentary rocks of the Belt Supergroup of Precambrian age (Figure 2.2-1). Most of the mines in the study area are lead-zinc-silver deposits, sometimes containing copper and gold. Host rocks include all formations of the Belt Supergroup. The ore veins have variously been described as hydrothermal deposits (Umpleby and Jones, 1923; Fryklund, 1964) or as mobilized syngenetic stratiform deposits (Hershey, 1916; Bennett, 1984). The veins may have been filled as late as the Cretaceous (Fleck and others, 1991; Eaton and others, 1993). Sphalerite, galena, pyrite, and pyrrhotite are commonly found in these deposits (Fryklund, 1964; Umpleby and Jones, 1923). Only three of the properties discussed in this volume reported any production. Of the three properties, only one produced more than 50 tons of ore.

2.3.2 Summary of Mill Development

All of the mines that had associated mills were discussed in Volume III (Part 1 of the discussion of the Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district but excluding the Prichard Creek and Eagle Creek drainages), which covers the major properties. This volume (Part 2 of the discussion of the Coeur d'Alene River drainage) discusses the smaller properties, which did not have associated mills.

2.4 HYDROLOGY AND HYDROGEOLOGY

The study area includes all of the drainage of the Coeur d'Alene River, except the drainages of Prichard and Eagle creeks (which are covered in Volumes I and IV of this report; see Appendix E). Prichard Creek flows into the Coeur d'Alene River at Prichard. The major drainages in the area (Figures 2.1-1 and 2.1-2) are the Coeur d'Alene River (which forms the southern boundary of the western half of the study area) and the North Fork of the Coeur d'Alene River. The South Fork of the Coeur d'Alene River, which drains the Coeur d'Alene mining district (most of which is not Forest Service land), flows into the Coeur d'Alene River west of Enaville. In the eastern part of the area, the southern boundary of the study area follows the divide between the South Fork of the Coeur d'Alene River and the St. Joe River drainages.

As noted, a number of the lead-zinc mines in the study area are hosted by rocks of the Prichard Formation. In places these rocks contain visible sulfides (primarily pyrite and pyrrhotite). These rocks also contain significantly higher values of base metals than some of the other Belt rocks. Table 1.5-3 (based on 727 samples) shows that rocks in the Prichard Formation contain 60 ppm zinc, 34 ppm lead, 3 percent iron, 22 ppm copper, and 0.5 percent cadmium, and soils developed on the Prichard reflect this metal content (Table 1.5-4 based on 1,705 samples) with 140 ppm zinc, 54 ppm lead, 3.1 percent iron, 21 ppm copper, 1.3 ppm cadmium, and 10 ppm arsenic. Tables 1.5-3 and 1.5-4 show similar data for the other formations in the Belt Supergroup.
To test whether the high metal content from the Belt Supergroup, especially the Prichard Formation, was impacting stream waters, eight reference water samples were collected. The chemical analyses for these samples are shown in Tables 2.4-1 and 2.4-2, along with water quality standards suggested by the Environmental Protection Agency (EPA). The following reference water samples were collected:

• B7169711 — East Fork of Twomile Creek  
• B7169712 — Ninemile Creek  
• B7259704 — Daisy Gulch  
• K07299704 — headwaters of Stewart Creek  
• R07309701 — Lost Man Creek  
• R08069702 — Big Creek  
• R08119701 — Varnum Creek  
• R72297001 — Beauty Creek

Of these eight samples, only R08119701 was below all EPA standards for all elements. In the total recoverable metals screen, samples B7169712, K07299704, R07309701, and R08069702 exceed all standards for cadmium, samples B7259704 and R72297001 exceed the Aquatic Life Chronic standard and are within the range of the Aquatic Life Acute standard for cadmium, and sample B7169711 exceeds the Aquatic Life Chronic standard for cadmium. In the dissolved metals screen, sample B7169712 exceeds all standards for cadmium, and samples R07309701 and R72297001 exceed the Aquatic Life Chronic standard for cadmium.

In addition, sample B7169712 exceeds both Aquatic Life standards for zinc in the total recoverable metals and the dissolved metals screens. In the dissolved metals screen, samples K07299704 and R07309701 exceed the Aquatic Life Chronic standard and are within the range of the Aquatic Life Acute standard for copper, sample R72297001 is within the range of the Aquatic Life Chronic standard for copper, and sample R08069702 is at the lower limit of the Aquatic Life Chronic standard for copper.

2.5 SUMMARY OF THE COEUR D'ALENE RIVER DRAINAGE

2.5.1 Summary of Environmental Observations

Most, but not all, samples which significantly exceed EPA water standards are from the larger mines in the area (Tables 2.5-1 and 2.5-2). Water quality variances include significant amounts of zinc from the Silver Cable Mine and lesser amounts of copper from the Beacon Light Mine and the Central and Little Giant Prospects (Atlas Mine). Cadmium in excess of one or more water quality standards is the most prevalent water quality variance in the Coeur d'Alene River drainage; in nearly half of these samples, cadmium is the only element that exceeds any standard. Most of the elements detected in the water samples are also found in the rock units underlying the drainages.
Table 2.4-1. Dissolved metals screen for reference samples from the Coeur d’Alene River drainage surrounding the Coeur d’Alene mining district (excluding the drainages of Prichard and Eagle Creeks).

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7169711</td>
<td>East Fork of Twomile Creek</td>
<td>---</td>
<td></td>
<td>0.0720</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0053</td>
</tr>
<tr>
<td>B7169712</td>
<td>Nine Mile Creek</td>
<td>---</td>
<td></td>
<td>0.0200</td>
<td>0.0180</td>
<td>0.0080</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0310</td>
<td></td>
<td>2.9000</td>
</tr>
<tr>
<td>B7259704</td>
<td>Daisy Gulch</td>
<td>---</td>
<td></td>
<td>0.0260</td>
<td></td>
<td>0.0100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0031</td>
</tr>
<tr>
<td>K07299704</td>
<td>Stewart Creek, head</td>
<td>---</td>
<td></td>
<td>0.0036</td>
<td></td>
<td>0.0066</td>
<td>0.0200</td>
<td>0.0037</td>
<td></td>
<td></td>
<td>0.0031</td>
<td>0.0200</td>
<td></td>
</tr>
<tr>
<td>R07309701</td>
<td>Lost Man Creek</td>
<td>---</td>
<td></td>
<td>0.0099</td>
<td>0.0029</td>
<td></td>
<td>0.0180</td>
<td>0.0120</td>
<td></td>
<td></td>
<td>0.0039</td>
<td>0.0210</td>
<td>0.0080</td>
</tr>
<tr>
<td>R08069702</td>
<td>Big Creek</td>
<td>---</td>
<td></td>
<td>0.0220</td>
<td></td>
<td></td>
<td>0.0120</td>
<td>0.0057</td>
<td></td>
<td></td>
<td>0.0025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R08119701</td>
<td>Varnum Creek</td>
<td>---</td>
<td></td>
<td>0.0100</td>
<td></td>
<td></td>
<td>0.0097</td>
<td>0.1500</td>
<td></td>
<td></td>
<td>0.0180</td>
<td></td>
<td>0.0028</td>
</tr>
<tr>
<td>R72297001</td>
<td>Beauty Creek</td>
<td>---</td>
<td></td>
<td>0.0100</td>
<td>0.0032</td>
<td>0.0055</td>
<td>0.0160</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0160</td>
<td>0.0130</td>
</tr>
</tbody>
</table>

**EXPLANATION**

Blank space equals no analysis

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<thead>
<tr>
<th></th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.050</td>
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<td>0.005</td>
<td>0.100</td>
<td></td>
<td>0.050</td>
<td></td>
<td></td>
<td>0.002</td>
<td>0.100</td>
<td></td>
<td></td>
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<tr>
<td>Secondary MCL</td>
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<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.00012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.360</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.00012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.001-0.002</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td>0.00012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated Detection Level (33% confidence)</td>
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<td>0.0029</td>
<td>0.0006</td>
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<td>0.0037</td>
<td>0.0015</td>
<td>0.0012</td>
<td>0.0005</td>
<td>0.007</td>
<td>0.0025</td>
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Table 2.4-2. Total metals screen for reference samples from the Coeur d’Alene River drainage surrounding the Coeur d’Alene mining district (excluding the drainages of Prichard and Eagle Creeks).

<table>
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<th>FIELD NO.</th>
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<th>AI (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7169711</td>
<td>East Fork of Twomile Creek</td>
<td>0.076</td>
<td>0.003</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.006</td>
<td>0.03</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>B7169712</td>
<td>Ninemile Creek</td>
<td>0.022</td>
<td>0.022</td>
<td>0.018</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.038</td>
<td>0.03</td>
<td>3.000</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>B7259704</td>
<td>Daisy Gulch</td>
<td>0.026</td>
<td>0.005</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>K07299704</td>
<td>Stewart Creek, head</td>
<td>0.006</td>
<td>0.006</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.003</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R07309701</td>
<td>Lost Man Creek</td>
<td>0.010</td>
<td>0.006</td>
<td>—</td>
<td>—</td>
<td>0.016</td>
<td>—</td>
<td>0.004</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
</tr>
<tr>
<td>R08069702</td>
<td>Big Creek</td>
<td>0.028</td>
<td>0.006</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.006</td>
<td>0.03</td>
<td>—</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R08119701</td>
<td>Varnum Creek</td>
<td>0.009</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>0.220</td>
<td>—</td>
<td>0.016</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R72297001</td>
<td>Beauty Creek</td>
<td>0.010</td>
<td>0.004</td>
<td>—</td>
<td>—</td>
<td>0.032</td>
<td>—</td>
<td>0.002</td>
<td>—</td>
<td>0.051</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

EXPLANATION
Blank space equals no analysis
Below Detection Limit is —

WATER QUALITY STANDARDS

<table>
<thead>
<tr>
<th></th>
<th>AI (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary MCL</td>
<td>0.050</td>
<td>2.000</td>
<td>0.005</td>
<td>0.100</td>
<td>0.050</td>
<td>0.002</td>
<td>0.100</td>
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</tr>
<tr>
<td>Secondary MCL</td>
<td>0.05-0.2</td>
<td>1.000</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td>0.11-0.19</td>
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</tr>
<tr>
<td>Aquatic Life, Acute</td>
<td>0.750</td>
<td>0.360</td>
<td>0.004-0.009</td>
<td>1.7-3.1</td>
<td>0.018-0.034</td>
<td>1.000</td>
<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
<td>0.11-0.19</td>
<td></td>
</tr>
<tr>
<td>Aquatic Life, Chronic</td>
<td>0.087</td>
<td>0.190</td>
<td>0.001-0.005</td>
<td>0.21-0.37</td>
<td>0.012-0.021</td>
<td>0.003-0.008</td>
<td>0.000012</td>
<td>0.16-0.28</td>
<td>0.11-0.19</td>
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<tr>
<td>Estimated Detection Level (33% confidence)</td>
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<td>0.013</td>
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<td>0.012</td>
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<td>0.02</td>
<td>0.003</td>
<td>0.004</td>
<td>0.005</td>
<td>0.007</td>
<td>0.010</td>
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</table>
Table 2.5-1. Dissolved metals in water samples from the minor properties in the Coeur d'Alene basin surrounding the Coeur d'Alene mining district. Numbers in bold exceed one or more water quality standards. Properties shown in gray are discussed in Sections A, B, and D of this volume.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppb)</th>
<th>Hg (ppm)</th>
<th>Ni (ppb)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7169701</td>
<td>Hudlow Mine (B7169701), adit</td>
<td>0.048</td>
<td>0.0024</td>
<td>0.0026</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.02</td>
<td>0.002</td>
<td>0.019</td>
<td>0.014</td>
<td>0.013</td>
</tr>
<tr>
<td>B7169703</td>
<td>Unnamed location (B7169703), adit</td>
<td>0.019</td>
<td>0.028</td>
<td>0.007</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.002</td>
<td>0.004</td>
<td>0.014</td>
<td>0.013</td>
</tr>
<tr>
<td>B7169704</td>
<td>Twomile Creek, downstream</td>
<td>0.02</td>
<td>0.028</td>
<td>0.007</td>
<td>0.02</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.04</td>
<td>0.002</td>
<td>0.004</td>
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<td>0.021</td>
<td>0.007</td>
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<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>B7179704</td>
<td>Silver Crescent Mine (SP-121), adit</td>
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<td>0.021</td>
<td>0.007</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
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</tr>
<tr>
<td>B7179705</td>
<td>Moon Gulch, downstream from SP-121</td>
<td>0.02</td>
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<td>0.007</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>B7239702</td>
<td>Dago Peak Gulch, downstream</td>
<td>0.03</td>
<td>0.033</td>
<td>0.007</td>
<td>0.013</td>
<td>0.013</td>
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<td>0.013</td>
<td>0.013</td>
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<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>B7309701</td>
<td>Beacon Light (WL-433), Adit #2</td>
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<td>0.007</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
</tr>
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<td>B8059702</td>
<td>Little Giant Prospect (WL-446), adit</td>
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<td>0.007</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
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<td>0.001</td>
<td>0.34</td>
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<td>Central Prospect (WL-445), tributary</td>
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<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.013</td>
<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
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<td>Princeton-Magna Mine (WL-439), adit</td>
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<td>0.013</td>
<td>0.013</td>
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<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
<td>0.27</td>
</tr>
<tr>
<td>B8079704</td>
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<td>0.008</td>
<td>0.001</td>
<td>0.34</td>
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**EXPLANATION**
Blank space equals no analysis
Below Detection Limit is —

**WATER QUALITY STANDARDS**

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<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<td>0.100</td>
<td>0.005</td>
<td>0.100</td>
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<td>Aquatic Life, Acute</td>
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<td>Aquatic Life, Chronic</td>
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<td>0.001-0.002</td>
<td>0.001-0.002</td>
<td>0.001-0.002</td>
<td>0.001-0.002</td>
<td>0.001-0.002</td>
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Table 2.5-1 (continued). Dissolved metals in water samples from the minor properties in the Coeur d'Alene basin surrounding the Coeur d'Alene mining district.

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<th>FIELD NO.</th>
<th>As (ppb)</th>
<th>Cu (ppm)</th>
<th>Zn (ppb)</th>
<th>Mn (ppb)</th>
<th>Cr (ppb)</th>
<th>Cd (ppb)</th>
<th>Pb (ppb)</th>
<th>Ba (ppb)</th>
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<td>0.020</td>
<td>0.11</td>
<td>0.250</td>
<td>0.005</td>
<td>0.003</td>
<td>0.005</td>
<td>0.033</td>
<td>West Mammoth Prospect (WL-222), adit</td>
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<tr>
<td>K07269701</td>
<td>0.100</td>
<td>0.0031</td>
<td>0.0012</td>
<td>0.0100</td>
<td>0.0084</td>
<td>0.0078</td>
<td>0.0040</td>
<td>0.0210</td>
<td>Burnt Cabin Mine (SP-40), adit</td>
</tr>
<tr>
<td>K07269702</td>
<td>0.100</td>
<td>0.0019</td>
<td>0.0012</td>
<td>0.0100</td>
<td>0.0084</td>
<td>0.0078</td>
<td>0.0040</td>
<td>0.0210</td>
<td>Canberra Mine (WL-200/222), train adit</td>
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<tr>
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<td>0.0012</td>
<td>0.0012</td>
<td>0.0100</td>
<td>0.0084</td>
<td>0.0078</td>
<td>0.0040</td>
<td>0.0210</td>
<td>Unarmed prospect on Shoshone Creek</td>
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<tr>
<td>K08089701</td>
<td>0.100</td>
<td>0.0012</td>
<td>0.0012</td>
<td>0.0100</td>
<td>0.0084</td>
<td>0.0078</td>
<td>0.0040</td>
<td>0.0210</td>
<td>Unarmed prospect on West Fork of Big Creek (S8960/371), adit</td>
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<td>K08089702</td>
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<td>0.0012</td>
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<td>0.0210</td>
<td>Silver Dale and Big Hill Mine (SP-277), adit #1 (upper)</td>
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<td>0.0012</td>
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<td>0.0078</td>
<td>0.0040</td>
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<tr>
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<td>0.0012</td>
<td>0.0100</td>
<td>0.0084</td>
<td>0.0078</td>
<td>0.0040</td>
<td>0.0210</td>
<td>West Fork of Big Creek, downstream</td>
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<tr>
<td>K08089705</td>
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<td>0.0012</td>
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<td>0.0084</td>
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<td>Royal Apex (SP-237), adit</td>
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<td>K08089706</td>
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**WATER QUALITY STANDARDS**

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<tr>
<th>Primary MCL</th>
<th>Secondary MCL</th>
<th>Aquatic Life, Acute</th>
<th>Aquatic Life, Chronic</th>
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<tr>
<td>0.050</td>
<td>0.100</td>
<td>0.003</td>
<td>0.0014</td>
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</table>

**EXPLANATION**

Below Detection Limit = no analysis
Table 2.5-1 (continued). Dissolved metals in water samples from the minor properties in the Coeur d’Alene basin surrounding the Coeur d’Alene mining district.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppb)</th>
<th>Hg (ppm)</th>
<th>Ni (ppb)</th>
<th>Zn (ppm)</th>
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<td>K08079703</td>
<td>Unnamed prospect (K08079702), adit</td>
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<td>East Fork Big Creek, downstream</td>
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<td>0.004</td>
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<td>Dobson Pass Prospect (WL-203), seep at toe of Adit #1 dump</td>
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**EXPLANATION**

Blank space equals no analysis
Below Detection Limit is —

**WATER QUALITY STANDARDS**

<table>
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<tr>
<th></th>
<th>Al (mg/L)</th>
<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<tr>
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<td>2.0000</td>
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<tr>
<td>Secondary MCL</td>
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<td>Aquatic Life, Chronic</td>
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Table 2.5-1 (continued). Dissolved metals in water samples from the minor properties in the Coeur d’Alene basin surrounding the Coeur d’Alene mining district.

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<th>FIELD NO.</th>
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<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppb)</th>
<th>Hg (ppb)</th>
<th>Ni (ppb)</th>
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<td>0.17</td>
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<td>0.0039</td>
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<td>0.0032</td>
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**EXPLANATION**
Blank space equals no analysis
Below Detection Limit is --

**WATER QUALITY STANDARDS**

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<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<td>0.050</td>
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<td>0.082-0.2</td>
<td>0.0024</td>
<td>1.4-2.5</td>
<td>0.12-0.21</td>
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<td>0.016-0.28</td>
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mg/L = ppm
Table 2.5-2. Total recoverable metals in water samples from the minor properties in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district. Numbers in bold exceed one or more water quality standards. Properties shown in gray are discussed in Sections A, B, and D of this volume.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<tbody>
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<td>B7169701</td>
<td>Hudlow Mine (B7169701), adit</td>
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<tr>
<td>B7169703</td>
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<td>0.016</td>
<td>---</td>
<td>---</td>
<td>0.007</td>
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<td>0.03</td>
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<td>B7169704</td>
<td>Twomile Creek, downstream</td>
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<td>0.05</td>
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<tr>
<td>B7169709</td>
<td>May Claim Prospect (WL-263), adit</td>
<td>0.0300</td>
<td>0.009</td>
<td>0.015</td>
<td>0.038</td>
<td>2.100</td>
<td>0.710</td>
<td>0.06</td>
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<tr>
<td>B7179704</td>
<td>Silver Crescent Mine (SP-121), adit</td>
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<td>0.0250</td>
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<td>0.300</td>
<td>0.150</td>
<td>0.04</td>
<td>0.030</td>
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<tr>
<td>B7179705</td>
<td>Moon Gulch, downstream from SP-121</td>
<td>0.0230</td>
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<td>0.0031</td>
<td>0.012</td>
<td>0.04</td>
<td>0.330</td>
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<tr>
<td>B7239702</td>
<td>Dago Peak Gulch, downstream</td>
<td>0.0400</td>
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<td>---</td>
<td>0.035</td>
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<tr>
<td>B7309701</td>
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<td>0.0690</td>
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<tr>
<td>B8059702</td>
<td>Little Giant Prospect (WL-446), adit</td>
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<td>Central Prospect (WL-445), tributary</td>
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<td>0.007</td>
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<td>0.003</td>
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<td>B8079704</td>
<td>Silver Cable Mine (WL-404), adit</td>
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<tr>
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<td>Blue Ribbon Group (WL-304), adit</td>
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<td>0.022</td>
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<td>West Mammoth Prospect (WL-252), adit</td>
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<td>0.032</td>
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**EXPLANATION**
Blank space equals no analysis
Below Detection Limit is

**WATER QUALITY STANDARDS**

| Al (mg/L) | As (mg/L) | Ba (mg/L) | Cd (mg/L) | Cr (mg/L) | Cu (mg/L) | Fe (mg/L) | Pb (mg/L) | Mn (mg/L) | Hg (mg/L) | Ni (mg/L) | Zn (mg/L) |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Primary MCL | 0.0500   | 2.0000   | 0.005    | 0.100    | 0.0500    | 0.002    | 0.10 |
| Secondary MCL | 0.05-0.2 | 0.3000   | 0.004-0.009 | 1.7-3.1 | 0.018-0.034 | 1.000 | 0.082-0.2 | 0.0024 | 1.4-2.5 | 0.12-0.21 |
| Aquatic Life, Acute | 0.750 | 0.3600 | 0.004-0.009 | 1.7-3.1 | 0.018-0.034 | 1.000 | 0.082-0.2 | 0.0024 | 1.4-2.5 | 0.12-0.21 |
| Aquatic Life, Chronic | 0.087 | 0.1900 | 0.001-0.002 | 0.21-0.37 | 0.012-0.021 | 0.003-0.008 | 0.000012 | 0.16-0.28 | 0.11-0.19 |
| Estimated Detection Level (33% confidence) | 0.0040 | 0.003 | 0.013 | 0.035 | 0.012 | 0.002 | 0.02 | 0.003 |
Table 2.5-2 (continued). Total recoverable metals in water samples from the minor properties in the Coeur d’Alene River basin surrounding the Coeur d’Alene mining district.

<table>
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<th>FIELD NO.</th>
<th>REMARKS</th>
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<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<td>Burnt Cabin Mine (SP-53), seepage from base of</td>
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<tr>
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**EXPLANATION**

Blank space equals no analysis
Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<th>Component</th>
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<th>As (mg/L)</th>
<th>Ba (mg/L)</th>
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<th>Cr (mg/L)</th>
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<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<td>Primary MCL</td>
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<td>0.0500</td>
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<td>0.100</td>
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<tr>
<td>Secondary MCL</td>
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<td>0.005</td>
<td>0.100</td>
<td>1.000</td>
<td>0.300</td>
<td>0.050</td>
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<td>Aquatic Life, Acute</td>
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<td>0.750</td>
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<td>1.7-3.1</td>
<td>0.018-0.034</td>
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<td>0.0024</td>
<td>1.4-2.5</td>
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<tr>
<td>Aquatic Life, Chronic</td>
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<td>0.21-0.37</td>
<td>0.012-0.021</td>
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<td>0.16-0.28</td>
<td>0.11-0.19</td>
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<tr>
<td>Estimated Detection Level (33% confidence)</td>
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<td>0.003</td>
<td>0.013</td>
<td>0.035</td>
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<td>0.020</td>
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### Table 2.5-2 (continued). Total recoverable metals in water samples from the minor properties in the Coeur d’Alene River basin surrounding the Coeur d’Alene mining district.

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<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
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<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<tr>
<td>K08079705</td>
<td>East Fork Big Creek, downstream</td>
<td>—</td>
<td>0.0330</td>
<td>—</td>
<td>0.006</td>
<td>—</td>
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<td>—</td>
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<td>—</td>
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<td>0.02</td>
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<tr>
<td>K08289702</td>
<td>Dobson Pass Prospect (WA-203), seep at toe of Adit #1 dump</td>
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<td>0.0420</td>
<td>0.005</td>
<td>0.013</td>
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<td>—</td>
<td>—</td>
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<td>K09029701</td>
<td>Vienna-International Mine (WL-471), Adit #1</td>
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<td>Vienna-International Mine (WL-471), 150 feet below seep from dump</td>
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### EXPLANATION
- Blank space equals no analysis
- Below Detection Limit is —

### WATER QUALITY STANDARDS

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<th>Cr (mg/L)</th>
<th>Cu (mg/L)</th>
<th>Fe (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Mn (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Ni (mg/L)</th>
<th>Zn (mg/L)</th>
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<td>0.0500</td>
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<td>0.3600</td>
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<td>0.16-0.28</td>
<td>0.11-0.19</td>
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Table 2.5-2 (continued). Total recoverable metals in water samples from the minor properties in the Coeur d’Alene River basin surrounding the Coeur d’Alene mining district.

<table>
<thead>
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<th>Al (ppm)</th>
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<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
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<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
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<td>0.036</td>
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<td>0.006</td>
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<td>0.03</td>
<td>0.008</td>
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EXPLANATION
Blank space equals no analysis
Below Detection Limit is ---

WATER QUALITY STANDARDS

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2.5.2 Mine Waste Samples

Samples were collected from most of the properties where the mine waste dump impinged on an active waterway (Tables 2.5-3 and 2.5-4). As expected, many of these samples contain metal loadings, including arsenic, copper, lead, and zinc, which exceed the Clark Fork Superfund Background Levels. No samples of mill tailings were collected from the properties examined in this volume because no mills were operated on these properties.
Table 2.5-3. Element screen for dump samples for the minor properties in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district. Properties shown in gray are discussed in Sections A, B, and D of this volume.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
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<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
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<th>Fe (ppm)</th>
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<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
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<td>48</td>
<td>49,000</td>
<td>58</td>
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<td>NA</td>
<td>22.00</td>
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<tr>
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<td>Burt Cabin Mine (SP-53), shaft dump, oxidized</td>
<td>NA</td>
<td>130.00</td>
<td>74</td>
<td>5.70</td>
<td>8.30</td>
<td>39</td>
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<td>NA</td>
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<tr>
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<td>NA</td>
<td>380.00</td>
<td>37</td>
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<td>4.90</td>
<td>10</td>
<td>20,000</td>
<td>27</td>
<td>500</td>
<td>NA</td>
<td>15.00</td>
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<tr>
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<td>Rainbow No. 2 Prospect (SP-55), dump, oxidized</td>
<td>NA</td>
<td>86.00</td>
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<td>1,400</td>
<td>NA</td>
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<tr>
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<td>—</td>
<td>11</td>
<td>0.77</td>
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<td>330</td>
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<td>NA</td>
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<tr>
<td>K08069702</td>
<td>Bismarck Prospect (SP-271), dump, southwest end</td>
<td>NA</td>
<td>—</td>
<td>36</td>
<td>1.20</td>
<td>3.60</td>
<td>17</td>
<td>10,000</td>
<td>25</td>
<td>620</td>
<td>NA</td>
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<td>Unnamed prospect (K08079706), dump</td>
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<td>120</td>
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<td>17.00</td>
<td>27</td>
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<td>700</td>
<td>NA</td>
<td>20.00</td>
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<td>Wolfson Mine (SP-274), dump</td>
<td>NA</td>
<td>—</td>
<td>44</td>
<td>1.30</td>
<td>4.60</td>
<td>14</td>
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<td>23</td>
<td>1,000</td>
<td>NA</td>
<td>7.10</td>
<td>15</td>
</tr>
<tr>
<td>K08129704</td>
<td>Rockford Group (SP-252), dump</td>
<td>NA</td>
<td>—</td>
<td>35</td>
<td>1.50</td>
<td>4.60</td>
<td>14</td>
<td>17,000</td>
<td>30</td>
<td>2,700</td>
<td>NA</td>
<td>9.70</td>
<td>27</td>
</tr>
<tr>
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<td>North Fork Mine (SP-77), Adit #2, dump</td>
<td>NA</td>
<td>—</td>
<td>64</td>
<td>1.30</td>
<td>5.80</td>
<td>38</td>
<td>17,000</td>
<td>37</td>
<td>1,000</td>
<td>NA</td>
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Clark Fork Superfund Background Levels (mg/kg) = ppm

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<th></th>
<th>As</th>
<th>Cd</th>
<th>Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Missoula Lake Bed Sediments</td>
<td>NA</td>
<td>0.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
<td>NA</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1000.0</td>
</tr>
</tbody>
</table>

Explanation
Below Detection Limit is —
Not analyzed equals NA
Table 2.5-3 (continued). Element screen for dump samples for the minor properties in the Coeur d'Alene River basin surrounding the Coeur d’Alene mining district.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>Al (ppm)</th>
<th>As (ppm)</th>
<th>Ba (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Cu (ppm)</th>
<th>Fe (ppm)</th>
<th>Pb (ppm)</th>
<th>Mn (ppm)</th>
<th>Hg (ppm)</th>
<th>Ni (ppm)</th>
<th>Zn (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K08199712</td>
<td>Unnamed prospect (K08199711), dump</td>
<td>NA</td>
<td>—</td>
<td>140</td>
<td>1.60</td>
<td>8.40</td>
<td>59</td>
<td>18,000</td>
<td>63</td>
<td>1,200</td>
<td>NA</td>
<td>12.00</td>
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</tr>
<tr>
<td>K08269702</td>
<td>Highlands Aurora (WL-145), dump</td>
<td>NA</td>
<td>—</td>
<td>560</td>
<td>1.50</td>
<td>6.80</td>
<td>84</td>
<td>11,000</td>
<td>1,600</td>
<td>1,300</td>
<td>NA</td>
<td>16.00</td>
<td>150</td>
</tr>
<tr>
<td>K08269705</td>
<td>Belmont-Banner Mine (WL-143), dump</td>
<td>NA</td>
<td>—</td>
<td>400</td>
<td>1.90</td>
<td>9.40</td>
<td>28</td>
<td>16,000</td>
<td>74</td>
<td>490</td>
<td>NA</td>
<td>20.00</td>
<td>140</td>
</tr>
<tr>
<td>K08269707</td>
<td>California Gulch Prospect (WL-94), dump</td>
<td>NA</td>
<td>130.00</td>
<td>170</td>
<td>4.60</td>
<td>13.00</td>
<td>51</td>
<td>27,000</td>
<td>230</td>
<td>1,100</td>
<td>NA</td>
<td>28.00</td>
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<tr>
<td>K09169705</td>
<td>Unnamed prospect (K09169704), dump</td>
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<td>—</td>
<td>490</td>
<td>0.85</td>
<td>6.00</td>
<td>41</td>
<td>8,200</td>
<td>38</td>
<td>490</td>
<td>NA</td>
<td>9.60</td>
<td>23</td>
</tr>
<tr>
<td>R07299702</td>
<td>Unnamed prospect (SP-132), dump</td>
<td>NA</td>
<td>160.00</td>
<td>120</td>
<td>4.30</td>
<td>39.00</td>
<td>230</td>
<td>59,000</td>
<td>100</td>
<td>1,000</td>
<td>NA</td>
<td>67.00</td>
<td>120</td>
</tr>
<tr>
<td>R08129703</td>
<td>Helvetia Prospect (WL-461), dump</td>
<td>NA</td>
<td>150.00</td>
<td>170</td>
<td>3.00</td>
<td>25.00</td>
<td>30</td>
<td>28,000</td>
<td>67</td>
<td>690</td>
<td>NA</td>
<td>27.00</td>
<td>110</td>
</tr>
<tr>
<td>R72397003</td>
<td>Red Horse Mine (SP-134), dump</td>
<td>NA</td>
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<td>40</td>
<td>5.70</td>
<td>28.00</td>
<td>170</td>
<td>71,000</td>
<td>110</td>
<td>1,200</td>
<td>NA</td>
<td>74.00</td>
<td>160</td>
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<td>K10059803</td>
<td>Sonora Prospect (WL-272), dump</td>
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<td>6.50</td>
<td>2,100</td>
<td>15,000</td>
<td>13,000</td>
<td>1,400</td>
<td>NA</td>
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Clark Fork Superfund Background Levels (mg/Kg) = ppm

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<tr>
<th></th>
<th>As</th>
<th>Cd</th>
<th>Pb</th>
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<tbody>
<tr>
<td>U.S. Mean Soil</td>
<td>6.7</td>
<td>0.7</td>
<td>20.0</td>
</tr>
<tr>
<td>Helena Valley Mean Soil</td>
<td>16.5</td>
<td>0.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Missoula Lake Bed Sediments</td>
<td>NA</td>
<td>0.2</td>
<td>34.0</td>
</tr>
<tr>
<td>Blackfoot River</td>
<td>4.0</td>
<td>&lt;0.1</td>
<td>NA</td>
</tr>
<tr>
<td>Phytotoxic Concentration</td>
<td>100.0</td>
<td>100.0</td>
<td>1000.0</td>
</tr>
</tbody>
</table>

Explanation:
Below Detection Limit is —
Not analyzed equals NA
Table 2.5-4. Toxicity Characteristic Leaching Procedure for dump samples from the minor properties in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district. Properties shown in gray are discussed in Sections A, B, and D of this volume.

<table>
<thead>
<tr>
<th>FIELD NO.</th>
<th>REMARKS</th>
<th>As (ppm)</th>
<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Pb (ppm)</th>
<th>Hg (ppm)</th>
<th>Se (ppm)</th>
<th>Ag (ppm)</th>
<th>Ba (ppm)</th>
<th>pH</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7179706</td>
<td>Royal Mine (SP-125), dump</td>
<td>0.680</td>
<td>ND</td>
<td>0.730</td>
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<tr>
<td>B7239701</td>
<td>Washington-Idaho Mine (SP-117), Adit #1 dump</td>
<td>0.060</td>
<td>ND</td>
<td>0.900</td>
<td>7.6</td>
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<td></td>
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<tr>
<td>B8069701</td>
<td>Central Prospect (WL-445), Adit #1 dump</td>
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<td>86.000</td>
<td>5.100</td>
<td>8.1</td>
<td></td>
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</tr>
<tr>
<td>B8069705</td>
<td>Gravel pit, Willow Creek</td>
<td>0.350</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>B8079702</td>
<td>Lewis and Clark Group (WL-358), dump</td>
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<td>0.031</td>
<td>2.0</td>
<td>2.0</td>
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<td>K07179701</td>
<td>Commonwealth Mine (SP-45), dump</td>
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<td>16.000</td>
<td>1.200</td>
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<tr>
<td>K07179703</td>
<td>Shamrock Mine (SP-42), dump</td>
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<td>ND</td>
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<td>7.7</td>
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<tr>
<td>K07179704</td>
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<td>0.025</td>
<td>ND</td>
<td>1.300</td>
<td>6.1</td>
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<tr>
<td>K07179705</td>
<td>Bradbury Mine (SP-35), dump sampled on north side of creek</td>
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<td>ND</td>
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<tr>
<td>K07249702</td>
<td>Burnt Cabin Mine (SP-53), shaft dump, unoxidized</td>
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<td>ND</td>
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<td>7.8</td>
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<tr>
<td>K07249703</td>
<td>Burnt Cabin Mine (SP-53), shaft dump, oxidized</td>
<td>0.025</td>
<td>ND</td>
<td>1.200</td>
<td>6.3</td>
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<tr>
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<td>Unnamed prospect (SP-46), dump</td>
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<td>ND</td>
<td>0.700</td>
<td>5.2</td>
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<td></td>
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<tr>
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<td>Rainbow No. 2 Prospect (SP-55), dump, oxidized</td>
<td>0.025</td>
<td>ND</td>
<td>1.000</td>
<td>8.1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>K07309704</td>
<td>Rainbow No. 2 Prospect (SP-55), dump, unoxidized</td>
<td>0.025</td>
<td>ND</td>
<td>0.830</td>
<td>4.6</td>
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<tr>
<td>K08069702</td>
<td>Bismarck Prospect (SP-271), dump, southwest end</td>
<td>0.025</td>
<td>ND</td>
<td>1.300</td>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K08079707</td>
<td>Unnamed prospect (K08079706), dump</td>
<td>0.500</td>
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<td>Wolfson Mine (SP-274), dump</td>
<td>0.500</td>
<td>0.031</td>
<td>1.100</td>
<td>8.0</td>
<td></td>
<td></td>
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**EXPLANATION**

Blank space equals no analysis

Not Detected is ND

Below Detection Limit is ---

**WATER QUALITY STANDARDS**

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<th>Cd (mg/L)</th>
<th>Cr (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Se (mg/L)</th>
<th>Ag (mg/L)</th>
<th>Ba (mg/L)</th>
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<td>0.05</td>
<td>0.02</td>
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<tr>
<td>Secondary MCL</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>Aquatic Life, Acute</td>
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<td>0.004 - 0.009</td>
<td>1.7 - 3.1</td>
<td>0.082 - 0.2</td>
<td>0.0024</td>
<td>0.0041 - 0.0134</td>
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<tr>
<td>Aquatic Life, Chronic</td>
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<td>0.001 - 0.002</td>
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Table 2.5-4 (continued). Toxicity Characteristic Leaching Procedure for dump samples from the minor properties in the Coeur d'Alene River basin surrounding the Coeur d'Alene mining district.

<table>
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<th>FIELD NO.</th>
<th>REMARKS</th>
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<th>Cd (ppm)</th>
<th>Cr (ppm)</th>
<th>Pb (ppm)</th>
<th>Hg (ppm)</th>
<th>Se (ppm)</th>
<th>Ag (ppm)</th>
<th>Ba (ppm)</th>
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<td>---</td>
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<tr>
<td>K08269702</td>
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<td>3.200</td>
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<td>1.100</td>
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<tr>
<td>R08129703</td>
<td>Helvetia Prospect (WL-461), dump</td>
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EXPLANATION

Blank space equals no analysis
Not Detected is ND
Below Detection Limit is ---

WATER QUALITY STANDARDS

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<th>Cr (mg/L)</th>
<th>Pb (mg/L)</th>
<th>Hg (mg/L)</th>
<th>Se (mg/L)</th>
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3.0 MINE DESCRIPTIONS – COEUR D'ALENE BASIN, SECONDARY PROPERTIES

3.55 UNNAMED PROSPECT (Site No. K08069708)

3.55.1 Site Location and Access (Figure 2.1-1b)

This prospect is on the southwest side of the West Fork of Big Creek near the bend in the creek where the West Fork changes from flowing north-south to east-west. It is in the NW¼ of the SW¼ of the NE¼ of section 29, T. 48 N., R. 3 E., on the Polaris Peak 7.5-minute quadrangle (Figure 3.55-1). Where the West Fork trail crosses the creek, a partially overgrown road (not shown on the topographic map) continues up the slope west of the creek. The prospect is along the north side of this road several hundred feet from the creek. This site is probably on Forest Service land, although a wedge of patented claims extending from the north may include this prospect.

3.55.2 Geologic Features (Figure 2.2-1a)

The prospect is along the Placer Creek Fault in quartzite of the Revett Formation (Hobbs and others, 1965, Plate 2).

3.55.3 Site History

Nothing is known of the history of this property. However, it may have been part of the Silver Dale and Big Hill Mine (SP-277) at one time (section 3.8 in Section A of this report).

3.55.4 Environmental Conditions

3.55.4.1 Site Features

This prospect was visited by John Kauffman on August 6, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:01:55-00:05:59). Documenting photo is Roll K4, frame 19.

The prospect consists of an adit driven west or northwest into the hillside. The adit is open, although some rock has fallen from the slope and forms a debris pile in front of the opening (Figure 3.55-2). An ore car and two 5-gallon buckets are visible just inside the portal. The waste dump is about 30 feet long, 4-10 feet wide, and 12 feet thick, and is densely covered with trees and brush. The disturbed area is less than 0.1 acre.

3.55.4.2 Sample Locations

3.55.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.55.4.2.2 Water Samples
No water samples were collected at this site.

3.55.5 Structures
No structures were found at this site.

3.55.6 Safety
The open adit could be a safety hazard, if the rock is fractured or unstable and therefore susceptible to collapse.
Figure 3.55-1. Topographic map of Unnamed Prospect Site No. K08069708, Shoshone County, Idaho (U.S. Geological Survey Polaris Peak 7.5-minute topographic map).
Figure 3.55-2. Open adit at Site No. K08069708. An ore car and two 5-gallon buckets, not visible in this frame, are located just inside the opening (Roll K4, frame #19).
3.56 UNNAMED PROSPECT (Site No. K08079702)

3.56.1 Site Location and Access (Figure 2.1-1b)

This prospect is located about 1 mile up the East Fork of Big Creek along the north side of the East Fork trail in the SW¼ of the NW¼ of section 35, T. 48 N., R. 3 E., on the Polaris Peak 7.5-minute quadrangle (Figure 3.56-1). Access from Forest Service Road 2354 is by foot on the East Fork trail. This trail was a jeep trail but the creek has washed out the road at several locations; it may be passable with a trail bike or all-terrain vehicle. The prospect is on Forest Service land.

3.56.2 Geologic Features (Figure 2.2-1a)

This prospect is in the banded arenaceous dolomite, dolomitic quartzite, and argillite of the upper Wallace Formation. These northwest-striking, north-dipping rocks form the north limb of the East Fork Anticline (Hobbs and others, 1965, Plate 2).

3.56.3 Site History

Nothing is known about the history of this site.

3.56.4 Environmental Conditions

3.56.4.1 Site Features

This prospect was visited by John Kauffman on August 7, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:06:00-00:10:42). Documenting photographs are Roll K4, frames 23-25.

The prospect consists of a caved adit driven northward into the slope just above the road and about 15 feet above creek level. Rotted timbers are visible (Figure 3.56-2) for 20-30 feet along a trough formed along the caved adit. A trickle of water (possibly 1 gallon per minute) flows from the caved adit, through a culvert under the road, and into the creek. No waste dump remains, except for whatever material was used to construct the road. The remainder of the dump has been washed away by the creek. The disturbed area is less than 0.05 acre.

3.56.4.2 Sample Locations

3.56.4.2.1 Solid Samples

No dump samples were collected at this site.

3.56.4.2.2 Water Samples

A water sample was collected in front of the caved adit (above the culvert). An upstream water sample was taken 100 feet east of the adit, and a downstream sample taken 120 feet west of the adit on the East Fork of Big Creek.

52
<table>
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<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (° F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<td>K08079704</td>
<td>East Fork of Big Creek, upstream</td>
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<td>54</td>
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<td>20 feet wide, 1 feet deep</td>
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<tr>
<td>K08079705</td>
<td>East Fork of Big Creek, downstream</td>
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<td>54</td>
<td>8.0</td>
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</table>

### 3.56.4.2.3 Analytical Results

**Water Samples  (Tables 2.5-1 and 2.5-2)**

Sample K08079703 exceeds the Aquatic Life Chronic standard, is within the range of the Aquatic Life Chronic standard, and is at the Primary MCL threshold for cadmium in the total recoverable metals screen. The upstream sample, K08079704, does not exceed any water quality standards. In the downstream sample, K08079705, cadmium equals or exceeds all standards in both the total recoverable metals and the dissolved metals screens.

### 3.56.5 Structures

No structures are present at this site.

### 3.56.6 Safety

No safety problems exist at this site.
Figure 3.56-1. Topographic map of Unnamed Prospect Site No. K08079702, Shoshone County, Idaho (U.S. Geological Survey Polaris Peak 7.5-minute topographic map).
Figure 3.56-2. Looking north at several of the adit timbers visible through the brush at Unnamed Prospect, Site No. K08079702 (Roll K4, frame #23).
3.57 UNNAMED PROSPECT (Site No. K08079706)

3.57.1 Site Location and Access (Figure 2.1-1b)

This prospect is located along the east side of Big Creek in the SW¼ of the NW¼ of the NW¼ of section 3, T. 47 N., R. 3 E., on the Polaris Peak 7.5-minute quadrangle (Figure 3.57-1). Forest Service Road 2354 follows the west side of Big Creek, and the creek must be waded to reach the prospect. The adit is shown on the Forest Service engineering topographic map. This location is on Forest Service land.

3.57.2 Geologic Features (Figure 2.2-1a)

The prospect is on the southern limb of the east-west trending East Fork Anticline in interbedded dolomitic and calcareous quartzite and argillite units of the lower Wallace Formation (Hobbs and others, 1965, Plate 2).

3.57.3 Site History

Nothing is known of the history of this site.

3.57.4 Environmental Conditions

3.57.4.1 Site Features

This prospect was visited by John Kauffman on August 7, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:10:45-00:13:50). Documenting photograph is Roll K4, frames 26.

The adit is caved and has no obvious seeps. The brushy, overgrown waste dump (about 35 feet long, 35 feet wide, and 20 feet thick) extends to the creek and is visible from FS Road 2354. A minor seep was coming from the base of the north end of the dump, but it had insufficient flow to sample. The disturbed area is less than 0.25 acre.

3.57.4.2 Sample Locations

3.57.4.2.1 Solid Samples

A grab sample of the waste dump was collected from the face of the dump above the creek. No oxidized material was present.

<table>
<thead>
<tr>
<th>Sample No.</th>
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<th>Analyzed (Yes/No)</th>
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<tbody>
<tr>
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56
3.57.4.2.2 Water Samples
No water samples were collected at this site.

3.57.4.2.3 Analytical Results

Solid Samples (Table 2.5-4 and 2.5-4)

Compared to background levels (Tables 1.5-3 and 1.5-4) and environmental standards (Table 1.5-5), sample K08079707 has elevated levels of arsenic (100 ppm), cadmium (4.4 ppm), lead (300 ppm), and zinc (780 ppm), and a slightly elevated level of copper (27 ppm) in the element screen. In the TCLP for metals screen, arsenic and cadmium showed significant amounts of leaching.

3.57.5 Structures
No structures were found at this site.

3.57.6 Safety
No safety problems were found at this site.
Figure 3.57-1. Topographic map of Unnamed Prospect Site No. K08079706, Shoshone County, Idaho (U.S. Geological Survey Polaris Peak 7.5-minute topographic map).
3.58 UNNAMED PROSPECTS (Site Nos. K09169701, -02, -03, -04, -06 and -08)

A nearby possible prospect, visited by Earl Bennett, was designated the Silver Mint and is discussed later in this report (section 3.95 in Section D). Either or both Site Nos. K09169704 and K09169706 may be the Silver Mint property (WL-204).

3.58.1 Site Location and Access (Figure 2.1-1c)

These six prospects are on the East Fork of Twomile Creek in sections 4 and 5, T. 48 N., R. 4 E., on the Osburn 7.5-minute quadrangle (Figure 3.58-1). The locations of the individual prospects are as follows:

- K09169701 – near the center of the SE¼ of section 5 on the south side of creek
- K09169702 – SE¼ of the NE¼ of the SE¼ of section 5 on the south side of creek
- K09169703 – center of the NE¼ of the SE¼ of section 5 on the north side of creek
- K09169704 – near the center of the southern edge of the SE¼ of the NW¼ of section 4, on the north side of creek
- K09169706 – NE¼ of the NW¼ of the SW¼ of section 4 on the south side of creek
- K09169708 – center of the NE¼ of the NW¼ of the SE¼ of section 5, about 300 feet above the creek on the north side.

A jeep trail up the East Fork leads to or passes by all but Site Nos. K09169706 and K09169708. K09169706 probably had an access road but, if present, it is densely overgrown with brush. K09169708 is high on the open to sparsely timbered slope north of the creek and is about 75-100 feet below the Twomile Saddle Road; there is no access road to this prospect.

3.58.2 Geologic Features (Figure 2.2-1b)

These adits are in folded quartzite units of the Burke Formation (K09169701 and K09169708) or Revett Formation (K09169702, K09169703, K09169704, and K09169706). The units strike northwest and dip either northeast or southwest (Hobbs and others, 1965, Plate 3).

3.58.3 Site History

Nothing is known about the history of these sites.

3.58.4 Environmental Conditions

3.58.4.1 Site Features

Each of these prospects was visited by John Kauffman on September 16, 1997. A video segment describing the prospects is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:13:54-00:36:05). Documenting photographs are Roll K11, frames 7-17.
K09169701 is about ¼ mile east of the switchback on Twomile Creek Road where it crosses the East Fork. The adit is on the south side of the creek about 10 feet above creek level. It is nearly caved at the portal but has an opening 2 feet high by 4 feet across. The opening, barely visible in the brush, has exposed tree roots hanging over it (Figure 3.58-2). A few rotten timbers can be seen inside the opening. The waste dump (about 75 feet long, 5-15 feet wide, and 5-10 feet thick) is densely overgrown with brush and saplings and has been partially eroded by the creek. The dump material is coarse, lacking oxidation and visible mineralization. The disturbed area is less than 0.1 acre.

K09169702 is about ¾ mile up the East Fork of Twomile Creek from the switchback on Twomile Creek Road. The adit is on the south side of the creek about 20-25 feet above creek level and is reached by a brushy, overgrown trail from the main trail up the East Fork. The adit is open and gated at the portal (Figure 3.58-3). However, the lock on the chain which holds the gate is broken and the adit could be entered easily. The portal timbers are in reasonably good condition. The waste dump is 60 feet long, 15 feet wide, and 20 feet thick, and is overgrown with brush. The dump extends to, and is slightly eroded by, the creek. Nearly all of the fragments on the dump are coarse. There is no oxidized material and little, if any, mineralization. The disturbed area is less than 0.25 acre.

K09169703 is on the north side of the creek and about 30 feet uphill from the East Fork trail. It is directly across the creek from K09169702. There are two adits, side by side, about 15 feet apart. Adit 1, which is depicted on Plate 3 in Hobbs and others (1965) and on the 7.5-minute quadrangle map, was driven in competent quartzite. It is open and has no supporting timbers (Figure 3.58-4), although one beam has been propped against the east wall of the adit. Adit 2, the western of the two adits, is completely caved. Both of these were probably short prospect adits. The combined waste dumps are only 25 feet long, 10 feet wide, and 5-10 feet thick. Some of the light-colored quartzite fragments rolled down to the trail below. The disturbed area is less than 0.1 acre.

K09169704 is slightly more than ¼ mile east of the switchback on Twomile Creek Road on the north side of the East Fork drainage. The main trail crosses to the south side of the East Fork about ¼ mile below this prospect. A spur road off the main trail provides access across the creek to the prospect. The adit is completely caved with only a slumped area on the slope indicating its presence (Figure 3.58-5). A minor seep in the vicinity of the caved adit had insufficient flow to sample. The waste dump is fairly large and somewhat fan shaped, about 150 feet long, 20-75 feet wide, and 5-15 feet thick. The narrowest and thinnest portions are at the east end near the adit. The dump appears to have been graded and spread out to build part of the access road and to provide an area for core drilling. Two angled steel drill collars are on the dump surface about 50 feet west of the adit (Figure 3.58-6). One of these has a minor trickle of water flowing from the casing. Near the south-central edge of the dump is a rectangular mound about 20 feet long, 10 feet wide, and 3 feet high (Figure 3.58-7). Laid out on the mound is a cross-work of rotten logs with spikes protruding from them. The part of the dump used for the access road extends across the creek, which was originally channeled under the dump through a culvert. However, this part
of the dump has been eroded into a V-shaped channel about 5-8 feet deep, probably because the culvert is plugged. The culvert remains in the bottom of the channel (Figure 3.58-8). An old tire, some scrap metal, a few pieces of rubber, and plastic debris are scattered on the dump. About 150-200 feet west of the dump, also on the north side of the creek and at approximately the same elevation, are the collapsed remains of an old cabin (Figure 3.58-9). Part of the foundation, boards, scrap metal, pieces of a wood stove, and other debris are all that remain. The total disturbed area at this prospect is about 0.5 acre.

K09169706 is about ¼ mile east of the switchback on Twomile Creek Road. This site is about halfway between K09169702 and K09169704, perhaps slightly closer to the latter. The adit, on the south side of the creek about 10-15 feet above creek level, is open but appears unstable (Figure 3.58-10). The portal timbers are rotten and leaning, and piles of caved material can be seen on the adit floor. The waste dump (Figure 3.58-11) is 35 feet long, 6 feet wide on top, and 5-12 feet thick. It extends out into the drainage. The creek disappears into rock rubble above the dump and reappears downstream below the dump. The material on the dump is unoxidized and coarse; no mineralization was noted. The disturbed area at this prospect covers less than 0.25 acre.

K09169708 is a minor prospect high on the steep north slope above the lower end of the East Fork of Twomile Creek and about 75-100 feet below the Twomile Saddle Road. This site is several hundred feet uphill from the Capitol Silver-Lead adit (section 3.10 in Section A of this volume) shown on Plate 3 of Hobbs and others (1965; site no. 12) and may be related to that prospect. No trace remains of the adit; talus from outcrops higher up the slope have covered its location. The waste dump is small (only 20 feet long, 10 feet wide, and 5 feet thick) and forms a thin veneer down the steep slope for at least 25 feet, with some material 50 feet or more below the adit (Figure 3.58-12). The disturbed area is less than 0.1 acre.

3.58.4.2 Sample Locations

3.58.4.2.1 Solid Samples

A waste dump sample (K09169705) was collected from prospect K09169704 in the V-shaped channel cut by the creek.

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<td>Site No. K09169704 waste dump</td>
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</tbody>
</table>

3.58.4.2.2 Water Samples

Several of the dumps impinged on the creek but had only coarse material and could not be sampled. Therefore, a water sample (K09169707) was collected downstream from all the
workings on the East Fork of Twomile Creek. The sample was taken just above the culvert on 
the east side of the road where Twomile Creek Road switches back across the East Fork.

<table>
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<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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3.58.4.2.3 Analytical Results

Solid Samples (Tables 2.5-3 and 2.5-4)

Compared to background values (Tables 1.5-3 and 1.5-4) or environmental standards (Table 1.5-
5), sample K09169705 has slightly elevated levels of copper (41 ppm) in the element screen. In
the TCLP for metals screen, values are below detection limits or are not significant.

Water Samples (Tables 2.5-1 and 2.5-2)

Sample K09169707 exceeds both Aquatic Life standards for copper in the total recoverable
metals screen.

3.58.5 Structures

The only structure found was the collapsed cabin or house west of Site No. K09169704.

3.58.6 Safety

All of the open or partially open adits could be hazards because of the potential for caving,
collapse, or bad air. The gate at Site No. K09169702 adit could easily be secured with a new
lock.
Figure 3.58-1. Topographic map of the Unnamed Prospects K09167901, K09167902, K09167903, K09167904, K09167906, and K09167908 on the East Fork of Twomile Creek, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map).
Figure 3.58-2. Small crawl space leading into the nearly caved adit at Site K09169701, looking southwest (Roll K11, frame #7).
Figure 3.58-3. Framed, gated portal of the adit at Site No. K09169702, looking south. The lock on the gate was broken at the time of the site inspection (Roll K11, frame #9).
Figure 3.58-4. Open Adit 1 at Site No. K09169703, looking north (Roll K11, frame #8).
Figure 3.58-5. Sloughed hillside above the caved adit at Site No. K09169704, looking north (Roll K11, frame #10).

Figure 3.58-6. Looking west across the surface of the waste dump at Site No. K09169704. The small, elevated mound described in the text can be seen at the left-center of the frame, just beyond the tip of the fallen tree (Roll K11, frame #11).
Figure 3.58-7. Two drill collars (center of frame) on the waste dump of Site No. K09169704. A trickle of water flows from the lower collar (Roll K11, frame #13).

Figure 3.58-8. V-shaped notch eroded through the waste dump at Site No. K09169704, with the plugged culvert in the bottom (Roll K11, frame #12).
Figure 3.58-9. Remains of the collapsed cabin just west of the waste dump at Site No. K09169704 (Roll K11, frame #14).

Figure 3.58-10. Collapsed and leaning timbers from the portal of the adit at Site No. K09169706, looking south (Roll K11, frame #15).
Figure 3.58-11. Waste dump of Site No. K09169706, looking west (Roll K11, frame #16).
Figure 3.58-12. Looking south down the face of the waste dump of Site No. K09169708 (Roll K11, frame #17).
3.59 UNNAMED PROSPECT (Site Nos. SP-132 and R07299704)

3.59.1 Site Location and Access (Figure 2.1-1a)

These prospects are slightly more than 1 mile southwest of Red Horse Mountain in the SE¼ of the SE¼ of section 36, T. 49 N., R. 3 W., on the Mt. Coeur d'Alene 7.5-minute quadrangle (Figure 3.59-1). Access from Beauty Bay is on Forest Service Road 438 to Beauty Saddle, southwest from Beauty Saddle on FS Road 439 to FS Road 808 (west of Red Horse Mountain), and then traveling 1 mile west on FS Road 808. From there, the prospects can be reached on foot by going east along the slope and then down to the workings. The prospects are on Forest Service land.

3.59.2 Geologic Features (Figure 2.2-1a)

These prospects are in rocks of the Prichard Formation (Anderson, 1940).

3.59.3 Site History

Nothing is known of the history of this site.

3.59.4 Environmental Conditions

3.59.4.1 Site Features

The prospects were visited by William Rember on July 29, 1997. A video segment describing the prospects is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:36:10-00:40:46). Documenting photographs are Roll R2, frames 15-18.

These two adits and the associated waste dumps (Figure 3.59-2) are high on the fairly open slope at the head of a tributary drainage of Blue Lake Creek.

Unnamed Prospect SP-132 has a caved adit driven northwest into the slope and a small waste dump. A minor seep flows from the adit down the east side of the dump. Several large trees, about 20 inches in diameter, are growing from the caved area, suggesting that this is a very old prospect. The waste dump, consisting mainly of coarse rubble (Figure 3.59-3), is only 15 feet long, 10 feet wide, and 10 feet thick. However, it extends down the steep slope for about 50 feet. A spring shown on the topographic map below the prospect was not found. The disturbed area covers less than 0.25 acre.

Site No. R07299704 is about 400 feet above and to the east of SP-132; it is probably part of the same prospect. It has a nearly caved adit and a small waste dump. Coarse rock rubble has nearly closed the adit, except for an opening (4 feet wide by 1 foot high) at the top of the rubble (Figure 3.59-4). The waste dump is about 25 feet long, 10 feet wide, and 5 feet thick, but it forms a veneer down the slope for about 20 feet (Figure 3.59-5). Some iron-stained diorite dike
fragments and sericitized Prichard rubble were found, but no sulfide mineralization was noted. The disturbed area covers less than 0.25 acre.

3.59.4.2 Sample Locations

3.59.4.2.1 Solid Samples

One sample (R07299702) was collected from the waste dump of Unnamed Prospect SP-132.

<table>
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<th>Sample No.</th>
<th>Location</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
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<td>R07299702</td>
<td>Unnamed Prospect SP-132, dump</td>
<td>Yes</td>
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</tbody>
</table>

3.59.4.2.2 Water Samples

A water sample (R07299701) was collected from the seep flowing from beneath the caved material of the adit at Unnamed Prospect SP-132.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R07299701</td>
<td>Unnamed Prospect SP-132, adit</td>
<td>113</td>
<td>50</td>
<td>7.3</td>
<td>seep</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.59.4.2.3 Analytical Results

Solid Samples (Table 2.5-3 and 2.5-4)

Compared to expected background values (Tables 1.5-3 and 1.5-4) and environmental standards (Table 1.5-5), sample R07299702 has elevated levels of arsenic (160 ppm), cadmium (4.3 ppm), copper (230 ppm), iron (5.9%), and lead (100 ppm) in the element screen. In the TCLP for metals screen, values are not significant for any relevant metals.

Water Samples (Table 2.5-1 and 2.5-2)

In the dissolved metals screen, sample R07299701 is within the range of the Secondary MCL and exceeds the Aquatic Life Chronic standard for aluminum. In the total recoverable metals screen, the sample exceeds all standards for cadmium and both Aquatic Life standards for copper.

3.59.5 Structures

No structures were found at this site.
3.59.6 Safety

The small opening at Site No. R07299704 could easily be enlarged for entry. However, the adit is probably short, judging from the size of the dump, so the hazard should not be too great.
Figure 3.59-1. Topographic map of Unnamed Prospects Site Nos. SP-132 and R07299704, Kootenai County, Idaho (U.S. Geological Survey Mt. Coeur d'Alene 7.5-minute topographic map).
Figure 3.59-2. Sketch of Site Nos. SP-132 and R07299704.
Figure 3.59-3. Looking northwest from below the waste dump of Site No. SP-132. The waste dump consists mostly of coarse rock fragments (Roll R2, frame #17).
Figure 3.59-4. Coarse rock in front of the adit at Site No. R07299704. A small opening remains at the top of the rubble, framed by the vegetation at the center of the photograph (Roll R2, frame #19).
Figure 3.59-5. View to the northwest of the waste dump of Site No. R07299704. The debris forms a veneer that extends about 25 feet down the slope (Roll R2, frame #20).
3.60 UNNAMED PROSPECT (Site No. R08069701)

3.60.1 Site Location and Access (Figure 2.1-1b)

This prospect is located about 5.5 miles south of Interstate 90 along the east side of Big Creek at the center of the eastern edge of the SE¼ of the NE¼ of section 4, T. 47 N., R. 3 E., on the Polaris Peak 7.5-minute quadrangle (Figure 3.60-1). Access is on County Road 264, which becomes Forest Service Road 2354. FS Road 2354 follows the west side of Big Creek, and the stream must be waded to reach the adit on the east side of the creek. The prospect is on Forest Service land.

3.60.2 Geologic Features (Figure 2.2-1a)

This prospect is in interbedded argillite, dolomitic quartzite, and calcareous quartzite of the lower Wallace Formation (Hobbs and others, 1965, Plate 2).

3.60.3 Site History

Nothing is known about the history of this site.

3.60.4 Environmental Conditions

3.60.4.1 Site Features

This prospect was visited by William Rember on August 6, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:40:51-00:43:42). Documenting photographs are Roll R4, frames 2-3.

This prospect consists of an adit and a waste dump on the east side of Big Creek (Figure 3.60-2). The adit is open and measures 7 feet wide by 8 feet high, although it appears to be somewhat smaller further inside (Figure 3.60-3). Some caved rock is visible on the floor about 20 feet inside the entrance. The waste dump is difficult to measure because it has been disturbed by an old road that cuts across its surface. However, it appears to be about 200 feet long, 20 feet wide, and 10 feet thick. The base of the dump is about 20 feet above the creek. Both the adit and dump are nearly impossible to see from Big Creek Road because of the dense brush. The disturbed area at this site covers less than 0.25 acre.

3.60.4.2 Sample Locations

3.60.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.60.4.2.2 Water Samples

No water samples were collected at this site.
3.60.5 Structures
   No structures are present at this site.

3.60.6 Safety

   The rock in the adit appears to be relatively competent but still poses a potential caving hazard to anyone entering the opening. Although it is difficult to see from the road in summer because of the brush, it may be easier to detect after the leaves have fallen.
Figure 3.60-1. Topographic map of Unnamed Prospect Site No. R08069701, Shoshone County, Idaho (U.S. Geological Survey Polaris Peak 7.5-minute topographic map).
Figure 3.60-2. Sketch of Site No. R08069701.
Figure 3.60-3. Open adit at Site No. R08069701, looking east (Roll R4, frame #2).
3.61 NATIONAL MINE, No. 2 Adit (SP-286)
Alternate names—Site No. R08079702.

3.61.1 Site Location and Access (Figure 2.1-1b)

The No. 2 adit of the National Mine is located about 4 miles south of Interstate 90 on the east side of Big Creek. It is just east of the midpoint of the line dividing sections 27 and 34, T. 48 N., R. 3 E., on the Polaris Peak 7.5-minute quadrangle (Figure 3.61-1). This site is about halfway between the main (No. 3) adit of the National Mine (section 3.5 of Volume III) and the No. 1 adit of the National Mine (section 3.48 in Section B of this report) on a small unnamed tributary to Big Creek. Access is south along Big Creek on County Road 264, which becomes Forest Service Road 2354 at the National Forest boundary. An overgrown access road to the National No. 1 adit passes this prospect, which is on the block of patented claims associated with the National Mine and is surrounded by National Forest land.

Although this property is referred to in the field notes and on the videotape as an unnamed prospect (Site No. R08079702), it is in fact part of the National Mine, as are all the other prospects on this group of patented claims. Other sites on the First National claim block are: the main adit (probably the No. 3 adit in the company's reports; discussed in section 3.5 of Volume III (Kauffinan and others, 1998)); Adit No. 1 (section 3.48 in Section B of this report); and an unnamed adit (section 3.122 in Section D of this report).

3.61.2 Geologic Features (Figure 2.2-1a)

This adit is in argillite, arenaceous dolomite, and dolomitic quartzite of the upper Wallace Formation, just south of the Placer Creek Fault. The fault brings the Revett units on the north in contact with the Wallace Formation on the south (Hobbs and others, 1965, Plate 2).

3.61.3 Site History

In 1913, when the property was owned by the Liston Mining Company, Ltd., the mine had about 3,000 feet of workings and seven of the twenty-six claims were patented. The mine’s surface plant was destroyed by the great forest fire of 1910 and was subsequently rebuilt. Development work continued until June 1918, when the company ran out of money. The First National Silver Mines, Ltd., which was controlled by some of the same people as the previous company, took over the mine in 1920. In 1922, the mine had two tunnels (2,600 and 900 feet long) and about 3,500 feet of total workings. In 1924, First National opened up a third tunnel. The company continued developing the property until 1928 or 1929, after which only assessment work was done until the company forfeited its charter in 1931. In 1947, the National Silver-Lead Mining Company began reopening the tunnels at the mine. The following year, total development at the property was about 5,300 feet, and the tunnels were 800, 1,800, and 2,700 feet long. National Silver-Lead continued developing the mine until 1953, after which only assessment work was done. Nothing is known of activities at the mine after 1980.

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3.61.4 Environmental Conditions

3.61.4.1 Site Features

This prospect was visited by William Rember on August 7, 1997. A video segment describing the prospect, identified as Site No. R08079702, is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:43:45-00:46:09). Documenting photographs are Roll R4, frames 10-13.

The adit is caved and the dump has been completely washed away by the creek, which originates inside the adit. At least 20 gallons-per-minute of water flows from beneath the rubble at the mouth of the adit. A few timbers from the portal can still be seen (Figure 3.61-2), and twisted pipe and rails remain where the dump originally was. There is a large landslide above the adit (Figure 3.61-3), which may have been caused, in part, by the caving and collapse of the adit. A second landslide is on the slope south of and below the adit, possibly where part of the dump was located. The disturbed area covers less than 0.5 acre.

3.61.4.2 Sample Locations

3.61.4.2.1 Solid Samples

No dump samples were collected at this site.

3.61.4.2.2 Water Samples

A sample (R08079703) was collected from the water flowing from beneath the rubble blocking the entrance to the adit.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R08079703</td>
<td>Site No. R08079702 adit</td>
<td>18</td>
<td>48</td>
<td>6.2</td>
<td>20+</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.61.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

In the total recoverable metals screen, sample R08079703 equals or exceeds all standards for cadmium. In the dissolved metals screen, copper is within the range of the Aquatic Life Chronic standard.
3.61.5 Structures
No structures were found at this site.

3.61.6 Safety
No safety hazards were found at this site.
Figure 3.61-1. Topographic map of the No. 2 adit of the National Mine, Shoshone County, Idaho (U.S. Geological Survey Polaris Peak 7.5-minute topographic map).
Figure 3.61-2. Collapsed adit and broken portal timbers at the No. 2 adit of the National Mine. A chain is hanging from the timbers on the left side of the portal (Roll R4, frame #10).

Figure 3.61-3. Large landslide above the caved No. 2 adit of the National Mine (Roll R4, frame #13).
3.62 PRINCETON-MAGNA MINE (Site No. WL-439)

3.62.1 Site Location and Access (Figures 2.1-1d)

This prospect is located on the north side of the South Fork of the Coeur d'Alene River near the center of the NW¼ of section 34, T. 48 N., R. 6 E., on the Lookout Pass 7.5-minute quadrangle (Figure 3.62-1). An adit symbol on the topographic map accurately locates the property. The mine can be reached from the Old Mullan Road via a spur road that turns to the northeast just past the Beacon Light Mine turnoff. The spur road goes under the power lines and crosses the South Fork of the Coeur d'Alene River. This site is on Forest Service land.

Although this property is referred to as an unnamed prospect (Site No. B8079703) in the field notes and in the videotape, it is the Magna adit of the Princeton-Magna property (WL-439).

3.62.2 Geologic Features (Figure 2.2-1b)

The property is in rocks of the St. Regis near the Osburn fault zone (Harrison and others, 1986).

3.62.3 Site History

The Princeton-Magna property is a consolidation of the holdings of three companies. Eastern Lead Corporation and Fortune Mining Company were both incorporated in 1949, and the Princeton Mining Company was organized the following year. In 1953, both Eastern and Fortune sold their claims to Princeton for 1,000,000 shares each of Princeton stock. Also in 1953, Princeton entered into a development agreement with Hecla Mining Company to develop the property. The following year, Hecla assigned a one-half interest in this agreement to the Bunker Hill and Sullivan Mining and Concentrating Company. Initial work consisted of bulldozing and surface exploration. In 1956, the two companies drove a 200-foot tunnel and did some diamond drilling. The diamond drilling was continued in 1957 and 1958, but only assessment work was done the following year. The agreement between Princeton, Hecla, and Bunker Hill was terminated in January 1960 (IGS mineral property files). Hecla and Bunker Hill spent $27,685 on the property between 1954 and 1959 (Nugent, 1973).

In July 1962, Princeton entered into a profit-sharing agreement with James Young and Kay Critchlow, who were required to perform certain exploration work. In August, work was started on what would later be called the Magna tunnel. By 1964, this tunnel was 421 feet long, and total development on the property was 453 feet of workings (IGS mineral property files).

In November 1963, Young and Critchlow assigned their agreement with Princeton to the Magna Mining Company (incorporated in 1963). During 1965 and 1966, Magna drove an 85-degree inclined shaft from the adit to a depth of 180 feet. When Magna ran out of money in 1966, the company proposed that Bunker Hill take over the property. After almost two years of
negotiations and maneuvering between (and among) Bunker Hill, Princeton, Magna, and Young and Critchlow, Magna and Bunker Hill agreed that Bunker Hill would assume all of Magna's obligations in exchange for a 20 percent interest in the property (Nugent, 1973).

In 1968, Bunker Hill Co. dewatered the Magna shaft, excavated a station, and began cross-cutting toward the downward projections of three mineralized veins intercepted in the Magna tunnel. Surface trenching, geological mapping, and soil sampling were also done. This work continued the following year (USBM Minerals Yearbooks). A 46-foot cross cut was run from the bottom of the shaft in November 1969 and some drilling was done from the crosscut. Work was halted in January 1970 and little was done the following year. Diamond drilling was resumed in mid-1971 and continued into the next year (Nugent, 1973).

Sporadic work continued at the property for the next few years. In 1980, several high grade silver veins were reported to have been discovered in the Magna adit, and major mining companies were again expressing interest in the property. The Magna adit portal, damaged three years earlier during a winter storm, was reopened and surface exploration was continued. There is no information in the IGS mineral property files on activity at this property after 1980.

3.62.4 Environmental Conditions

3.62.4.1 Site Features

This prospect (Figure 3.62-2) was visited by Earl Bennett on August 7, 1997. A video segment describing the property, identified as Site No. B8079703, is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:46:13-00:48:55). Documenting photographs are Roll B9, frames 8-10.

The prospect consists of a caved adit with a log portal (Figure 3.62-3) and a waste dump. Water flows from the adit and into a small wetland on the dump. The hillside behind the adit has sloughed, forming a highwall. Concrete footings for a long-gone structure are just west of the adit. The east-west elongate dump measures 90 feet long, 35 feet wide, and 10 feet thick. It is overgrown with grass and dense brush (Figure 3.62-4). The South Fork is close to the mine, but the dump does not impinge on waterway. The disturbed area covers less than 0.5 acre.

3.62.4.2 Sample Locations

3.62.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.62.4.2.2 Water Samples

A sample (B8079703) was collected from the water flowing from the caved adit.
<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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<tbody>
<tr>
<td>B8079703</td>
<td>Princeton-Magna Mine, Magna adit</td>
<td>43</td>
<td>52</td>
<td>8.2</td>
<td>3</td>
<td>Yes</td>
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</table>

3.62.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

Sample B8079703 exceeds the lower limit of the Aquatic Life Chronic standard for copper in the dissolved metals screen. In the total recoverable metals screen, cadmium equals or exceeds all standards.

3.62.5 Structures

A concrete footing for a structure is present, but no building remains.

3.62.6 Safety

There are no safety hazards at this site.
Figure 3.62-1. Topographic map of the Magna adit of the Princeton-Magna Mine, Shoshone County, Idaho (U.S. Geological Survey Lookout Pass 7.5-minute topographic map).
Figure 3.62-2. Sketch of the Magna adit of the Princeton-Magna Mine.
Figure 3.62-3. Caved adit and log portal of the Magna adit of the Princeton-Magna Mine (Roll B9, frame #8).

Figure 3.62-4. Grass- and brush-covered waste dump at the Magna adit of the Princeton-Magna Mine (Roll B9, frame #9).
3.63 WEST MAMMOTH PROSPECT (Site No. WL-252)

3.63.1 Site Location and Access (Figures 2.1-1c)

This site is about ¼ mile west of Military Gulch at the prospect symbol on the topographic map in the SE¼ of the NW¼ of section 12, T. 48 N., R. 5 E., on the Burke 7.5-minute quadrangle (Figure 3.63-1). It is at the east end of a burn and can be reached by a fire road that goes west from the Military Gulch Road. The property is either on Forest Service land or on a group of patented claims bordered by Forest Service land.

3.63.2 Geologic Features (Figure 2.2-1b)

The West Mammoth Prospect is in the interbedded impure quartzite and argillite of the St. Regis Formation (Hobbs and others, 1965, Plate 5).

3.63.3 Site History

In 1951, the West Mammoth was listed in the U.S. Bureau of Mines Yearbook as one of the important producing properties in the area.

3.63.4 Environmental Conditions

3.63.4.1 Site Features

This property was visited by Earl Bennett on August 13, 1997. No video or photographs were taken at this site.

The West Mammoth consists of a caved adit that has a seep of about 1-2 gallons per minute flowing from beneath the caved debris. The top of the dump was reworked when the access road was constructed for the fire crews. The disturbed area covers less than 0.25 acre.

3.63.4.2 Sample Locations

3.63.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.63.4.2.2 Water Samples

A sample (B8139707) was collected from the seep at the adit.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
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</thead>
<tbody>
<tr>
<td>B8139707</td>
<td>West Mammoth adit</td>
<td>43</td>
<td>50</td>
<td>7.6</td>
<td>1-2</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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3.63.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

In the dissolved metals screen, sample B8139707 is below all water quality standards. In the total recoverable metals screen, copper exceeds both Aquatic Life standards.

3.63.5 Structures
   There are no structures at this site.

3.63.6 Safety
   There are no safety hazards at this site.
Figure 3.63-1. Topographic map of the West Mammoth Prospect, Shoshone County, Idaho (U.S. Geological Survey Burke 7.5-minute topographic map).
3.64 IDAHO SILVER PROSPECT (Site No. WL-415)
Alternative names—Daisy, Fairview, Silver Mountain Lead.

Although the Idaho Silver Prospect and the Silver Mountain Lead were originally assigned two site numbers in the database (WL-415 and WL-430, respectively), they are the same property. This duplication is the result of different owners of the property at different times and two sets of workings.

3.64.1 Site Location and Access (Figures 2.1-1d)

The property is at Larson siding, which is east of Mullan at the mouth of Daisy Gulch. The prospect is in the NE¼ of the NW¼ of section 31, T. 48 N., R. 6 E., on the Lookout Pass 7.5-minute quadrangle (Figure 3.64-1). The site is either on the edge of Forest Service land or on private land along the South Fork of the Coeur d’Alene River.

3.64.2 Geologic Features (Figure 2.2-1b)

This site is between the Osburn fault zone and the Paymaster fault in the lower Wallace Formation, which consists of dolomitic and calcareous quartzite interbedded with argillite. The St. Regis Formation is in fault contact with the Wallace in this area, and at least one of the Idaho Silver adits crossed a fault into the St. Regis rocks (Hobbs and others, 1965, Plate 5).

3.64.3 Site History

Mines in this area were originally operated by the Daisy Mining Company (incorporated 1906) and the Fairview Mining Company, Ltd. (incorporated 1905). In 1913, the Daisy had a total of about 1,200 feet of workings. The company worked the property until 1921. At that time, the mine had about 2,000 feet of workings, including a 1,500-foot tunnel and a 50-foot inclined shaft. Daisy Mining forfeited its corporate charter in 1922. Fairview Mining did little more than the necessary assessment work on its claims, but the property had 900 feet of workings by 1914. In 1927, the company president decided to forego the assessment work on the claims, and the corporate charter also was forfeited during the year.

The next reported owner apparently was the Butte & Coeur d’Alene Mining Company (no corporate information available), with the property being leased to the Butte & Coeur d’Alene Development Company. In addition to the claims in Daisy Gulch (“Daisy Mine”), the property included several more claims farther west. The lessee abandoned its lease in December 1928.

In 1938, the property, which appears to have included claims in both Daisy and Gentle Annie gulches, was under the control of Butte & Coeur d’Alene Silver Lead Mines, Inc. (incorporated in 1937). The company did 400 feet of development during 1938. The mine was sold in 1946 to the Idaho Silver Corporation (incorporated that year). At that time, the property had about 7,200 feet of workings, including two tunnels and one 400-foot vertical shaft.

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Idaho Silver announced a major exploration and development program in 1946, but except for 1948 (700 feet of drifting), little work was actually done. The property was sold to Silver Mountain Lead Mines (incorporated in 1951).

In 1952, Silver Mountain consolidated several claim groups and had an agreement with the Sullivan Mining Company (Hecla Mining Company and Bunker Hill and Sullivan Mining and Concentrating Company) to develop the property. In late 1954, Hecla and Bunker Hill obtained a Defense Minerals Exploration Administration (DMEA) contract to explore the Silver Mountain holdings. DMEA approved a $1,058,000 project, with the government paying half of the cost and Hecla and Bunker Hill sharing the remainder equally. The work was to include a 2,000-foot shaft and approximately 6,400 feet of exploratory drifts and crosscuts on the 2,000 level. The target was mineralization that could extend below the old Snowstorm Mine on the north side of the Deadman Syncline. In 1955, Hecla completed the preliminary diamond drilling from surface stations and began sinking the shaft. The shaft was completed by the end of 1956, and crosscutting on the 2,000-foot level was started in February 1957. The DMEA contract was amended in 1957 and the amount of the project was increased to $1,435,880. Drifting, crosscutting, and diamond drilling continued during 1957, 1958, and most of 1959. In October 1959, Hecla and Bunker Hill discontinued work at the Silver Mountain project, removed the underground equipment, and allowed the shaft to flood.

In 1988, Hecla rehabilitated the 1,700-foot-long Snowstorm No. 3 tunnel (the Snowstorm was part of Silver Mountain's holdings) and prepared a base station for a drilling program. Some drilling was done the following year.

3.64.4 Environmental Conditions

3.64.4.1 Site Features

The Idaho Silver (Silver Mountain Lead) property was visited by Earl Bennett on July 25, 1997. No video was taken at this property. Documenting photographs are Roll B5, frames 11-13.

This site, which contained the Silver Mountain shaft, has been reclaimed by Hecla and is briefly discussed with the Snowstorm Mine in Volume III. A few timbers from the headframe are still bolted to bedrock on the east side of the dump. The dump has been reworked and now has a considerable amount of Revett Quartzite (waste rock from the Gold Hunter orebody at the Lucky Friday Mine) stockpiled on its surface. The site covers about 10 acres.

3.64.4.2 Sample Locations

3.64.4.2.1 Solid Samples

No waste dump samples were collected at this site.
3.64.4.2.2 Water Samples

A background water sample (B7259704) was collected from Daisy Gulch just north of the Old Mullan Road.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>B7259704</td>
<td>background, Daisy Gulch</td>
<td>80</td>
<td>50</td>
<td>8.1</td>
<td>---</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.64.4.2.3 Analytical Results

Water Samples

Only the dissolved metals screen was run on background sample B7259704. Cadmium equals or exceeds all water quality standards in this sample.

3.64.5 Structures

There are no structures at this site.

3.64.6 Safety

There are no safety hazards at this site.
Figure 3.64-1. Topographic map of the Idaho Silver (Silver Mountain Lead) property, Shoshone County, Idaho (U.S. Geological Survey Lookout Pass 7.5-minute topographic map).
3.65 SILVER CABLE MINE (Site No. WL-404)


3.65.1 Site Location and Access (Figures 2.1-1d)

The main workings of the Silver Cable Mine are in Montana in section 24, T. 20 N., R. 32 W., on the Saltse 7.5-minute quadrangle (Figure 3.65-1). It is reached by a spur road to the north from the Old Mullan Road at Mullan Pass and is just over the state line in Mineral County, Montana. The claim block from the Silver Cable extends to the west back into Idaho, into section 25, T. 48 N., R. 6 E., on the Lookout Pass 7.5-minute quadrangle. The prospects and main workings are on a block of patented claims surrounded by Forest Service land.

3.65.2 Geologic Features (Figure 2.2-1b)

The mine is in rocks of the Revett and/or Burke formations near an east-west striking fault that is probably associated with the Osburn fault (Harrison and others, 1986).

3.65.3 Site History

In 1911, the Idaho Mine Inspector described “an important new ore” discovery at the Silver Cable (1911 IMIR, p. 113). It was also noted that the mine had considerable development “in former years,” but had been idle for some time before the then-current management had taken charge of the property.

During the 1940s, the Silver Cable was apparently leased to Hecla Mining Company. Beginning about May 1, 1943, ore from the Silver Cable lease was processed through the Hecla mill at Burke to supplement the declining tonnage from the Hecla mine. In 1954, the Silver Cable was leased to Uranium Mines, Inc. (UMI; incorporated in 1954), which also owned the nearby Silver Center, Silver Leader, and New Mercury claim blocks. In April 1957, UMI entered into a cost-sharing agreement with Pinnacle Exploration to explore the property. Pinnacle ran a diamond-drilling program on the property from 1957 to 1959, and the agreement was terminated in 1960. UMI changed its name to Idaho-Montana Silver, Inc., in 1963. The property was explored by the Bunker Hill Company between 1967 and 1973.

In 1976, it was reported that the Silver Cable was being reactivated. The extent of the work done at this time is not known. Noranda Exploration leased the property in 1983, but terminated the lease the following year when the exploration program failed to locate a large enough deposit. In 1989, Silver Cable Mining Company, Inc. (incorporated in 1977), cleaned up the Silver Cable adit. Several parties were reportedly interested in leasing the property.
3.65.4 Environmental Conditions

3.65.4.1 Site Features

This mine was visited by Earl Bennett on August 7, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:49:00-00:53:25). Documenting photographs are Roll B9, frames 11-17.

The Silver Cable Mine is an extensive property. The access road goes over the main dump and then up the hillside above the adit in a series of switchbacks. Eventually, the road goes into Idaho and continues west for many miles. Figure 3.65-2 shows the main workings. A recently caved adit has a substantial flow of water (Figure 3.65-3). The water from the adit flows across and along the west side of the large dump. Rails extend from the adit across the dump (Figure 3.65-4). The waste dump (Figures 3.65-5 and 3.65-6) measures about 160 feet long, 100 feet wide, and about 80 feet thick on the nose (Figure 3.65-7). Several structures at the site are described below. The disturbed area covers 5-7 acres.

3.65.4.2 Sample Locations

3.65.4.2.1 Solid Samples

No waste dump samples were collected at this site.

3.65.4.2.2 Water Samples

A sample (B8079704) was collected from the adit water.

<table>
<thead>
<tr>
<th>Sample No</th>
<th>Location</th>
<th>Specific Conductivity (µS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
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<td>B8079704</td>
<td>Silver Cable adit</td>
<td>44</td>
<td>42</td>
<td>7.9</td>
<td>25-30</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.65.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

In the dissolved metals screen, sample B8079704 equals or exceeds all standards for cadmium and exceeds both Aquatic Life standards for zinc. In the total recoverable metals screen, cadmium exceeds all standards and zinc exceeds both Aquatic Life standards. Lead exceeds the Aquatic Life Chronic standard.
3.65.5 Structures

There is a red storage building (Figure 3.65-4) on the property just east of the adit and an old ore bin and cabin (Figure 3.65-5) to the east of the main dump. A pile of old boards and timbers indicates another larger structure used to stand below and to the east of the ore bin. Another wooden structure is located on the west side of the dump.

3.65.6 Safety

The old buildings pose the usual potential for minor hazards of cuts, punctures, and similar injuries, but no major safety hazards were found at this site.
Figure 3.65-1. Topographic map of the Silver Cable Mine, Shoshone County, Idaho, and Mineral County, Montana (U.S. Geological Survey Lookout Pass and Saltese 7.5-minute topographic maps).
Figure 3.65-2. Sketch of the Silver Cable Mine site.
Figure 3.65-3. Caved Silver Cable Mine adit with water discharge in the lower foreground (Roll B9, frame #16).

Figure 3.65-4. View across the surface of the Silver Cable waste dump. Rails extend across the dump on the left side of the photograph (Roll B9, frame #17).
Figure 3.65-5. First of a two-picture panorama of the Silver Cable waste dump, with red storage shed and rails on the dump surface. The caved adit is to the left of the trail bike (Roll B9, frame #12).

Figure 3.65-6. Second of a two-picture panorama of the Silver Cable waste dump. This view overlaps the right edge of Figure 3.65-5. The ore bin is at the center, and the remains of a collapsed cabin are below the ore bin on the right side of the photograph (Roll B9, frame #13).
Figure 3.65-7. Looking down the nose of the waste dump. Water from the adit flows along the right edge of the dump and the access road (Roll B9, frame #15).
3.66 SILVERTON PROSPECT-LOWER ADIT (Site No. WL-335)
Alternative names—Paradise, Revenue Creek.

3.66.1 Site Location and Access (Figures 2.1-1c)

The Silverton Mine is located in Revenue Gulch, just northeast of Silverton in the SE¼ of the SW¼ of section 15, T. 48 N., R. 4 E., on the Osburn 7.5-minute quadrangle (Figure 3.66-1). The mine is on the south side of the creek where the gulch turns from an east-west to a north-south trend, and is shown on the south edge of the topographic map by an adit symbol. Access from the town of Silverton is on the Revenue Gulch road, then through a horse pasture at a private residence where the Forest Service road crosses Revenue Gulch. The prospect is on Forest Service land, just within the National Forest boundary, and BLM land is to the south.

Although this property was identified in the field notes and on the videotape as the upper adit of the Silverton Prospect (WL-326), it is in fact the lower adit of the Silverton Prospect (WL-335).

3.66.2 Geologic Features (Figure 2.2-1d)

This prospect is in the fine-grained quartzite of the Burke Formation, which strikes about north-south and dips 30°-40° E in the vicinity of the adit. The main tunnel cuts through the Silverton fault, which strikes northeast-southwest and dips 65° SE (Hobbs and others, 1965, Plate 3).

3.66.3 Site History

The original claims in this area were staked in 1904 but were later dropped. The Paradise Group was staked in 1922, and the Paradise Mine's Association (a common-law trust) was organized to develop the property. In mid-1923, the mine had two tunnels and a total of 945 feet of workings. The Association worked the property for several years, then leased the claims to Paradise Mining Company, Inc. (incorporated in 1926). Paradise did the assessment work for three or four years, but the lease was canceled in 1931, in part due to failure to perform the necessary assessment work. This led to a dispute between Thomas Sheppard (president of the Paradise Mine's Association) and another partner in the Association, who was also a major stockholder in the Paradise Mining Company, over the title to the mine. Paradise Mining forfeited its corporate charter in 1933, while the Paradise Mine's Association survived a couple of years after that, suggesting that Sheppard was able to retain title to the property. In 1935, the property was reported to have two tunnels, each about 800 feet long.

Silvertown Mines, Inc., was organized in 1945. The new company acquired both this property and the adjacent Climax Group (upper adit of the Silverton Prospect). After doing some work in the late 1940s, Silvertown Mines apparently did only assessment work for many years.

In 1983, Silvertown Mines announced a two-year exploration and drilling program on the company's fifteen claims. An agreement was signed with Callahan Mining Corporation in 1984 for Callahan to explore Silverton's seventeen claims, and the lease was revised the following year.
3.66.4 Environmental Conditions

3.66.4.1 Site Features

This mine (Figure 3.66-2) was visited by Earl Bennett on July 23, 1997. A video segment describing the property, which is identified as the upper adit of the Silverton Prospect, is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 00:53:30-01:00:27). Documenting photographs are Roll B3, frames 20-22.

The open adit is gated and the portal is secured by a fine-mesh wire covering (Figure 3.66-3). There are metal tags on the portal. A little water comes out of the adit and is absorbed by a wet area, supporting tadpoles and frogs, in front of the adit. There are two ore cars (Figure 3.66-4), two power poles, and a stack of mine timbers just northeast of the adit. There is also a power pole near the pile of mine timbers, and several old transformers are at the base of the pole; the transformers are drained and empty. A large dump (162 feet long, 75 feet long, and 20 feet thick on the nose) is overgrown with grasses. Part of the dump appears to have been removed. Pieces of an old hoist are on a junk pile near the center of the front edge of the dump. A small tributary flows across the dump just southwest of the adit. The disturbed area at this site covers about 2-3 acres.

3.66.4.2 Sample Locations

3.66.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.66.4.2.2 Water Samples

No water samples were collected at this site.

3.66.5 Structures

There is one old, collapsed cabin at this property.

3.66.6 Safety

The adit is secured with a wire-mesh covering and is not a hazard. The transformers have been drained. No other safety concerns were found at this site.
Figure 3.66-1. Topographic map of the lower adit of the Silverton Prospect, Shoshone County, Idaho (U.S. Geological Survey Osburn 7.5-minute topographic map).
Figure 3.66-2. Sketch of the lower adit of the Silverton Prospect.
Figure 3.66-3. Portal of the lower adit of the Silverton Prospect. The portal is covered with fine-mesh wire (visible in the diagonal strip where the sun is shining through a gap on the top of the portal) (Roll B3, frame #20).

Figure 3.66-4. Ore cars north of the adit along the edge of the grass- and weed-covered waste dump (Roll B3, frame #21).
3.67 CHIEF RED CLOUD MINE (Site No. B7189706)

3.67.1 Site Location and Access (Figures 2.1-1a)

The Chief Red Cloud Mine is located in Terror Gulch about ½ mile up the creek from the last house, which is owned by Mr. Art Caparelli. The mine is on the west side of the road in the SE¼ of section 1, T. 48 N., R. 3 E., on the Kellogg East 7.5-minute quadrangle (Figure 3.67-1). It is shown as an adit symbol on the topographic map. Access is from the road up Terror Gulch. The mine is on Forest Service land.

3.67.2 Geologic Features (Figure 2.2-1a)

The Chief Red Cloud is in the quartzitic argillite and argillite of the Prichard Formation (Hobbs and others, 1965, Plate 3).

3.67.3 Site History

Nothing is known of the history of this site.

3.67.4 Environmental Conditions

3.67.4.1 Site Features

This property was visited by Earl Bennett on July 18, 1997. No video was taken at this site. Documenting photograph is Roll B1, frame 35.

This is a gated and dry adit (Figure 3.67-2) about 150 feet north of the last residence (Mr. Art Caparelli’s house). It has a sign above the portal noting that it is the Chief Red Cloud Mine. There is little evidence of a dump. The disturbed area covers less than 0.5 acre.

3.67.4.2 Sample Locations

3.67.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.67.4.2.2 Water Samples

No water samples were collected at this site.

3.67.5 Structures

There are no structures at this site.

3.67.6 Safety

The portal is covered with a steel gate and appears very secure. There should be no safety problems at this site.
Figure 3.67-1. Topographic map of the Chief Red Cloud Mine, Shoshone County, Idaho (U.S. Geological Survey Kellogg East 7.5-minute topographic map).
Figure 3.67-2. Gated adit at the Chief Red Cloud Mine along the Terror Gulch road (Roll B1, frame #35).
3.68 ORDWAY TUNGSTEN MINE (Site No. SP-3)

3.68.1 Site Location and Access (Figure 2.1-1a)

The property is located in the SE¼ of the SE¼ of section 27, T.54 N., R. 2 W., on the Bayview 7.5-minute quadrangle (Figure 3.68-1). It is approximately 1½ road miles north of the town of Bayview along Cape Horn Peak Road. The site is just north of the Bonner County line on Forest Service land.

3.68.2 Geologic Features (Figure 2.2-1a)

The Ordway Tungsten Mine is in the Cambrian Lakeview Limestone (Griggs, 1973).

3.68.3 Site History

This prospect was discovered around 1950.

3.68.4 Environmental Conditions

3.68.4.1 Site Features

The site was visited by William Rember and John Kauffman on July 15, 1997. A video segment showing this property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:00:50-01:03:16). Documenting photographs are Roll K1, frames 1-2.

The site consists of a caved shaft with a small waste dump, which indicates the shaft was relatively shallow. The shaft is capped with a partially collapsed covering of small-diameter logs. There is an access door beneath the covering (Figures 3.68-2 and 3.68-3). The disturbed area covers less than 0.1 acre.

3.68.4.2 Sample Locations

3.68.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.68.4.2.2 Water Samples

No water samples were collected at this site.

3.68.5 Structures

Aside from the partially collapsed covering over the caved shaft, no structures are present.
3.68.6 Safety

If the shaft is not completely caved but merely bridged at the surface, there may be the potential for further collapse. However, based on the relatively small waste dump, this problem appears minimal.
Figure 3.68-1. Topographic map of the Ordway Tungsten Prospect, Bonner County, Idaho (U.S. Geological Survey Bayview 7.5-minute topographic map).
Figure 3.68-2. Small-diameter logs used as a roof over the caved shaft (Roll K1, frame #1).

Figure 3.68-3. Side view of the log roof, showing the access door (Roll K1, frame #2).
3.69 LOST STAND (Site No. SP-32)
Alternative name—Last Stand.

3.69.1 Site Location and Access (Figure 2.1-1a)

This prospect is located along Forest Service Road 385 northeast of Tom Lavin Creek in the SE¼ of the NE¼ of the NE¼ of section 7, T. 52 N., R. 1 W., on the Spades Mountain 7.5-minute quadrangle (Figure 3.69-1). Access is via FS Road 385 about ¾ mile northeast from its junction with FS Road 1507. The prospect cut is on the nose of a ridge several hundred feet above the road. Possible small, shallow prospect pits are along the east side of FS Road 385 in section 8. This prospect is on Forest Service land.

3.69.2 Geologic Features (Figure 2.2-1a)

This prospect is in impure calcareous shale, calcareous quartzite, and interbedded limestone and argillite of the Wallace Formation just north of a fault (Anderson, 1940, Plate II; Griggs, 1973).

3.69.3 Site History

In 1962, the workings consisted of bulldozer cuts near a logging road. The mineralization was in discontinuous pods (IGS mineral property files).

3.69.4 Environmental Conditions

3.69.4.1 Site Features

This prospect was visited by John Kauffman on July 23, 1997. No video or photographs were taken at this location.

All that was found at this location was a bulldozer cut along an old, overgrown road on the nose of the ridge northwest of FS Road 385 and a few shallow pits along the east side of FS Road 385. The cut is a scraped-off area about 25-30 feet long by 10 feet wide. The pits are 2-3 feet in diameter by 2 feet deep, and may not actually be from prospecting. The disturbed area is less than 0.1 acre.

3.69.4.2 Sample Locations

3.69.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.69.4.2.2 Water Samples
No water samples were collected at this site.
3.69.5 Structures
   No structures are present at this site.

3.69.6 Safety
   No safety hazards exist at this site.
Figure 3.69-1. Topographic map of the Lost Stand Prospect, Kootenai County, Idaho (U.S. Geological Survey Spades Mountain 7.5-minute topographic map).
3.70 TOM LAVIN CREEK PROSPECT (Site No. SP-34)
Alternative name—Tom Levin Creek Prospect.

3.70.1 Site Location and Access (Figure 2.1-1a)

This prospect is located above Forest Service Road 385 on the northeast side of Tom Lavin Creek in the NW¼ of the NE¼ of the SE¼ of section 7, T. 52 N., R. 1 W., on the Spades Mountain 7.5-minute quadrangle (Figure 3.70-1). The prospect can be reached by following FS Road 385 northeast to its junction with FS Road 1507. FS Road 385 turns sharply to the southeast. About ¾-¼ mile from the junction, where the road crosses a saddle, a short access trail leads to the prospect. The site is on Forest Service land.

3.70.2 Geologic Features (Figure 2.2-1a)

Anderson (1940, Plate II) mapped the area around this prospect as argillite and intercalated quartzite units of the Striped Peak Formation. According to Griggs (1973), Burke and lower Wallace formations are in fault contact near this prospect.

3.70.3 Site History

Nothing is known of the history of this site.

3.70.4 Environmental Conditions

3.70.4.1 Site Features

The Tom Lavin Creek Prospect was visited by John Kauffman on July 23, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:03:41-01:11:13). Documenting photographs are Roll K2, frames 9-13.

This prospect consists of a long bulldozer cut along the hillside that forms an embankment about 35 feet high (Figure 3.70-2). Rock debris from the cut has been pushed out to form benches or waste piles on two levels. The upper level is about 110 feet long, 50 feet wide, and 20 feet thick. The lower level is 100 feet long, 50 feet wide, and 20 feet thick. A trickle of water on the lower level, insufficient to sample, seeps into the surface of the bench. The total disturbed area is about 0.75 acre.

3.70.4.2 Sample Locations

3.70.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.70.4.2.2 Water Samples

No water samples were collected at this site.
3.70.5 Structures
   No structures are present at this site.

3.70.6 Safety
   No safety hazards were identified at this site.
Figure 3.70-1. Topographic map of the Tom Lavin Creek Prospect, Kootenai County, Idaho (U.S. Geological Survey Spades Mountain 7.5-minute topographic map).
Figure 3.70-2. Headwall of the prospect cut and a portion of the upper waste dump (lower left part of the frame) at the Tom Lavin Creek Prospect, looking northwest (Roll K2, frame #12).
3.7.1 BUCKLES PROSPECT (Site No. SP-36)

3.7.1.1 Site Location and Access (Figure 2.1-1a)

The Buckles Prospect is located about ¾ mile up Buckles Creek from the North Fork of Hayden Creek in the NW¼ of the SW¼ of section 17, T. 52 N., R. 2 W., on the Hayden Lake 7.5-minute quadrangle (Figure 3.7.1). A gated Forest Service road exits off the east side of Forest Service Road 625 near the Shamrock Mine. This road winds northeastward around the slopes to the Buckles Creek drainage, where it has been reclaimed and recontoured. The last section of the road was covered with fallen trees from the winter of 1996-97 and was nearly impassable on foot. The prospect is about ¼ mile up the drainage from where the reclaimed road crosses Buckles Creek. It is on Forest Service land.

3.7.1.2 Geologic Features (Figure 2.2-1a)

Anderson (1940, p. 65) notes:

It [the Buckles Prospect] has a tunnel with about 165 feet of workings in and along a prominent vein of N. 40° E. strike and steep northeast dip. This vein is from 10 to 15 feet thick, cuts quartzite beds of the Wallace Formation, and projects as much as 10 feet above the surface. It is composed mostly of white barren quartz, in places cut by thin seams of ankerite in which are widely scattered small grains and crystals of pyrite.

3.7.1.3 Site History

The Buckles Prospect had 165 feet of workings in 1937 when the property was visited by Anderson (1940). Nothing else is known of the history of this site.

3.7.1.4 Environmental Conditions

3.7.1.4.1 Site Features

The Buckles Prospect was visited by John Kauffman on July 17, 1997. No video or photographs were taken at this site.

The adit reported by Anderson was not located. Two very shallow pits about 4 feet in diameter and 2 feet deep were found 40-50 feet above creek level on the north slope below several rock outcrops. If the adit is present, it is well concealed in the thick trees and abundant fallen timber in the area. Essentially no disturbance exists. Even if the adit and waste dump are present, the disturbed area would likely be less than 0.1 acre.

3.7.1.4.2 Sample Locations

3.7.1.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.71.4.2.2 Water Samples
   No water samples were collected at this site.

3.71.5 Structures
   No structures are present at this location.

3.71.6 Safety
   No safety problems were found at this prospect.
3.72 ROCK CITY MINE (Site No. SP-37)

3.72.1 Site Location and Access (Figures 2.1-1a)

This prospect is located on a southeast-flowing tributary of Brett Creek in the NW\(\frac{1}{4}\) of the NE\(\frac{1}{4}\) of section 13, T. 52 N., R. 2 E., on the Spyglass Peak 7.5-minute quadrangle (Figure 3.72-1). From Prichard, the prospect is reached by following Forest Service Road 208 northwest to Brett Creek, then heading west on Brett Creek to the tributary creek. A old, overgrown road leads up the tributary to the prospect, which is on Forest Service land.

3.72.2 Geologic Features (Figure 2.2-1a)

The Rock City Mine is in the quartzite, argillite, and siltite of the Striped Peak Formation (Griggs, 1973).

3.72.3 Site History

Nothing is known about the history of this site.

3.72.4 Environmental Conditions

3.72.4.1 Site Features

This site was visited by Earl Bennett on August 8, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:11:36-01:15:25). Documenting photographs are Roll B9, frames 21-25, and Roll B10, frames 1-4.

The property (Figure 3.72-2) consists of a north-south elongated pit or quarry (Figure 3.72-3), about 150 feet long, in a pegmatite that contains some copper (evidenced by copper staining on the rock; Figure 3.72-4). There is a log ramp, probably used for loading, on the north end of the pit (Figure 3.72-5). The material from the quarry was dumped over the hillside to form a waste dump (Figure 3.72-6), which does not impinge on the creek. The disturbed area covers about 3 acres.

3.72.4.2 Sample Locations

3.72.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.72.4.2.2 Water Samples

No water samples were collected at this site.
3.72.5 Structures

Except for the log loading ramp, there are no structures at this site.

3.72.6 Safety

There are no safety hazards at this site.
Figure 3.72-1. Topographic map of the Rock City Mine, Shoshone County, Idaho (U.S. Geological Survey Spyglass Peak 7.5-minute topographic map).
Figure 3.72-2. Sketch of the Rock City Mine site.
Figure 3.72-3. Looking north up the cut at the Rock City Mine (Roll B10, frame #4).

Figure 3.72-4. Copper staining (azurite) on rock at the Rock City Mine (Roll B9, frame #25).
Figure 3.72-5. Log loading ramp at the Rock City Mine (Roll B9, frame #24).

Figure 3.72-6. Waste dump on the slope below the cut at the Rock City Mine (Roll B10, frame #3).
3.73 TWO BROTHERS PROSPECT (Site No. SP-38)

3.73.1 Site Location and Access (Figure 2.1-1a)

The Two Brothers Prospect is located about 2 miles up the North Fork of Hayden Creek near the mouth of the Buckles Creek drainage in the NW¼ of the SE¼ of section 13, T. 52 N., R. 3 W., on the Hayden Lake 7.5-minute quadrangle (Figure 3.73-1). The prospect is on Forest Service land.

3.73.2 Geologic Features (Figure 2.2-1a)

According to Anderson (1940, p. 64):

The Two Brothers claim ... covers a prominent quartz vein which may be traced a long distance on the surface because of its superior resistance to erosion. The vein strikes N. 40° E. and apparently dips steeply southeast. The only development has been a small open cut at a point along the bottom of the gulch where the vein is at least 40 feet thick. The vein is composed of white quartz in which are inclusions of little altered country rock.

The prospect is in the argillite and dolomitic siltite and quartzite of the lower Wallace Formation (Griggs, 1973).

3.73.3 Site History

Nothing is known about the history of this site.

3.73.4 Environmental Conditions

3.73.4.1 Site Features

The Two Brothers Prospect was visited by John Kauffman on July 17, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:15:28-01:17:44). No photographs were taken at this site.

A shallow depression and a small waste dump on the north side of Buckles Creek are the only evidence remaining of this prospect. The depression is probably the remains of the open cut reported by Anderson rather than a caved adit. The dump is only about 15 feet long, 6 feet wide, and 5 feet thick. The slope is timbered with brushy undergrowth. The disturbed area is only 0.01 acre.

3.73.4.2 Sample Locations

3.73.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.73.4.2.2 Water Samples
   No water samples were collected at this site.

3.73.5 Structures
   No structures are present at this site.

3.73.6 Safety
   No safety problems exist at this site.
Figure 3.73-1. Topographic map of the Two Brothers Prospect, Kootenai County, Idaho (U.S. Geological Survey Hayden Lake 7.5-minute topographic map).
3.74 LUCKY BUD CLAIM (Site No. SP-39)

3.74.1 Site Location and Access (Figure 2.1-1a)

This site may or may not be the correct location for the Lucky Bud Claim. The U.S. Bureau of Mines mineral property file for this site, including any description or exact location information, is not available. The cut described below was assumed to be the prospect. Its location is along Forest Service Road 437 on the northeast side of Lewelling Creek in the SW¼ of the SE¼ of section 18, T. 52 N., R. 1 W., on the Spades Mountain 7.5-minute quadrangle (Figure 3.74-1). This location is on Forest Service land.

3.74.2 Geologic Features (Figure 2.2-1a)

The prospect is in the argillite, dolomitic siltite, and dolomitic quartzite of the lower Wallace Formation (Griggs, 1973).

3.74.3 Site History

Nothing is known of the history of this site.

3.74.4 Environmental Conditions

3.74.4.1 Site Features

This prospect was visited by John Kauffman on July 23, 1997. No video was taken at this site. Documenting photographs are Roll K2, frame 14-15.

After searching in the vicinity of our map location for this site and failing to locate any evidence of mining or prospecting activity, it was decided that a cut along FS Road 437, south of the IGS file location, was probably the prospect and is herein designated as such. Inasmuch as the original information from the U.S. Bureau of Mines located the surface workings of this prospect with a precision of 1 kilometer, this designation is probably correct.

The cut (Figures 3.74-2 and 3.74-3), located along and just above the road, is 200 feet long, 6-10 feet wide, and 15 feet high on the upper embankment. Waste rock has been pushed downhill and forms a slope that is cut along its base by FS Road 437. A few quartz stringers were seen in the rock debris, but no mineralization was noted. The disturbed area covers about 0.1 acre.

3.74.4.2 Sample Locations

3.74.4.2.1 Soil Samples

No waste dump samples were collected at this site.
3.74.4.2.2 Water Samples
   No water samples were collected at this site.

3.74.5 Structures
   No structures are present at this site.

3.74.6 Safety
   No safety problems are present at this site.
Figure 3.74-1. Topographic map of the Lucky Bud Prospect, Kootenai County, Idaho (U.S. Geological Survey Spades Mountain 7.5-minute topographic map).
Figure 3.72. Prospect cut at the Lucky Bud Claim (Roll K2, frame #15).

Figure 3.74-3. Waste rock at the Lucky Bud Claim (Roll K2, frame #14).
3.75 CONNIE PROSPECT (Site No. SP-40)
Alternative name—Dandy Mine.

3.75.1 Site Location and Access (Figure 2.1-1a)

The Connie Prospect, shown on the topographic map as the Dandy Mine, is located at the head of
Conie Creek (possibly a misspelling of “Connie” on the topographic map), a tributary to the East
Fork of Hayden Creek. The prospect is on the south slope of South Chilco Mountain in the SW
corner of the NE¼ of section 14, T. 52 N., R. 2 W., on the Spades Mountain 7.5-minute
quadrangle (Figure 3.75-1). The adit is about one quarter mile up Forest Service Trail 14 and
about 50-75 feet northwest of a switchback along the trail (Figure 3.75-2). The trail head can be
reached by taking Forest Service Road 406 north about one mile from its junction with FS Road
437. The junction is about one quarter mile northwest of Hudlow Saddle.

3.75.2 Geologic Features (Figure 2.2-1a)

Anderson (1940, p. 63) reports:
The vein strikes about N. 45° E. and dips 70° to 90° N.W. It cuts transversely
across the Burke formation, the beds of which strike about N. 30° W. and dip 20°
S.W. The vein has been exposed underground for about 600 feet. Its average
thickness is 18 inches, but locally the vein swells to 4 feet. In three places it has
been offset by faults of N. 20° W. strike and 65° to 70° S.W. dip. The offset by the
first two faults has been negligible (fig. 15 [Figure 3.75-3]), but the continuation
beyond the third fault was not found. On intersecting the third fault, the tunnel
was directed northward for nearly 500 feet, but exposed only slightly micaceous
quartzite, metamorphosed by emanations from the granodiorite body which
outcrops less than a mile to the north.

The vein is composed of white, fairly coarse crystalline quartz, which in places is
somewhat fractured and impregnated with scant amounts of sulphides, mostly
arsenopyrite but including a little pyrite, sphalerite, and galena.

3.75.3 Site History

According to Anderson (1940, p. 63):
The Connie, formerly known as the Dandy, . . . is owned by the Connie Mining
and Milling Company, incorporated July 11, 1927, a reorganization of the Chilco
Mining and Milling Company, the incorporation of which is dated September 14,
1925. The property comprises the Chilco group of 11 unpatented claims and
includes a tunnel about 1,300 feet long (fig. 15 [Figure 3.75-3]). The most recent
development work was done between 1931 and 1933, inclusive, when the length
of the tunnel was increased 600 feet.
3.75.4 Environmental Conditions

3.75.4.1 Site Features

The Connie Prospect was visited by John Kauffman on July 23, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:18:07-01:24:01). Documenting photographs are Roll K2, frames 17-18.

The adit at the Connie is caved and densely vegetated with brush and ground-covering plants. Two small streams of water flow out of the brush, but only one of these appears to originate from the adit. The other may issue from a seep on the slope east of the adit. The flow from the adit is estimated to be 3 gallons per minute, and the combined flow from the two sources is about 5 gallons per minute. The water runs onto the surface of the waste dump and disappears into the dump a few feet down the dump face. The water course is lined with grasses and brushy vegetation. The water does not reach Conie Creek, which is several hundred yards to the west. The waste dump (Figure 3.75-3) consists mostly of coarse fragments of light gray quartzite. No oxidized zones or mineralization was seen in the dump material. The dump is about 50 feet long, 40 feet wide, and 50-70 feet down the face. Because of the steepness of the slope, however, the actual maximum thickness of the dump is probably only 8-10 feet, and it thins to only a few feet near the edges. A few pieces of scrap metal are on the dump and near the caved adit.

3.75.4.2 Sample Locations

3.75.4.2.1 Solid Samples

No dump samples were collected at this site.

3.75.4.2.2 Water Samples

A water sample (K07239702) was collected from the small stream of water flowing from the caved adit. The pH and conductivity of the combined streams was nearly identical to that of the adit water.

<table>
<thead>
<tr>
<th>Sample No.</th>
<th>Location</th>
<th>Specific Conductivity (μS)</th>
<th>Temperature (°F)</th>
<th>pH</th>
<th>Flow (gpm)</th>
<th>Analyzed (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>K07239702</td>
<td>Connie adit</td>
<td>13</td>
<td>41</td>
<td>8.1</td>
<td>3</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.75.4.2.3 Analytical Results

Water Samples (Tables 2.5-1 and 2.5-2)

In sample K07239702, all elements are either below detection limits or below all water quality standards in both the dissolved metals and the total recoverable metals screens.
3.75.5 Structures
   No structures were found at this site.

3.75.6 Safety
   No safety problems were identified at the Connie Prospect.
Figure 3.75-1. Topographic map of the Connie Mine, Kootenai County, Idaho (U.S. Geological Survey Spades Mountain 7.5-minute topographic map).
Figure 3.75-2. Sketch of the Connie Mine.
Figure 3.75-3. Geologic sketch of the underground workings of the Connie Mine. The bedrock is Burke Formation, and the strike and dip symbols show the attitude of the bedding (Anderson, 1940, Figure 15).
Figure 3.75-4. View to the south-southwest of the waste dump and the drainage of the East Fork of Hayden Creek (Roll K2, frame #18).
3.76 RM PROSPECT (Site No. SP-41)

3.76.1 Site Location and Access (Figure 2.1-1a)

The RM Prospect is located about 1.5 miles up the North Fork of Hayden Creek on the east side of Forest Service Road 625 in the NW¼ of the SE¼ of section 13, T. 52 N., R. 3 W., on the Hayden Lake 7.5-minute quadrangle (Figure 3.76-1). This prospect is on Forest Service land.

3.76.2 Geologic Features (Figure 2.2-1a)

The prospect is in the argillite, dolomitic siltite, and dolomitic quartzite of the lower Wallace Formation (Griggs, 1973). According to Anderson (1940, p. 64):

That [adit] on the east side has been driven beneath a bold quartz outcrop as much as 40 feet high and 40 feet wide. The vein cuts the Wallace Formation and appears to strike about N. 35° W. and dips 70° N.E. That across the creek has a similar strike and dip, but its thickness ranges from 12 to 15 feet. Another vein is known to occur nearby. The veins are composed of milky-white, coarsely granular quartz, in part massive, in part with included breccia fragments of little altered country rock. Some of the quartz is slightly iron-stained, but no sulphides were observed.

3.76.3 Site History

Anderson (1940, p. 64) notes:

The R. M. . . . is an old property but has had some recent work. The development comprises a tunnel 50 feet long on the east side of the creek and another less than 10 feet long on the west side.

3.76.4 Environmental Conditions

3.76.4.1 Site Features

The RM Prospect was visited by John Kauffman on July 17, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:25:05-01:26:17). No photographs were taken at this site.

A possible collapsed adit and a small waste dump were located about 40 feet above FS Road 625 on the hillside east of the creek. The area around the adit and dump is overgrown and brushy. The water in the drainage appears to come from above the site of the possible adit and not from the workings. The waste dump, if it in fact is one, is 15 feet long, 15 feet wide, and 8 feet thick. Several shallow pits north of this location and just above the road may have been prospect pits. The disturbed area is less than 0.1 acre.
3.76.4.2 Sample Locations

3.76.4.2.1 Soil Samples
   No waste dump samples were collected at this site.

3.76.4.2.2 Water Samples
   No water samples were collected at this site.

3.76.5 Structures

No structures were present at the site, although a building is shown on the topographic map west of the road along the creek. Remnants of that structure may be present.

3.76.6 Safety
   No safety problems were identified at this site.
Figure 3.76-1. Topographic map of the RM Prospect, Kootenai County, Idaho (U.S. Geological Survey Hayden Lake 7.5-minute topographic map).
3.77 LOWER PROPERTY (Site No. SP-44)
Alternate names—Lucky Joe Mining Company, Silver Star Group.

3.77.1 Site Location and Access (Figure 2.1-1a)

The Lower Property is located on the north side of the East Fork of Hayden Creek and east of the mouth of Cardin Creek in the SE¼ of the NW¼ of the SW¼ of section 29, T. 52 N., R. 2 W., on the Hayden Lake 7.5-minute quadrangle (Figure 3.77-1). Access is by way of Forest Service Road 437, which follows the north side of the East Fork. The prospect is north of the road on the nose of the ridge on the east side of Cardin Creek. It is on Forest Service land.

3.77.2 Geologic Features (Figure 2.2-1a)

The prospect is in the argillite, dolomitic siltite, and dolomitic quartzite of the lower Wallace Formation (Griggs, 1973).

3.77.3 Site History

In the late 1950s, this property was held by the Lucky Joe Mining Company (incorporated 1957). Another prospect belonging to this company is discussed in section 3.117 of Section D.

3.77.4 Environmental Conditions

3.77.4.1 Site Features

The Lower Prospect was visited by John Kauffman on July 22, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:26:21-01:29:25). Documenting photograph is Roll K2, frame 5.

This prospect consists of several small pits and a trench cut along the face of an outcrop on the ridge nose. The trench, which is about 50 feet above the road, is 30-40 feet long, 6-8 feet wide, and 5-7 feet high on the uphill side of the cut. The shallow pits are downhill from the trench along a bulldozer trail that follows the nose of the ridge. Some white vein quartz is present in the trench and pits, which have small trees and brush growing in them. The disturbed area is less than 0.25 acre.

3.77.4.2 Sample Locations

3.77.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.77.4.2.2 Water Samples
No water samples were collected at this site.
3.77.5 Structures
   No structures are present at this prospect.

3.77.6 Safety
   No safety problems exist at this site.
Figure 3.77-1. Topographic map of the Lower Property Prospect, Kootenai County, Idaho (U.S. Geological Survey Hayden Lake 7.5-minute topographic map).
3.78 BIG ELK GROUP (Site No. SP-48)

3.78.1 Site Location and Access (Figure 2.1-1a)

The Big Elk Group is located in the upper reaches of U S Creek, a southeast-flowing tributary to Big Elk Creek, in the SE ¼ of the SE ¼ of section 6, T. 51 N., R. 1 E., on the Cataract Peak 7.5-minute quadrangle (Figure 3.78-1). The prospect is accurately located on the topographic map, although the claim group probably extends eastward onto the Lamb Peak 7.5-minute quadrangle. Access is from Forest Service Road 534 (the Cascade-Magee Road) to Cascade Saddle, southeast along Crooked Ridge on FS Road 258 to its junction with FS Road 261, then east and southeast on FS Road 261 to FS Road 913. About 1 mile north and east on FS Road 913, a brushy access road (shown as a trail marked “4WD” on the topographic map) leads to the claim group. FS Road 913 was not passable with a vehicle at the time of the site visit because of numerous fallen trees. The unpatented claims are on Forest Service land.

3.78.2 Geologic Features (Figure 2.2-1a)

This prospect is probably in rocks of the Revett Formation. It is close to the contact between the Revett and St. Regis formations (Griggs, 1973).

3.78.3 Site History

Nothing is known about the history of this site.

3.78.4 Environmental Conditions

3.78.4.1 Site Features

The Big Elk Group was visited by John Kauffman on July 29, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:29:28-01:40:38). Documenting photographs are Roll K3, frames 13-16.

The prospect consists of a bulldozer cut and a short trench with an adit at its end. The bulldozer cut is on the nose of the ridge above the four-wheel-drive road and below FS Road 913. It is the prospect marked on the topographic map. The cut is 70 feet long by 30 feet wide. The headwall is 12-15 feet high, and one side of the cut has a wall about 5 feet high (Figure 3.78-2). Rock debris pushed downhill from this cut is about 10 feet thick.

A narrow trench with a short open adit (Figure 3.78-3) at its southwest end is located about 100-150 feet uphill from the cut. The trench may be a caved portion of the adit. The adit is driven perpendicular to a thick quartz vein that is exposed at numerous places along the nose of the ridge. The adit is only about 10 feet in length and, if it had been continued, would have gone through the ridge and opened on its southern slope. A waste dump at the northeast end of the trench in front of the adit is about 30 feet long, 10 feet wide, and 10 feet thick.
The total disturbed area is about 0.5 acre.

3.78.4.2 Sample Locations

3.78.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.78.4.2.2 Water Samples
No water samples were collected at this site.

3.78.5 Structures

An old log cabin (Figure 3.78-4), although in disrepair, remains standing on the east side of the four-wheel-drive trail southeast of the prospect cut. It is just off the Cataract Peak quadrangle on the Lamb Peak quadrangle and is marked on that quadrangle map with an open box symbol. The cabin measures about 16 feet by 20 feet.

3.78.6 Safety

Although the short adit is open, it should not be a hazard because of the competent nature of the rock.
Figure 3.78-1. Topographic map of the Big Elk Group, Kootenai County, Idaho (U.S. Geological Survey Cataract Peak and Lamb Peak 7.5-minute topographic map).
Figure 3.78-2. Bulldozer cut on the nose of the ridge at the Big Elk Group, looking northwest (Roll K3, frame #15).

Figure 3.78-3. Opening of the short adit at the Big Elk Group, looking southwest (Roll K3, frame #16).
Figure 3.78-4. Remains of the log cabin at the Big Elk Group (Roll K3, frame #13).
3.79 UNNAMED PROSPECT (Site No. SP-49)

3.79.1 Site Location and Access (Figure 2.1-1a)

This prospect is on an open slope near the ridge top between Short Creek and Little Elk Creek near the boundary between the NE¼ and the SE¼ of the SE¼ of section 6, T. 5¹ N., R. 2 E., on the Spyglass Peak 7.5-minute quadrangle (Figure 3.79-1); it is accurately located on the topographic map by a prospect symbol. Access is by foot trail (originally a bulldozer road) northward from Short Creek about ¼ mile north of the cabins shown on the topographic map. The cabins are about ¼ mile east of where Forest Service Road 6749 switches back over Short Creek. The prospect is on Forest Service land.

3.79.2 Geologic Features (Figure 2.2-1a)

This property is in siltite and argillite of the Libby Formation (Griggs, 1973). The prospects are on milky white quartz veins up to several feet wide along shear zones in dark gray argillite. Malachite staining was noted on some of the quartz fragments.

3.79.3 Site History

Nothing is known of the history of this site.

3.79.4 Environmental Conditions

3.79.4.1 Site Features

This prospect was visited by John Kauffman on July 30, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:40:42-01:46:10). Documenting photographs are Roll K3, frames 17-21.

The property consists of a series of open pits and cuts on the north-south-trending nose of the ridge. There are two main pits, one long bulldozer cut, and several small, shallow pits or cuts. The uppermost cut is a shallow pit, only a foot or two deep and about 15 feet long. The sides of the cut are smooth and rounded from weathering. The upper main pit is about 75 feet south of the uppermost cut. This pit (Figure 3.79-2) has a north wall about 15 feet high and is about 20 feet in diameter. The dump is about 30 feet long, 10 feet wide, and 10 feet thick, with a somewhat irregular, hummocky surface. A vertical quartz vein, 1-2 feet wide, is exposed on the face of the north wall. The lower main pit is roughly 100 feet south of the upper pit. It is about the same size as the upper pit, but the sides have sloughed into the pit and very little outcrop is exposed in the pit wall. The dump of the lower pit (Figure 3.79-3) is about 40 feet long, 10 feet wide, and 15 feet thick. A few small trees and some brush are growing on the dump and on the floor of the pit. About 200 feet south of the lower pit is an east-west-trending bulldozer cut that crosses the nose of the ridge. This cut is about 75 feet long. The embankment on its north edge is about 6 feet high. The total disturbed area is less than 1.0 acre.
3.79.4.2 Sample Locations

3.79.4.2.1 Soil Samples
   No waste dump samples were collected at this site.

3.79.4.2.2 Water Samples
   No water samples were collected at this site.

3.79.5 Structures
   There are no structures at this site.

3.79.6 Safety
   No safety hazards were identified at this site.
Figure 3.79-1. Topographic map of the Unnamed Prospect SP-49, Shoshone County, Idaho (U.S. Geological Survey Spyglass Peak 7.5-minute topographic map).
Figure 3.79-2. Looking northeast into the upper prospect pit. The vertical white quartz vein exposed in the face is 1-2 feet wide (Roll K3, frame #18).

Figure 3.79-3. Waste dump of the upper prospect pit, looking northwest (Roll K3, frame #19).
Figure 3.79-4. Waste dump of the lower prospect pit, looking south (Roll K3, frame #21).
3.80 HAMBURG-AMERICAN PROSPECT (Site No. SP-57)
Alternative name—Leiberg Creek.

3.80.1 Site Location and Access (Figure 2.1-1a)

The Hamburg-American Prospect is about one mile northeast of the North Fork of the Coeur d’Alene River on the southeast side of Leiberg Creek in the SW¼ of the NW¼ of section 32, T. 51 N., R. 1 E., on the Bumblebee Peak 7.5-minute quadrangle (Figure 3.80-1). Forest Service Road 422 follows the northwest side of the creek. The property consists of 3 patented claims surrounded by Forest Service land.

3.80.2 Geologic Features (Figure 2.2-1a)

Anderson (1940, p. 58) states:

*The Hamburg American vein is in the St. Regis formation, which locally trends northwest and dips northeast, a trend which does not conform, however, with the general northwest strike and steep northeast dip of the vein (fig. 10 [Figure 3.80-2]). The vein possesses considerable curvature, but its average strike is N. 40º W. It is exposed for 640 feet underground, ranges from an inch to 3-1/2 feet thick, and occurs in the form of scattered lenses joined by thinner bands and stringers. The vein is cut off on the northwest by a fault (along which the crosscut from portal was driven).*

It is composed largely of milky-white, fairly coarsely crystalline quartz with more or less uniformly scattered grains, granules, and irregular small nests of chalcopyrite, in places accompanied by generally insignificant amounts of sphalerite and galena. In the vein is also considerable pearly but buff-weathering ankerite in the form of rather widely scattered seams, bands, and veinlets penetrating and engulfing the fractured quartz and sulphide. The ferriferous carbonate appears to be more abundant locally than in any other vein in the district. The ore is frozen to the walls and is incased by only slightly altered rock.

3.80.3 Site History

According to Anderson (1940, p. 58):

*Its ownership is vested in the Hamburg American Copper Mining and Milling Company, incorporated November 30, 1908; but its charter was forfeited in 1933. The property comprises 3 patented and 4 unpatented claims and the development of two tunnels, the longest about 950 feet (fig. 10 [Figure 3.80-2]). No extensive development has been done for a number of years, and the workings, except in the one tunnel, are inaccessible.*
In 1915, the mine had about 500 feet of workings. The company applied for patent on its claims in 1912, but did not receive the patents on five of the seven claims until 1922. In 1925, the mine had three tunnels (15 feet, 500 feet, and 930 feet long) and a total of about 1,500 feet of workings (IGS mineral property files). However, in 1921, only the lowest (900-foot-long tunnel) was open, and the higher two tunnels were caved at the mouth (Hershey, 1921). Although Anderson (1940) reports that the Hamburg American Copper Mining and Milling Company's corporate charter was forfeited in 1933, the charter was reinstated the following year. After again forfeiting its charter in 1939 and having it reinstated in 1940, the company was inactive for a number of years and forfeited its charter for the last time in 1961. Little work seems to have been done on the mine after 1926.

3.80.4 Environmental Conditions

3.80.4.1 Site Features

This property was visited by John Kauffman on July 30, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:46:13-01:50:28). Documenting photo is Roll K4, frame 5.

Only one of the two adits reported by Anderson was found. This adit, about 10-15 feet above creek level on the southeast side of the creek, is caved and its existence is barely detectible as a shallow depression on the slope. It is located about 30 feet southeast of USFS Mineral Survey Marker # 2797. A flat area between the creek and caved adit is about 20-30 feet wide, 100-125 feet long parallel to the creek, and about 8 feet above the creek. This may be the waste dump or part of an old road surface (or both). Rotten timbers on this flat area may be the remnants of a cabin. If this is the waste dump, the creek cuts along its entire length, although the material appears to be completely stabilized by a dense stand of small trees and brush. No mineralization or oxidation was noted. The disturbed area covers less than 0.25 acre.

3.80.4.2 Sample Locations

3.80.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.80.4.2.2 Water Samples

No water samples were collected at this site.

3.80.5 Structures

There are no structures present at this property.

3.80.6 Safety

No safety hazards were identified at this location.
Figure 3.80-1. Topographic map of the Hamburg-American Prospect, Kootenai County, Idaho (U.S. Geological Survey Bumblebee Peak 7.5-minute topographic map).
Figure 3.80-2. Geologic sketch map of the Hamburg-American vein. The bedrock is St. Regis Formation, and the symbols show the strike and dip of the bedding (Anderson, 1940, Figure 10).
3.81 BROWER (Site No. SP-61)
   Alternative names—Estella, Rosebud.

This prospect was found in the area near where the Brower should be, but it does not match Anderson's (1940, p. 66) description, which reports a tunnel more than 100 feet long. Since the Brower property at one time included a large block of claims and several tunnels, this site is probably one of the less explored sections of the property. Unnamed Prospect R08059701 (Section D, property report 3.119) is similar to Anderson's description of the Brower, but the location does not agree with his. However, it could easily be another part of the Brower property, since Anderson's (1940) description does not appear to cover most of the property.

3.81.1 Site Location and Access (Figure 2.1-1a)

The prospect is located about 2 miles west of Skitwish Peak and 1 mile east of the Idaho Chainlink Prospect (SP-62) in the NE¼ of the NE¼ of section 12, T. 50 N., R. 2 W., on the Wolf Lodge 7.5-minute quadrangle (Figure 3.81-1). Access from Wolf Lodge Creek is on Forest Service Road 202 northeast to its junction with FS Road 1510, then north on FS Road 1510 about 1 mile. The prospect is at the end of a logging road above FS Road 1510. The site is on Forest Service land.

3.81.2 Geologic Features (Figure 2.2-1a)

This site is in the Revett Formation (Griggs, 1973). The Brower tunnel was started in deeply weathered Revett quartzite. A few white quartz fragments were found on the property, but no mineralization was visible underground (Anderson, 1940).

3.81.3 Site History

In 1923, the Estella Metallurgical Company (incorporated in 1923) held forty-one claims. The workings on the property (as described by the company) were three tunnels, twenty shafts, and eighteen crosscuts. By 1925, the property included sixty-five claims with 875 feet of workings, including four tunnels (150 feet, 250 feet, 25 feet, and 450 feet long) which seem to have been located in different parts of the property. In 1925, the company mentioned a 55-foot crosscut and an 18-foot shaft in connection with a 125-foot adit on one part of its holdings; two other tunnels on the property were listed as being 250 feet and 175 feet long. Little work appears to have been done after that, and Estella forfeited its corporate charter in 1931.

3.81.4 Environmental Conditions

3.81.4.1 Site Features

The prospect was visited by William Rember on August 5, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:50:30-01:52:07). Documenting photographs are Roll R3, frames 14-15.
This is a very minor prospect consisting of a caved shaft and a small waste dump (Figure 3.81-2). The shallow pit of the caved shaft is about 7 feet deep with rock rubble and a few old rotten timbers at the bottom. The shaft was probably no more than 20-25 feet deep originally, judging from the size of the dump (15 feet long, 10 feet wide, and 5 feet thick). The dump surface is covered with moss, brush, and a few small trees. The disturbed area is less than 0.25 acre.

3.81.4.2 Sample Locations

3.81.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.81.4.2.2 Water Samples
No water samples were collected at this site.

3.81.5 Structures
No structures are present at this site.

3.81.6 Safety

The caved shaft is shallow and is not a safety hazard.
Figure 3.81-1. Topographic map of the Brower Prospect, Kootenai County, Idaho (U.S. Geological Survey Wolf Lodge 7.5-minute topographic map).
Figure 3.81-2. Sketch of the Brower Prospect.
3.82 KOOTENAI KING(?) (Site No. SP-83)

The site described below may or may not be the Kootenai King. It was the only possible prospect found in this vicinity.

3.82.1 Site Location and Access (Figure 2.1-1a)

The site is just north of and above Interstate 90 at Fourth of July Summit in the NW¼ of the SW¼ of section 6, T. 49 N., R 1 W., on the Lane 7.5-minute quadrangle (Figure 3.82-1). Access from the freeway is on Forest Service Road 3097 about 0.5 mile to FS Road 3098, then north and west on FS Road 3098 about 0.8 mile. This site is on Forest Service land.

3.82.2 Geologic Features (Figure 2.2-1a)

This prospect is in rocks of the upper Prichard Formation near the Osburn fault (Griggs, 1973).

3.82.3 Site History

In 1948, the Kootenai King Mining Company (incorporated 1947) held nine claims. The property had one 270-foot tunnel. The company forfeited its corporate charter in 1950.

3.82.4 Environmental Conditions

3.82.4.1 Site Features

The site was visited by William Rember on July 31, 1997. A video segment describing the property is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Index 01:52:10-01:54:26). Documenting photographs are Roll R2, frames 23-24.

The site consists of four recent trenches which may not have been dug for prospecting. Two survey pins were found with faded writing stating “U.S. West property corner.” This could, therefore, be the proposed site of a communications tower or other facility. The trenches could also be recent activity on a claim block reported by McDowell (1949) because the site is on-strike with mineralization exposed in the freeway cut to the south. The disturbed area is less than 0.25 acre.

3.82.4.2 Sample Locations

3.82.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.82.4.2.2 Water Samples

No water samples were collected at this site.
3.82.5 Structures
   No structures are present at this site.

3.82.6 Safety
   There are no safety hazards at this site.
Figure 3.82-1. Topographic map of the Kootenai King Prospect, Kootenai County, Idaho (U.S. Geological Survey Lane 7.5-minute topographic map).
3.83 LOST CABIN MINE (Site No. SP-92)
Alternative names—Idaho Goldfields, Donahoe Lease.

3.83.1 Site Location and Access (Figure 2.1-1a)

The Lost Cabin Mine is about ¼ mile west of Interstate 90 along a southeast-flowing tributary of Reserve Creek in the NE¼ of the NE¼ of section 12, T. 49 N., R. 2 W., on the Lane 7.5-minute quadrangle (Figure 3.83-1). Access from the east-bound lane of I-90 is by driving southwest on an unnumbered road a short distance to the tributary creek, then by walking up an old road to the mine site. When visited, access was easier up the creek than on the road because of numerous fallen trees. From the Forest Service map of the Idaho Panhandle National Forest, this prospect appears to be on a block of private land surrounded by Forest Service land. The range line, several hundred yards east of the prospect, is also the National Forest-private land boundary.

3.83.2 Geologic Features (Figure 2.2-1a)

The Lost Cabin Mine is in rocks of the Prichard Formation. Units of the upper and lower Prichard are in fault contact in the vicinity of the mine (Griggs, 1973). Three or four white, iron-stained, irregular quartz veins were found on the property. In places, these veins were entirely barren, and in others, they carried visible iron, lead, and zinc sulfides. Small amounts of gold and silver were also present (Sample and Parsons, 1957).

3.83.3 Site History

This property was apparently located in the late 1880s or 1890s, with exploration continuing intermittently from the time of the discovery. The property was leased to Idaho Goldfields, Inc. (incorporated in 1930), in 1949 (Sample and Parsons, 1957). In late 1949, the company built a road and bridge to the property and exposed the vein on both sides of the creek. The following year, the No. 1 tunnel was extended 60 feet. By 1954, the property had two tunnels (200 and 175 feet long) and a 28-foot vertical shaft. The company also did 768 feet of diamond drilling during 1954. Most of the work on the property was done by contract. In 1958, the mine had four tunnels (207 feet, 175 feet, 58 feet, and 40 feet long) and 1 shaft. According to Sample and Parson (1957), the 100-foot inclined shaft was driven along one of the quartz veins.

By 1962, the mine had 532 feet of total workings. These included five tunnels (214 feet, 178 feet, 60 feet, 55 feet, and 25 feet long), one 30-foot vertical shaft, and one 168-foot raise (possibly the inclined shaft). Little work seems to have been done on the property after 1962.

3.83.4 Environmental Conditions

3.83.4.1 Site Features

The Lost Cabin Mine was visited by William Rember on July 28, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:54:30-01:56:48). Documenting photographs are Roll R2, frames 13-14.
Although a shaft symbol is shown on the topographic map, only a series of trenches (or possibly caved adits?) was found at this prospect (Figure 3.83-2). The area is moderately timber-covered with some brush, and the trenches are only slight depressions on the surface with rock rubble along the sides. No waste dumps were found. The area has been logged, and the logging operations have altered the original workings. The disturbed area covers about 1 acre.

3.83.4.2 Sample Locations

3.83.4.2.1 Soil Samples
   No waste dump samples were collected at this site.

3.83.4.2.2 Water Samples
   No water samples were collected at this site.

3.83.5 Structures

   The collapsed remains of two cabins are located about 500 feet northwest of the trenches. The cabin locations are accurately shown on the topographic map.

3.83.6 Safety
   No safety hazards were found at this site.
Figure 3.83-1. Topographic map of the Lost Cabin Prospect, Kootenai County, Idaho (U.S. Geological Survey Lane 7.5-minute topographic map).
Figure 3.83-2. Sketch of the Lost Cabin Prospect.
3.84 BLUE FOX PROSPECT (Site No. SP-98)

3.84.1 Site Location and Access (Figure 2.1-1a)

The Blue Fox is located at the southeast end of Mineral Ridge and about 1 mile west of Elk Mountain near the SE corner of section 7, T. 49 N., R. 2 W., on the Mt. Coeur d'Alene 7.5-minute quadrangle (Figure 3.84-1). Access from Interstate 90 at Fourth of July Pass is south on Forest Service Road 614 to FS Road 1597, then west on FS Road 1597 past Elk Mountain about 1 mile. The prospect is along the saddle just west of knoll 4050 and is on Forest Service land.

3.84.2 Geologic Features (Figure 2.2-1a)

The Blue Fox Prospect is along a pale gray to cream-colored rhyolite dike cutting rocks of the Prichard Formation. Some milky-white quartz veins also cut the Prichard rocks.

3.84.3 Site History

This site was briefly prospected by the Blue Fox Mining Company, which was incorporated in 1926 and which forfeited its corporate charter the following year.

3.84.4 Environmental Conditions

3.84.4.1 Site Features

The Blue Fox Prospect was visited by William Rember on July 24, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:56:51-01:58:42). Documenting photographs are Roll R1, frames 22-24, and Roll R2, frames 1-2.

The Blue Fox Prospect consists of a series of exploration trenches and cuts (Figure 3.84-2) that appear to be of several ages. Five or six trenches have been cut along the road on the ridge top (Figure 3.84-3) to expose milky-white quartz veins. Two east-west cuts along the slope south of the ridge (Figure 3.84-4) are on a north-trending rhyolite dike about 100 feet wide. No sulfide mineralization was noted in any of the cuts. The exploration trenches cover an area of 2-3 acres.

3.84.4.2 Sample Locations

3.84.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.84.4.2.2 Water Samples
No water samples were collected at this site.
3.84.5 Structures
   No structures are present at this site.

3.84.6 Safety
   There are no safety problems at this site.
Figure 3.84-1. Topographic map of the Blue Fox Prospect, Kootenai County, Idaho (U.S. Geological Survey Mt. Coeur d'Alene 7.5-minute topographic map).
Figure 3.84-2. Sketch of the Blue Fox Prospect.
Figure 3.84-3. One of the trenches on the ridge top at the Blue Fox Prospect, looking east (Roll R1, frame #24).

Figure 3.84-4. Trench across the rhyolite dike that cuts the Prichard Formation at the Blue Fox Prospect, looking west (Roll R2, frame #2).
3.85 MCGILLIVRAY PROSPECT (Site No. SP-101)

3.85.1 Site Location and Access (Figure 2.1-1a)

The McGillivray Prospect is on the northeast side of Prado Creek about 1¼ miles northwest of County Road 1-C, which follows the west side of the Coeur d’Alene River. The prospect is near the center of the south edge of the SW¼ of section 12, T. 49 N., R. 1 E., on the Cataldo 7.5-minute quadrangle (Figure 3.85-1). Forest Service Road 255 follows the northeast side of Prado Creek, and the prospect is between the first switchback on FS Road 255 and the ridge top. This location is on Forest Service land just north of the National Forest boundary.

3.85.2 Geologic Features (Figure 2.2-1a)

The McGillivray Prospect is probably in the Burke Formation. The rocks in the area are cut by several northwest-trending faults, and both the Revett and St. Regis formations crop out close to the prospect (Griggs, 1973).

3.85.3 Site History

In 1957, several bulldozer cuts exposed a quartz vein on this prospect (IGS mineral property files).

3.85.4 Environmental Conditions

3.85.4.1 Site Features

The McGillivray Prospect was visited by John Kauffman on August 5, 1997. A video segment describing the prospect is on the Coeur d’Alene Basin (Secondary Properties) Videotape (Tape 3, index 01:58:44-02:01:43). No photographs were taken at this site.

Several old bulldozer cuts and trenches were found in the timber on the slope above Prado Creek. The cuts were overgrown with brush and fir trees 3-5 inches in diameter. The largest cut, a trench about 200 feet long near the top of the ridge, has an embankment about 15 feet high on the northeast side and 6 feet high on the southwest side. The total disturbed area is less than 0.1 acre.

3.85.4.2 Sample Locations

3.85.4.2.1 Soil Samples
No waste dump samples were collected at this site.

3.85.4.2.2 Water Samples
No water samples were collected at this site.
3.85.5 Structures
   No structures are present at this site.

3.85.6 Safety
   No safety problems exist at this site.
Figure 3.85-1. Topographic map of the McGillivray Prospect, Shoshone County, Idaho (U.S. Geological Survey Cataldo 7.5-minute topographic map).
3.86 BLUE JAY PROSPECT (Site No. SP-102)

3.86.1 Site Location and Access (Figure 2.1-1a)

The Blue Jay Prospect is on the southwest side of Elk Mountain near the western edge of the NW¼ of the NW¼ of section 16, T. 49 N., R. 2 W., on the Lane 7.5-minute quadrangle (Figure 3.85-1). Access from Interstate 90 at Fourth of July Summit is south on Forest Service Road 614 to FS Road 1597, then west on FS Road 1597 to Elk Mountain. The prospect is along FS Road 1597 on the southwest side of Elk Mountain about 100 feet below the top and is on Forest Service land.

3.86.2 Geologic Features (Figure 2.2-1a)

The Blue Jay Prospect is in siltite and argillite of the lower Prichard Formation (Griggs, 1973).

3.86.3 Site History

In 1941, the Lost Cabin Mining & Milling Company (not incorporated) held three claims on the top of Elk Mountain. The property had one 115-foot tunnel and a 40-foot vertical shaft.

3.86.4 Environmental Conditions

3.86.4.1 Site Features

The Blue Jay Prospect was visited by William Rember on July 24, 1997. A video segment describing the prospect is on the Coeur d'Alene Basin (Secondary Properties) Videotape (Tape 3, index 02:01:45-02:02:40). Documenting photographs are Roll R2, frames 8-10.

This prospect consists of a pit or trench that has been partly filled, or at least modified, by the construction of FS Road 1597 and a flat area below the road (Figure 3.86-2). The pit (Figure 3.85-3) is on the north side of the road. It is roughly equidimensional (about 20 feet across and 4-5 feet deep) and was dug to expose a milky-white quartz vein. The flat area on the south side of FS Road 1597, 50 feet long by 20 feet wide (Figure 3.85-4), may be material originally excavated from the trench and later leveled during construction of the road.

3.86.4.2 Sample Locations

3.86.4.2.1 Soil Samples

No waste dump samples were collected at this site.

3.86.4.2.2 Water Samples

No water samples were collected at this site.
3.86.5 Structures
    No structures are present at this site.

3.86.6 Safety
    There are no safety hazards at this site.
Figure 3.86-1. Topographic map of the Blue Jay Prospect, Kootenai County, Idaho (U.S. Geological Survey Lane 7.5-minute topographic map).
Figure 3.86-2. Pit or trench along FS Road 1597 at the Blue Jay Prospect, looking northwest (Roll R2, frame #10).

Figure 3.86-3. Grassy flat area below FS Road 1597 at the Blue Jay Prospect (Roll R2, frame #8).
BIBLIOGRAPHY


Appendix A
Field Questionnaire
PART A
(To be completed for all identified sites)

LOCATION AND IDENTIFICATION

ID# __________ Site Name(s) __________________________
FS Tract #: ________________ FS Watershed Code ________________
Forest __________________________ District ___________________
Location based on: GPS _____ Field Map _____ Existing Info _____ Other _____
Lat ______ Long _________ xutm _______ yutm _______ zutm _______
Quad Name ____________________ Principal Meridian ____________
Township __________ Range __________ Section __ 1/4 _______ 1/4 _____ 1/4
State _____ County ____________ Mining District _______________

Ownership of all disturbances:

_____ National Forest (NF)
_____ Mixed private and National Forest (or unknown)
_____ Private.

If private only, impacts from the site on National Forest Resources are

_____ Visually apparent _____ Likely to be significant _____ Unlikely or minimal

If all disturbances are private and impacts to National Forest Resources are unlikely or
minimal - STOP

PART B
(To be completed for all sites on or likely affecting National Forest lands)

SCREENING CRITERIA

Yes  No

_____ 1. Mill site or Tailings present
_____ 2. Adits with discharge or evidence of a discharge
_____ 3. Evidence of or strong likelihood for metal leaching, or AMD (water stains,
    stressed or lack of vegetation, waste below water table, etc.)
_____ 4. Mine waste in floodplain or shows signs of water erosion
_____ 5. Residences, high public use area, or environmentally sensitive area (as listed in
    HRS) within 200 feet of disturbance
_____ 6. Hazardous wastes/materials (chemical containers, explosives, etc)
_____ 7. Open adits/shafts, highwalls, or hazardous structures/debris
_____ 8. Site visit (If yes, take picture of site), Film number(s)

If yes, provide name of person who visited site and date of visit
Name: ______________________ Date: ______________________

If no, list source(s) of information (If based on personal knowledge,
provide name of person interviewed and date):

If the answers to questions 1 through 6 are all No - STOP

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PART C
(To be completed for all sites not screened out in Parts A or B)

Investigator ___________________________________ Date ____________
Weather __________________________

1. GENERAL SITE INFORMATION

*Take panoramic picture(s) of site, Film Number(s) ___________________________

Size of disturbed area(s) _____ acres   Average Elevation _____ feet
Access:  ____ No trail  ____ Trail  _____ 4wd only  ____ Improved road
        ____ Paved road

Name of nearest town (by road): ____________________________________________
Site/Local Terrain:  ____ Rolling or flat  ____ Foothills  ____ Mesa  ____ Mountains
        ____ Steep/narrow canyon

Local undisturbed vegetation (*Check all that apply):  ____ Barren or sparsely vegetated
____ weeds/grasses  ____ Brush  ____ Riparian/marsh
____ Deciduous trees  ____ Pine/spruce/fir

Nearest wetland/bog:  ____ On site,  ____ 0-200 feet,  ____ 200 feet-2 miles,  ____ > 2 miles

Acid Producers or Indicator Minerals:  ____ Arsenopyrite,  ____ Chalcopyrite,  ____ Galena,
____ Iron Oxide,  ____ Limonite,  ____ Marcasite,  ____ Pyrite,  ____
____ Pyrrhotite,  ____ Sphalerite,  ____ Other Sulfide
Neutralizing Host Rock:  ____ Dolomite,  ____ Limestone,  ____ Marble,  ____ Other Carbonate

2. OPERATIONAL HISTORY

Dates of significant mining activity _________________________________________

<table>
<thead>
<tr>
<th>MINE PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity (s)</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>(ounces)</td>
</tr>
</tbody>
</table>

Years that Mill Operated ____________________________________________

Mill Process:  ____ Amalgamation,  ____ Arrastre,  ____ CIP (Carbon-in-Pulp),  ____ Crusher
only,  ____ Cyanidation,  ____ Flotation,  ____ Gravity,  ____ Heap Leach,  ____ Jig Plant,  ____
Leach,  ____ Retort,  ____ Stamp,  ____ No Mill,  ____ Unknown

<table>
<thead>
<tr>
<th>MILL PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodity(s)</td>
</tr>
<tr>
<td>Production</td>
</tr>
<tr>
<td>(ounces)</td>
</tr>
</tbody>
</table>
3. HYDROLOGY

Name of nearest Stream ___________________________ which flows into ___________________________
Springs (in and around mine site): _____ Numerous _____ Several _____ None
Depth to Groundwater ___ ft, Measured at: ___ shaft/pit/hole ___ well ___ wetland
Any waste(s) in contact with active stream ___ Yes ___ No

4. TARGETS (Answer the following based on general observations only)

Surface Water
Nearest surface water intake ____ miles, Probable use _________________________________
Describe number and uses of surface water intakes observed for 15 miles downstream of site:
_____________________________________________________________________________
_____________________________________________________________________________

Wells
Nearest well ____ miles, Probable use _________________________________
Describe number and use of wells observed within 4 miles of site:
_____________________________________________________________________________
_____________________________________________________________________________

Population
Nearest dwelling ____ miles, Number of months/year occupied _______ months
Estimate number of houses within 2 miles of the site (Provide estimates for 0-200ft,
200ft-1mile, 1-2miles, if possible)
_____________________________________________________________________________
_____________________________________________________________________________

Recreational Usage
Recreational use on site: _____ High (Visitors observed or evidence such as tire
tracks, trash, graffiti, fire rings, etc.; and good access to site), _____ Moderate
(Some evidence of visitors and site is accessible from a poor road or trail), _____
Low (Little, if any, evidence of visitors and site is not easily accessible)
Nearest recreational area ____ miles, Name or type of area: __________________________

5. SAFETY RISKS

_____ Open adit/shaft, _____ Highwall or unstable slopes, _____ Unstable structures,
_____ Chemicals, _____ Solid waste including sharp rusted items, _____ Explosives
6. MINE OPENINGS

Include in the following chart all mine openings located on or partially on National Forest lands. Also, include mine openings located entirely on private land if a point discharge from the opening crosses onto National Forest land. In this case, enter data for the point at which the discharge flows onto National Forest land; you do not need to enter information about the opening itself.

**TABLE 1 - ADITS, SHAFTS, PITS, AND OTHER OPENINGS**

<table>
<thead>
<tr>
<th>Opening Number</th>
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</thead>
<tbody>
<tr>
<td>Type of Opening</td>
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<td></td>
</tr>
<tr>
<td>Ownership</td>
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<tr>
<td>Opening Length (ft)</td>
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<td></td>
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<tr>
<td>Opening Width (ft)</td>
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<tr>
<td>Latitude (GPS)</td>
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<tr>
<td>Longitude (GPS)</td>
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<td></td>
</tr>
<tr>
<td>Condition</td>
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<td></td>
</tr>
<tr>
<td>Ground water</td>
<td></td>
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</tr>
<tr>
<td>Water Sample #</td>
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<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments *(When commenting on a specific mine opening, reference opening number used in Table 1):*

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Type of opening:** ADIT=Adit, SHAFT=Shaft, Pit=Open Pit/Trench, HOLE=Prospect Hole, WELL=Well

**Ownership:** NF=National Forest, MIX=National Forest and Private (Also, for unknown), PRV=Private

**Condition (Enter all that apply):** INTACT=Intact, PART=Partially collapsed or filled, COLP=Filled or collapsed, SEAL=Adit plug, GATE=Gated barrier,

**Ground water (Water or evidence of water discharging from opening):** NO= No water or indicators of water, FLOW=Water flowing, INTER=Indicators of intermittent flow, STAND= Standing water only *(In this case, enter an estimate of depth below grade)*

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7. MINE/MILL WASTE

Include in the following chart all mine/mill wastes located on or partially on National Forest lands. Also, include mine/mill wastes located entirely on private land if it is visually effecting or is very likely to be effecting National Forest resources. In this case enter data for the point at which a discharge from the waste flows onto National Forest land, or where wastes have migrated onto National forest land; only enter as much information about the waste as relevant and practicable.

### TABLE 2 - DUMPS, TAILINGS, AND SPOIL PILES

<table>
<thead>
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<th>Waste Number</th>
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<tbody>
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<tr>
<td>Ownership</td>
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<td>Area (acres)</td>
<td></td>
</tr>
<tr>
<td>Volume (cu yds)</td>
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</tr>
<tr>
<td>Size of Material</td>
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</tr>
<tr>
<td>Wind Erosion</td>
<td></td>
</tr>
<tr>
<td>Vegetation</td>
<td></td>
</tr>
<tr>
<td>Surface Drainage</td>
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<td>Indicators of Metals</td>
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</tr>
<tr>
<td>Stability</td>
<td></td>
</tr>
<tr>
<td>Location with respect to Floodplain</td>
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</tr>
<tr>
<td>Distance to Stream</td>
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<tr>
<td>Water Sample #</td>
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<tr>
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<td>Soil Sample #</td>
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</tr>
<tr>
<td>Photo Number</td>
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</table>

**Codes Applicable for all entries:**
- NA = Not applicable
- UNK = Unknown
- OTHER = Explain in comments
- NO = NO or none

**Waste Type:**
- WASTE=Waste rock dump
- MILL=Mill tailings
- SPOIL=Overburden or spoil pile
- HIGH=Highwall
- PLACER=Placer or hydraulic deposit
- POND=Settling pond or lagoon
- ORE=Ore Stockpile
- HEAP=Heap Leach

**Ownership:**
- NF=National Forest
- MIX=National Forest and Private (Also, for unknown)
- PRV=Private

**Size of material** *(if composed of different size fractions, enter the sizes that are present in significant amounts):*
- FINE=Finer than sand
- SAND=sand
- GRAVEL=sand and <2".
- COBBLE=2"-6".
- BOULD>6"

**Wind Erosion**
- HIGH=Fine, dry material that could easily become airborne, airborne dust, or windblown deposits
- MOD=Moderate, Some fine material, or fine material that is usually wet or partially cemented
- LOW=Little if any fines, or fines that are wet year-round or well cemented

**Vegetation** *(density on waste):*
- DENSE=Ground cover > 75%
- MOD=Ground cover 25% - 75%
- SPARSE=Ground cover < 25%
- BARREN=Barren

**Surface Drainage** *(include all that apply):*
- RILL=Surface flow channels mostly < 1' deep
- GULLY=Flow channels >1' deep
- SEEP=Intermittent or continuous discharge from waste deposit
- POND=Seasonal or permanent ponds on feature
- BREACH=Breached
- NO=No indicators of surface flow observe

**Indicators of Metals** *(enter as many as exist):*
- NO=None
- VEG=Absence of or stressed vegetation
- STAIN=yellow, orange, or red precipitate
- SALT=Salt deposits
- SULF=Sulfides present

**Stability:**
- EMER=imminent mass failure
- LIKE=Potential for mass failure
- LOW=mass failure unlikely

**Location w/respect to Stream:**
- IN=In contact with normal stream
- NEAR=In riparian zone or floodplain
- OUT=Out of floodplain

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8. SAMPLES

Take samples only on National Forest lands.

**TABLE 3 - WATER SAMPLES FROM MINE SITE DISCHARGES**

<table>
<thead>
<tr>
<th>Sample Number</th>
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<tbody>
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</tr>
<tr>
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<td>Feature Number</td>
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<td>Indicators of Sedimentation</td>
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<tr>
<td>Distance to stream (ft)</td>
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<tr>
<td>Sample Longitude</td>
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<td>Photo Number</td>
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Comments: *(When commenting on a specific water sample, reference sample number used in Table 3):*

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**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Discharging From:** ADIT=Adit, SHAFT=Shaft, PIT=Pit/Trench, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, WELL=Well

**Feature Number:** Corresponding number from Table 1 or Table 2 *(Opening Number or Waste Number)*

**Indicators of Metal Release** *(Enter as many as exist):* NO=None, YEG=Absence of, or stressed vegetation/organisms in and along drainage path, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SUF=Sulfides present, TURB=Discolored or turbid discharge

**Indicators of Sedimentation** *(enter as many as exist):* NO=None, SLIGHT=Some sedimentation in channel, banks and channel largely intact, MOD=Sediment deposits in channel, affecting flow patterns, banks largely intact, SGN=Sediment deposits in channel and/or along stream banks extending to nearest stream

**Method of Measurement:** EST=Estimate, BUCK=Bucket and time, METER=Flow meter
<table>
<thead>
<tr>
<th>Location relative to mine site/features</th>
<th>Upstream (Background)</th>
<th>Downstream</th>
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<tbody>
<tr>
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<tr>
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<tr>
<td>Field SC</td>
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<tr>
<td>Flow (gpm)Method of measurement</td>
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<td>Method of measurement</td>
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</tr>
<tr>
<td>Photo Number</td>
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</tbody>
</table>

Comments: *(When commenting on a specific water sample, reference sample number used in Table 4)*:

---

**Codes Applicable for all entries:** NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

**Indicators of Metal Release** *(Enter as many as exist)*: NO=None, VEG=Absence of, or stressed streamside vegetation/organisms in and along drainage path, STAIN=yellow, orange, or red precipitate, SALT=Salt deposits, SULF=Sulfides present, TURB=Discolored or turbid discharge

**Indicators of Sedimentation** *(Enter as many as exist)*: NO=None, SLIGHT=Some sedimentation in channel, natural banks and channel largely intact, MOD=Sediment deposits in channel, affecting stream flow patterns, natural banks largely intact, SIGN=Sediment deposits in channel and/or along stream banks extending 1/2 a mile or more downstream

**Method of Measurement**: EST=Estimate, BUCK=Bucket and time, METER=Flow meter

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# TABLE 5 - WASTE SAMPLES

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Date of sample</th>
<th>Sampler (Initials)</th>
<th>Sample Type</th>
<th>Waste Type</th>
<th>Feature Number</th>
<th>Sample Latitude</th>
<th>Sample Longitude</th>
<th>Photo Number</th>
</tr>
</thead>
</table>

Comments: *(When commenting on a specific waste or soil sample, reference sample number used in Table 5):*

Codes Applicable for all entries: NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

Sample Type: SING=Single sample, COMP=composite sample (enter length)

Waste Type: WASTE=Waste rock dump, MILL=Mill tailings, SPOIL=Overburden or spoil pile, HIGH=Highwall, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon sludge, ORE=Ore Stockpile, HEAP=Heap Leach

Feature Number: Corresponding number from Table 2 *(Waste Number)*
<table>
<thead>
<tr>
<th>Sample Number</th>
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<td>Sample Longitude</td>
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<tr>
<td>Likely Source of Contamination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feature Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indicators of Contamination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Photo Number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: *(When commenting on a specific waste or soil sample, reference sample number used in Table 6):*

Codes Applicable for all entries: NA= Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none

Sample Type: SING=Single sample, COMP=Composite sample (enter length)

Likely Source of Contamination: ADIT=Adit, SHAFT=Shaft, PIT=Open Pit, HOLE=Prospect Hole, WASTE=Waste rock dump, MILL=Milling, SPOIL=Overburden or spoil pile, PLACER=Placer or hydraulic deposit, POND=Settling pond or lagoon, ORE=Ore Stockpile, HEAP=Heap Leach

Feature Number: Corresponding number from Table 1 or 2 (Opening or Waste Number)

Indicators of Contamination *(Enter as many as exist)*: NO=None, VEG=Absence of vegetation, PATH=Visible sediment path, COLOR=Different color of soil than surrounding soil, SALT=Salt crystals
### 9. HAZARDOUS WASTES/MATERIALS

<table>
<thead>
<tr>
<th>Waste Number</th>
<th>Type of Containment</th>
<th>Condition of Containment</th>
<th>Contents</th>
<th>Estimated Quantity of Waste</th>
</tr>
</thead>
</table>

**Comments:** *(When commenting on a specific hazardous waste or site condition, reference waste number used in Table 7):*

---

**Codes Applicable for all entries:**
- **NA** = Not applicable
- **UNK** = Unknown
- **OTHER** = Explain in comments
- **NO** = NO or none

**Type of Containment:**
- **NO** = None
- **LID** = drum/barrel/vat with lid
- **AIR** = drum/barrel/vat without lid
- **CAN** = cans/jars
- **LINE** = lined impoundment
- **EARTH** = unlined impoundment

**Condition of Containment:**
- **GOOD** = Container in good condition, leaks unlikely
- **FAIR** = Container has some signs of rust, cracks, damage but looks sound, leaks possible
- **POOR** = Container has visible holes, cracks or damage, leaks likely
- **BAD** = Pieces of containers on site, could not contain waste

**Contents:**
- from label if available, or guess the type of waste, e.g., petroleum product, solvent, processing chemical.

**Estimated Quantity of Waste:**
- Quantity still contained and quantity released

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10. STRUCTURES

For structures on or partially on National forest lands.

<table>
<thead>
<tr>
<th>TABLE 8 - STRUCTURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Condition</td>
</tr>
<tr>
<td>Photo Number</td>
</tr>
</tbody>
</table>

Comments:

Codes Applicable for all entries: NA=Not applicable, UNK=Unknown, OTHER=Explain in comments, NO=NO or none
Type: CABIN=Cabin or community service (store, church, etc.), MILL=mill building, MINE=building related to mine operation, STOR=storage shed, FLUME=Ore Chute/flume or tracks for ore transport
Number: Number of particular type of structure all in similar condition or length in feet
Condition: GOOD=all components of structure intact and appears stable, FAIR=most components present but signs of deterioration, POOR=major component (roof, wall, etc) of structure has collapsed or is on the verge of collapsing, BAD=more than half of the structure has collapsed

11. MISCELLANEOUS

Are any of the following present? (Check all that apply): ___ Acrid Odor, ___ Drums, ___ Pipe, ___ Poles, ___ Scrap Metal, ___ Overhead wires, ___ Overhead cables, ___ Headframes, ___ Wooden Structures, ___ Towers, ___ Power Substations, ___ Antennae, ___ Trestles, ___ Powerlines, ___ Transformers, ___ Tramways, ___ Flumes, ___ Tram Buckets, ___ Fences, ___ Machinery, ___ Garbage

Describe any obvious removal actions that are needed at this site:

General Comments/Observations (not otherwise covered)

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12. SITE MAP

Prepare a sketch of the site. Indicate all pertinent features of the site and nearby environment. Include all significant mine and surface water features, access roads, structures, etc. Number each important feature at the mine site and use these number throughout this form when referring to a particular feature (Tables 1 and 2). Sketch the drainage routes off the site into the nearest stream.
13. RECORDED INFORMATION

Owner(s) of patented land
Name: ________________________________
Address: ________________________________
Telephone Number: ________________________________

Claimant(s)
Name: ________________________________
Address: ________________________________
Telephone Number: ________________________________

Surface Water (From water rights)
Number of Surface Water Intakes within 15 miles downstream of site used for:
____ Domestic, ____ Municipal, ____ Irrigation, ____ Stock,
____ Commercial/Industrial, ____ Fish Pond, ____ Mining,
____ Recreation, ____ Other

Wells (From well logs)
Nearest well _____ miles
Number of wells within: _____ 0-1/4 miles _____ 1/4-1/2 miles, _____ 1/2-1 mile
____ 1-2 miles _____ 2-3 miles _____ 3-4 miles of site

Sensitive Environments
List any sensitive environments (as listed in the HRS) within 2 miles of the site or along receiving
stream for 15 miles downstream of site (wetlands, wilderness, national/state park, wildlife refuge,
wild and scenic river, T&E or T&E habitat, etc):

________________________________________

Population (From census data)
Population within: _____ 0-1/4 miles _____ 1/4-1/2 miles _____ 1/2-1 mile
____ 1-2 miles _____ 2-3 miles _____ 3-4 miles of site

Public Interest
Level of Public Interest: ____ Low, ____ Medium, ____ High
Is the site under regulatory or legal action? _____ Yes, _____ No

Other sources of information (MILs #, MRDS #, other sampling data, etc):

________________________________________
Appendix B
Database Fields
NEWLOC
WA 1
ORANGENUM
   451
MAPLOC
   1
DEPOSIT
Eagle Creek Mine

MRDSREC
MILSREF
0160790528
PERIODPROD

ORE
COMMOD
Au
REFERENCE

LATITUDE
474325
LONGITUDE
1154916
HARDFILE
N
MLA
NAME
EAGLE CREEK MINE
SEC
33
SUBSEC
NESE
TWN
051 N
RNG
005 E
DDMMSS
474325
DDMMSS
1154904
OPTYP
SURFAC
STATUS
PAST PRO
COMM01
GOLD
COMM02
COMM03
COMM04
COMM05

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Appendix C
Geochemical Data
GEOCHEMICAL DATA

ACCURACY OF GEOCHEMICAL DATA

The following information was received on the subject of the accuracy and the detection limits for the geochemical data presented in this report:

Date: Fri, 24 Oct 1997 10:48:23 PST8PDT
From: Kim Anderson <kanderson@asl.fs.uidaho.edu>
To: Ruth E Vance <rvance@uidaho.edu>
Subject: Re: detection limit accuracy

That is something I put together some years ago for another client. Also Greg Moller [Technical Director, Analytical Sciences Laboratory] had input. Other than that, the refs are included in the discussions I sent [discussion titled “Practical Quantitation Limits”; see next page].

Good Luck
Kim,

Kim A. Anderson, Ph.D.
Asst. Prof. / Food Science and Toxicology Dept.
Chief Chemist / Analytical Sciences Laboratory
University of Idaho
Moscow, Idaho 83844-2201
208-885-7900/FAX 209-885-8937
Practical Quantitation Limits

Sensitivity of an analytical method is often based on its ability to reproducibly detect target analytes above the method noise level. Several similar definitions of this Minimum Detection Level or Limit (MDL) or Limit of Detection (LOD) are currently used. According to the American Chemical Society (ACS) (Principles of Environmental Analysis, p 9):

Limit of detection (LOD) "is defined as the lowest concentration level that can be determined as statistically different from the blank".

Instrument detection limit (IDL) "is the smallest signal above background noise that an instrument can detect reliably and is often equivalent to the LOD".

Method detection limit (MDL) "is the lowest concentration of analyte that can that a method can detect reliably in either a sample or a blank".

ACS recommends the value of LOD to be $3\sigma$ for a 99% confidence level, where $\sigma$ is the standard deviation of the measurement.

Limit of Quantitation (LOQ) "is defined as the level above which quantitative results may be obtained with a specified degree of confidence".

ACS recommends an LOQ of $10\sigma$ and this imparts a quantitative measurement uncertainty of $+/-30\%$ in the measured value at this 99% confidence level. ACS contends "quantitative interpretation, decision-making and regulatory actions should be limited to data at or above the limit of quantitation". In particular, ACS states: "Analytical chemists must always emphasize to the public that the single most important characteristic of any result obtained from one or more analytical measurements is an adequate statement of its uncertainty level. Lawyers usually attempt to dispense with uncertainty and try to obtain unequivocal statements; therefore, an uncertainty interval must be clearly defined in cases involving litigation and/or enforcement proceedings. Otherwise, a value of 1.001 without a specified uncertainty, for example, may be viewed as legally exceeding a permissible level of 1."

EPA Methods used for regulatory enforcement use the same definition of MDL. "The method detection limit is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero". Since performance of analytical methodology and therefore detection limits vary significantly with non-controllable laboratory to laboratory variables such as the exact type of analytical instrumentation, EPA promulgates the concept of Practical Quantitation Limits (PQL). A PQL is equal to the MDL multiplied by a factor of ten or greater and are published as a general guide to laboratory method performance. The factors can range from ten to ten thousand depending on sample matrix and are intended to allow the laboratory the flexibility to determine the relative performance of an analytical method in a more complex sample matrix. In confirmation of laboratory variability, EPA methods as well as
other published analytical methods often estimate detection limits and quantitation limits using a bench-level expert, performance estimate.

Recognition of the 'average performance' nature of the PQL guidelines, EPA states that PQL's "are the lowest concentrations of analytes in (samples) that can be reliably determined within specified limits of precision and accuracy by the indicated methods under routine laboratory operating conditions. The PQL's listed are generally stated to one significant figure. CAUTION: The PQL values in many cases are based only on a general estimate for the method and not on a determination for the individual compounds; PQL's are not a part of the regulation (40 CFR Part 264 Appendix IX, Footnote 6)."
SEE

FOLDER:

Geochem_data

For data
Appendix D
Field Forms for Properties in the Study Area
SEE

FOLDER:

Field_forms

For data
Appendix E
Reports Completed for U.S. Forest Service, Region 1, Field Inspection Program
1997 Reports


1998 Reports


1999 Reports


Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle
National Forest: Volume V (Section A): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 250 p., 1 videotape.

Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section B): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 211 p., 1 videotape.

Kauffman, John, E.H. Bennett, and V.E. Mitchell, 1999, Site inspection report for the abandoned and inactive mines in Idaho on U.S. Forest Service lands (Region 1), Idaho Panhandle National Forest: Volume V (Section C): Coeur d'Alene River drainage surrounding the Coeur d'Alene mining district (excluding the Prichard Creek and Eagle Creek drainages) [secondary properties]: Idaho Geological Survey unpublished report, 225 p., 1 videotape.