Site Inspection Report for the Abandoned and Inactive Mines in Idaho on U.S. Bureau of Land Management Property in the Lemhi Pass Area, Lemhi County, Idaho

Virginia S. Gillerman
Bruce Otto
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Moscow, Idaho 83844-3014

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Field inspection conducted by Virginia Gillerman, Bruce Otto, and Forrest Griggs
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GEOLOGY

PREVIOUS WORK

Lemhi Pass is located at the crest of the Beaverhead Mountains on the boundary of Idaho and Montana. It’s first description was in the journals of the Lewis and Clark Expedition, whose Advance Party crossed Lemhi Pass, along a Shoshoni Indian hunting trail, on August 12, 1805. Captain Lewis recorded their entry into Idaho, “...I now descended the mountain about 3/4 of a mile which found much steeper than on the opposite side, to a handsome bold running Creek of cold Clear water. Here I first tasted the water of the great Columbia river ...” Their guide, Sacajawea, was reunited with her Shoshoni Nation, in the Lemhi Valley.

Westward expansion had begun, and prospectors and miners soon followed into the new Idaho Territory. Not far below Lemhi Pass, the Copper Queen mine, located just off Agency Creek, produced about $100,000 worth of copper ore between 1893 and 1910, with sporadic production since then (Staatz, 1979). Anderson (1961) notes that the Copper Queen ores consisted of quartz-bornite veins and fissure fillings with lesser chalcopyrite and gold.

However it was not until the discovery in 1949 of thorium mineralization, that the district saw much activity. Found by radiometric surveys, the discovery started a staking rush in the Lemhi Pass area that lasted until approximately 1957. Many new claims and prospects were discovered using the newly available Geiger counters and scintillometers. Some of the exploration was conducted under joint sponsorship of the federal government, through the U.S. Atomic Energy Commission and the DMEA program, and private companies (Anderson, 1958). Much bulldozer prospecting was done. Anderson reported that while some thorite was mined and concentrated in 1959, many operations were only in the planning stage.

More comprehensive geologic investigations by the U.S. Atomic Energy Commission and the U.S. Geological Survey soon followed, including papers by Sharp and Cavender (1962); Staatz (1972); Staatz, et al. (1972); and Staatz (1979). In addition, A.L. Anderson (1958, 1961a,b) working for the Idaho Bureau of Mines and Geology investigated the geology and mineral resources of Lemhi Pass and nearby areas, documenting a number of uranium, thorium, and rare earth deposits in the greater Salmon region. In the opinion of the present authors, Anderson’s descriptions of the deposits and the geologic history of the area are frequently more accurate than the later work by Staatz (1979).

All workers agree that the Lemhi Pass District covers a very large area on the west slope and summit of the Beaverhead Mountains, approximately 26 miles southeast of the town of Salmon. They also agree that the thorium deposits are hosted in folded and faulted impure quartzites and phyllitic rocks of Precambrian age, generally part of the Proterozoic-age Belt series. The correlation and stratigraphy of the numerous Proterozoic quartzites of the Salmon region is still a hotly debated issue, and one which will not be part of this report. Tertiary-age volcanic rocks overlie the quartzites in part of the district. The mapping of Staatz and more recent thesis mapping shows the volcanics with principally faulted contacts against the older metasediments. The volcanic rocks in the region are mid-Eocene (45-49 m.y.a.) in age, according to K-Ar age dating by more recent work (Janecke et al., 2000; Blankenau, 1999).
Site Map for the Lemhi Pass Area Mines.

Figure 1: Area map of the Lemhi Pass area Mines and Prospects, Lemhi County, Idaho.
We noted a propylitically altered mafic dike exposed in one of the Copper Queen adits, but its age and relationship to mineralization was not clear. Nor is it shown on other maps. The copper veins at the Copper Queen are thought to be older than the thorium veins, but that is uncertain, and based on one underground report in the literature.

Staatz (1979) mapped approximately 250 veins in the district, which extends into Montana. The thorium veins range in length from a few feet to several thousand feet long, and in width from a few inches to 40 feet wide. Staatz (1979) reported that the indicated thorium oxide resource in the district was 176,500 tons of ThO$_2$, with the ten largest veins having an average grade of 0.43 percent ThO$_2$. Some ores contained several percent of thorium dioxide. However, since the thorium market apparently collapsed shortly after the U.S.G.S. investigations, the veins are still unmined, and many of the workings have caved, leaving only a number of bulldozer prospects and a few old adits to show to modern geologists. Many of the thorium veins also contain substantial concentrations of Rare Earth Elements (REE), with analysis in the percent range.

ORE MINERALOGY AND TEXTURE

Several vein types are found in the district. In general, they are:

Quartz-hematite (common)
Copper veins (Copper Queen mine)
Thorium veins (Buffalo mine, Lucky Horseshoe mine, others)

A few thorium veins also contain copper, as at Wonder Lode. The country rock is a fine-grained micaceous quartzite. The Lucky Horseshoe mine is unusual in having a siltite/phyllite host rock.

Ore mineralogy is unique and very complex:

<table>
<thead>
<tr>
<th>Common Minerals</th>
<th>Also Found</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specular hematite</td>
<td>Xenotime</td>
</tr>
<tr>
<td>Quartz</td>
<td>Euxenite</td>
</tr>
<tr>
<td>Feldspar</td>
<td>Pyrite</td>
</tr>
<tr>
<td>Barite</td>
<td>Magnetite</td>
</tr>
<tr>
<td>Thorite (ThSiO4)</td>
<td>Calcite</td>
</tr>
<tr>
<td>Monazite</td>
<td>Siderite</td>
</tr>
<tr>
<td>Apatite</td>
<td>Many Others</td>
</tr>
<tr>
<td>Allanite</td>
<td></td>
</tr>
<tr>
<td>Biotite</td>
<td></td>
</tr>
<tr>
<td>Sericite</td>
<td></td>
</tr>
<tr>
<td>Hydrous Iron Oxides (secondary)</td>
<td></td>
</tr>
</tbody>
</table>

Microcline feldspar, quartz, and specular hematite constitute the principal gangue minerals. Thorite is the most common ore mineral, but at the Lucky Horseshoe mine, allanite and probably monazite predominate. This would account for the high REE contents of that ore. Texturally, the ore minerals "may occur irregularly through the broad zones of sheared or
otherwise fractured rock, usually in greater concentration in areas of more extensive fracturing than in other areas.” (Anderson, 1961) Staatz generally describes the thorium veins as “veins”, but notes that at the Lucky Horseshoe mine, the “workings expose highly sheared rocks” and the country rock is unusual in being a siltite. “The vein is brecciated, black to gray, and commonly contains augen of light-colored unfractured feldspar and quartz surrounded by a granulated dark-gray matrix. Shearing of vein material gives it a marked foliation, and the vein commonly resembles a banded gneiss.” (Staatz, 1979, p. 54) Gangue minerals noted by Staatz at the Lucky Horseshoe mine are microcline, quartz, specularite, and biotite with allanite being the most abundant ore mineral with lesser dark red thorite and dark-brown monazite. Samples assayed up to 1 % ThO₂ with up to 10% REE. Most of the “veins” are highly oxidized; exposures are limited to small open pits and bulldozer scraps. The Lucky Horseshoe mine is unique in exposing fresh mineralization showing only minimal supergene weathering.

AGE OF MINERALIZATION

Anderson (1958) recognized that the Tertiary volcanics were deposited on an uneven erosional surface on the much older Precambrian quartzites, implying that the thorium veins were older than the volcanics. He also noted that similar thorite veins are found in the Diamond Creek area, near the town of Salmon. The Diamond Creek veins cut Precambrian quartzite but also a granitic rock which Anderson correlated with the Cretaceous-age Idaho Batholith. Thus, he suggests that the thorium-REE mineralization took place after the Cretaceous magmatic activity. This interpretation hinges on correlating the Lemhi Pass veins with those at Diamond Creek (not examined in this investigation), and on the age of the granite at Diamond Creek. Many Proterozoic granitic rocks, including a 1370 million year old rapakivi granite, outcrop in the Salmon region.

Staatz (1979) concluded “The veins in this district are middle Tertiary or younger in age and were formed after both the Challis volcanics and the diorite were emplaced. The copper veins are somewhat older than the thorium ones. The latter are believed to have formed from fluids derived from magma that formed buried alkalic rocks.” He noted that most strike northwest with a steep dip and “thorium veins are generally found along small fractures and shears that are related to faulting of Tertiary age.”

However, field observations made during the course of this examination of AML sites suggests an alternate hypothesis. Field relations suggest that it is equally likely that the thorium mineralization predated the Tertiary structures cited by Staatz. Indeed, we found evidence that thorium mineralization at Site 00006 might actually be cut off by a Tertiary fault and/or covered by Tertiary rocks. At Lemhi Pass a Tertiary conglomerate with large rounded cobbles and volcanic matrix infills the Lemhi Pass Fault-bounded graben of Staatz, suggesting that the fault valley was present prior to Eocene volcanism. A 4-inch diameter, rounded cobble of non-radioactive, specularite “ironstone” was found as float near the Copper Queen road. This implies that at least some of the iron mineralization predates the Eocene. Janecke et al. (2000) also concluded, from independent, sedimentological evidence, that there were two large Eocene-age paleovalleys extending across the Cretaceous thrust belt in the Beaverhead Mountains. Since none of the thorium or copper mineralization is found in the Tertiary rocks, it seems most likely
that the mineralization predates the formation of the valleys and must be Cretaceous or older in age. In addition, the style of mineralization is more typical of higher temperature, ductile deformation and metasomatism, more typical of Precambrian processes. A more accurate age determination of the thorium and copper mineralization is needed to explain the origin of the deposits and to better understand the geologic history of the region.

COMPARISON TO PROTEROZOIC FeOx-Cu-Au-U-REE DEPOSITS

Subsequent to the 1976 discovery of the giant Olympic Dam deposit in Australia, geologists have recognized a “new” Proterozoic deposit type with considerable economic potential. Hitzman et al. (1992) summarized the previous literature and characteristics of these “Olympic Dam type deposits,” which he designated Proterozoic iron oxide (Cu-U-Au-REE) deposits. Olympic Dam of course is a giant ore deposit with reserves of over 2000 million metric tons of 1.6% Cu, 0.06% UO₂, 0.6 g/metric ton Au, and 3.5 g/metric ton Ag. It is hosted in the Stuart Shelf region of South Australia, in a mid-Proterozoic age granitic basement cut by a number of hematitic breccias. The breccia complex is apparently related to an intra-continental rift zone which was the locus of considerable hydrothermal and tectonic activity. Since then, other deposits of varying size have been recognized as having similarities to Olympic Dam. Table 1 on the following page contains a summary of these deposits (after Hitzman et al., 1992) and the Lemhi Pass deposits.

CONCLUSIONS ON GEOLOGY OF LEMHI PASS AREA

Even our brief examination of the ten properties described in this report revealed a number of structural and petrological features of the deposits and host rocks which are not adequately explained in work by Staatz and other previous workers. A number of low-angle faults were observed in the mine workings. A combination of several contacts and steep normal faults shown on the map by Staatz could just as easily be redrawn as low-angle faults and unconformities over a surface of considerable relief. For example, at the Copper Queen mine, flat structures shown in adits could be minor structures mirroring a more major one. The low-angle faults may be pre-Tertiary transpressional (strike-slip plus compression/extension) faults, Cretaceous thrusts, Tertiary detachments or inherited older structures. Recent work by Janecke and her students (Blankenau, 1999) may help elucidate some of the Tertiary volcanic and sedimentological history of the area.

It is our conclusion that the Lemhi Pass Fault Zone, as defined by Staatz, is not strictly a Tertiary fault although minor Tertiary faulting along its margins may have occurred. Rather, the topographic feature was a pre-existing valley, possibly of structural origin, filled in with Tertiary volcanics, probably of Challis affinity (approximately 45-50 m.y.a.). The presence of well-rounded cobbles in conglomerate along the volcanic/metasediment contact suggests a pre-Tertiary erosional surface rather than Tertiary faulting. Janecke, et al. (2000) also concluded from totally independent evidence, based on provenance of the Tertiary conglomerates and
Table 1: Comparison of Lemhi Pass Thorium deposits to Proterozoic FeOx-Cu-Au-U-REE Olympic Dam type deposits.

<table>
<thead>
<tr>
<th>GENERAL CHARACTERISTICS</th>
<th>LEMHI PASS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>Early to mid-Proterozoic (1.1-1.8 billion years old).</td>
</tr>
<tr>
<td><strong>Tectonic setting</strong></td>
<td>Cratonic / continental margin during Lower to Mid-Proterozoic, extensional environment likely.</td>
</tr>
<tr>
<td><strong>Mineralogy</strong></td>
<td>Iron Oxide (magnatite, hematite) dominate ores, with carbonate, Ba, P, or F minerals common. REE sub to economic concentrations in apatite or REE phases.</td>
</tr>
<tr>
<td><strong>Alteration</strong></td>
<td>Intense, variable with sodic to potassic and/or Fe metasomatisim, dependent on host rock type and depth.</td>
</tr>
<tr>
<td><strong>Structure</strong></td>
<td>Discordant to concordant morphology, breccias common.</td>
</tr>
<tr>
<td><strong>Origin</strong></td>
<td>Possible relation to deep-seated, volatile-rich igneous hydrothermal systems tapped by deep structures.</td>
</tr>
</tbody>
</table>
thicknesses of the volcanics, that the volcanics filled a pre-Eocene valley eroding the structural high resulting from Cretaceous overthrusting. The volcanic-filled valley could hide an older, major structural feature.

Both our field observations and previous workers note that thorium mineralization is found only in the Proterozoic metasedimentary rocks and not in the Tertiary rocks. In the field it seems to be truncated by the unconformity or Tertiary faults, rather than controlled by them. Thus, we suggest that the thorium (and copper) mineralization predates the Tertiary volcanics. It could easily be Precambrian in age, although any pre-Tertiary age can not be ruled out at this point. The style of both copper and thorium deposits suggest fairly hot temperatures and moderately deep environments; this is distinctly different from known Tertiary mineralization in Idaho or the region.

At the well-exposed Lucky Horseshoe mine, thorium-bearing minerals and associated gangue, such as specularite, biotite, and feldspar, exhibit a syntectonic schistose to cataclastic fabric (Black Breccia and Schistose Specularite). Quartz of all generations shows strain, suggesting that mineralization was contemporaneous with deformation, metamorphism and metasomatism. The shear fabric seems to contain at least two directions of incipient foliation and an elongation direction of N70W, with nearly 0 degree plunge. This could match nearly isoclinal fold axes, with mineralization concentrated in the fold noses, or in related shears. Such a complex pattern might explain the sporadic distribution of the “veins” in the district.

At the Lucky Horseshoe mine, the most radioactive rocks are clearly confined to the most sheared and metasomatized units. A third rock type, the tan feldspar unit, is considerably less radioactive, and appears to be a late nearly opaline silica overprint. It is the only sample with open-space fractures and veins. It could reflect Tertiary hydrothermal activity or be a late-stage of older mineralization. Much more work would need to be done to unravel the structural complexities of the area.

The similarity of the Lernhi Pass Thorium District to the characteristics of Proterozoic Iron Oxide Cu-U-Au-REE deposits goes far beyond coincidence. We suggest that the thorium deposits at Lemhi Pass, and other deposits in the region should be re-examined, both academically and economically, in light of this association. The close similarity alone is sufficient to strongly suggest a Proterozoic age for the thorium and copper mineralization.
HAZARD ASSESSMENT

SUMMARY

Physical safety hazards in the Lemhi Pass area are limited primarily to the presence of underground openings at historic mine workings and prospects. Hazards defined by this field evaluation are summarized in Table 2 on the following page. Figure 2 is a map of the site locations discussed in this report. All sites were field visited during the summer of 2000. The physical hazards vary in significance, primarily by their visibility and ease or difficulty of access. The primary danger is with open adits, and four of the ten sites have these features. Many of the open historic mine workings are out of view from the roadways, are not easily recognized from afar, and therefore pose little danger. Others are located close to easily accessible terrain and present a somewhat greater risk. The greatest risk associated with the open adits is near or at portals, where most have been partially sloughed shut by caving and soil creep, and grown over with vegetation. Internally, most of the open adits are developed in quartzite and appear from the outside to be in reasonably good shape.

Most of the historic disturbance in the thorium district consists of shallow prospect pits, cat cuts and hillside-parallel trenches, and access roads. These features have largely sloughed in and are naturally re-vegetating with indigenous grass, shrubs and locally, small trees. In most instances steep cut-banks have acquired the natural angle of repose and do not pose a threat to migrating wildlife or humans. Field observers during this study recognized that numerous trenches and prospect pits are being used extensively by wildlife, primarily as bedding and feeding areas for deer and elk.

Environmental hazards, where present, are due to radioactivity associated with the thorium mineralization. The danger to a casual visitor would be primarily from inhaling radioactive dust particles, which may be present at several of the sites. Of these, Site 00004 is clearly the "hottest" and exposes the most radioactive rock. However, particulate matter at Sites 00006 and 00010 offer lower level exposure risks as well. Following are summaries of the physical and environmental characteristics of each site evaluated.

SITE ID-0485-00001: SUMMERWELLS ADIT (DU 47)

Summerwell's Adit is located on a steep hillslope above the Agency Creek road, in the east half of Section 16, T19N R25E (Lemhi Pass 7.5' Quadrangle). Summerwell's Adit is located, apparently, on land owned by the State of Idaho. The workings are not easily visible from the roadway, and access to the property requires a cross-country hike over very steep terrain. The property has two shallow prospect pits and one partially open adit. The portal of the adit is partially caved, but accessible. The adit is 220 feet in length and has several short crosscuts turn that from it (Sharp and Cavender, 1962). The prospect pits pose no physical hazard. Recorded radiation levels represent the regional background. Sulfide minerals are not present in a quantity adequate to create an acid rock drainage problem, and none of the mine dump material encroaches on waterways. The site should be considered in a low risk category.
The Copper Queen Mine is located along the South Fork of Agency Creek, approximately one half mile south of its confluence with Agency Creek, in the northern most part of section 22, T19N R25E (Lemhi Pass 7.5' Quadrangle). The mine and all significant hazards at the site are located on the Copper Queen patented lode claim (USMS 993), which is bordered on the north by land administered by Salmon National Forest and on the south by BLM. A single-track road used frequently by the public follows the creek, providing access to the old mine workings.

The mine exploited a shear-zone-hosted quartz vein system on 7 levels, three of which are below stream level and 4 above. The three levels below stream grade were accessed through a 400-foot shaft (Umpleby, 1913). The shaft and a nearby vent raise are badly caved, though they remain partially open and present a hazard to visitors. The sub-stream-grade workings accessed by the shaft are inaccessible and pose no risk.

The four levels above stream grade were accessed by tunnels that open to surface along the eastern side of the drainage, and are spaced at approximately 100-foot vertical intervals along the trace of the vein. Three of these adits and two stopes that have caved to surface are very accessible and present a major hazard to the public. All the workings are located on a patented claim.

Three historic structures are present on the patented claim and are located adjacent to the road. The buildings are in disrepair and are currently unusable. The buildings pose a slight risk to curious trespassers. The only hazard that appears to be located on BLM-administered land is Adit 7 which is open and has had visitors. Three additional adits occur on BLM land, but they are caved. The open adit presents a moderate risk and has been posted with warning signs indicating this danger. However, in a second visit a few weeks later, the sign had been removed. The other caved adits are small and inconspicuous, and pose no physical or environmental risk. The Copper Queen Mine is considered a high risk site due to its physical hazards adjacent to a major recreation road.
Table 2: Summary of the Lemhi Pass area sites in Lemhi County, Idaho. Site name in bold indicates property has significant potential environmental or physical hazards. Under “Environmental Hazards”: T=a mill tailings problem, D= dump material in or near waterway, WQ= potentially poor water quality. Under “Physical Hazards”: Features: A= adit, P= prospect pit, S= shaft, St= stope; Condition: O= open, C= caved, ?= Unknown (condition or number).

<table>
<thead>
<tr>
<th>BLM Site Number (Corrected GPS Data File)</th>
<th>IGS Property Number</th>
<th>Mine Name</th>
<th>Environment Hazard</th>
<th>Physical Hazard</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID-0485-00001</td>
<td>DU 47</td>
<td>Summerwell’s Adits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID-0485-00002</td>
<td>DU 64</td>
<td>Copper Queen Mine</td>
<td>3D</td>
<td>6AO 2SO 4StO 5AC 1SC</td>
<td>Open adits, stopes, shaft easily accessible</td>
</tr>
<tr>
<td>ID-0485-00003</td>
<td>DU 64M</td>
<td>Copper Queen Mill</td>
<td>1T 1D</td>
<td>1?</td>
<td>Tailings eroded by stream, mill building collapsing</td>
</tr>
<tr>
<td>ID-0485-00004</td>
<td>DU 36</td>
<td>Lucky Horseshoe Mine</td>
<td>1?</td>
<td>2AO</td>
<td>2 Open adits, Radioactivity</td>
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<tr>
<td>ID-0485-00005</td>
<td>DU 35</td>
<td>In Trust</td>
<td>1?</td>
<td>6P</td>
<td>Radioactivity</td>
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<tr>
<td>ID-0485-00006</td>
<td>DU 46</td>
<td>Thorium Deposit #4/ Buffalo Mine</td>
<td></td>
<td>3AC</td>
<td>Radioactivity</td>
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<td>ID-0485-00007</td>
<td>DU 45</td>
<td>Rufus Prospect</td>
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<td>1AO 4AC</td>
<td>Open Adit</td>
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<tr>
<td>ID-0485-00008</td>
<td>DU 5</td>
<td>Lower Pattee Creek Workings</td>
<td></td>
<td>5P</td>
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<tr>
<td>ID-0485-00009</td>
<td>DI 208</td>
<td>Pattee Creek Workings</td>
<td>2D</td>
<td>4AO 1AC 3P</td>
<td>Open Adits near Lewis &amp; Clark campsite</td>
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<tr>
<td>ID-0485-00010</td>
<td>DU-73</td>
<td>Wonder Lode</td>
<td>1D</td>
<td>2AC 2StC 9P</td>
<td>Radioactivity</td>
</tr>
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</table>
Figure 2: Mines and Prospects of the Lemhi Pass area, Lemhi County, Idaho.
AML site locations in the Lemhi Pass region, Idaho

Date 6/29/2000
SITE ID-0485-00003: COPPER QUEEN MILL (DU 64M)

The Copper Queen Mill is also located along the South Fork of Agency Creek, approximately one half mile south of its confluence with Agency Creek, in the northwest quarter of section 22 and the southwest quarter of section 15, T19N R25E (Lemhi Pass 7.5' Quadrangle). The mill is adjacent to the Copper Queen Mine and approximately half of the site is apparently located on the Copper Queen patented lode claim (USMS 993). The other half resides on land administered by Salmon National Forest. The same single-track road that accesses the Copper Queen Mine is also the primary access for the mill site.

Improvements on the mill site are limited to one mostly collapsed mill building and two washed-out log dams. One of the dams was used to impound mill tailings, which are mostly eroded away. The mill building appears to be bisected by the east end line of the patented claim; the western half of the structure is on private land while the eastern half is on Forest Service land. The mill consists of 3-4 levels of concrete foundation, collapsed wood timbers and unsafe wood stairs which extend downhill from the upper level. The two wooden dams are also located on land administered by the Forest Service. Disturbances that occur on BLM-administered land are limited to a few small prospect pits.

The mill building is in disrepair and will no-doubt soon collapse, potentially when visitors are present. The South Fork of Agency Creek has removed most of the mill tailings that formerly resided behind one of the log dams. Only a few embankments of tailings remain and these accumulations are not directly in the active water channel. They are free of sulfide minerals and other visibly apparent pollutants. One sample of the tailings material was collected to confirm this observation. Water pH analysis above and below the tailings impoundment site yielded values of 8.3 and 8.5 respectively, showing that no acid development is occurring. These analyses and observations suggest that there are no significant environmental risks on site. No physical or environmental risks were noted on land administered by the BLM.

SITE ID-0485-00004: LUCKY HORSESHOE MINE (DU 36)

The Lucky Horseshoe Mine is located on the west side of Flume Creek, approximately one mile north of its confluence with Agency Creek, near the center of section 9, T19N R25E (Lemhi Pass 7.5' Quadrangle). The benched open cut is quite visible from a distance, and the mine is less than a quarter mile from the power line and Lewis and Clark Trail route. Access to the property is by a single-track four-wheel-drive road that crosses the lower part of the Flume Creek drainage with a turnoff at the fence line. The property is a combination of private and federal land. The Northern half of the site is on land administered by the Forest Service; the south half is split equally between private land to the east and BLM to the west. Surface disturbance occurs on all of these ownerships, though most of the past mining disturbance appears to be on Forest Service land.

The prospect developed a shear-zone-hosted hematite-thorium-bearing "vein" in quartzite/siltite. The ore-bearing material is radioactive and recognizable. It consists of a distinctive shistose, black rock with specular hematite, biotite, large crystals of feldspar, and minor monazite and allanite. Development included scraping and benching on several levels.
No commercial production is known to have occurred, and much of the activity appears to have been for the purpose of exposing the mineralized zone. The prospect area includes one wood-frame building, four open cuts, two open adits, one caved adit and several road-style trenches.

The two open adits are easily accessible, so pose some risk to visitors. No other physical hazards were noted. Radiation readings on the mineralized zone yielded values above background over an area of approximately two acres. Readings collected directly on the mineralized zone yielded up to 6 mR/Hr average over most of the east half of the open dozer scrape. This level of radiation approaches the threshold of health risk according to BLM Hazmat personnel, though mitigation of this naturally occurring radiation source would be extremely difficult. Simply covering the site with barren soil might help. Casual visits by tourists should be discouraged, and visitors should use protective masks and gloves. At a minimum the entire site should be fenced and posted. In summary, the Lucky Horseshoe Mine is considered to have moderate risks due to the open adits and high radioactivity, as well as proximity to Lewis and Clark Trail.

SITE ID-0485-00005: IN TRUST (DU 35)

The In Trust prospect is located along the eastern slope of Flume Creek, approximately one mile north of its confluence with Agency Creek, in the southeast quarter of section 9, T19N R25E (Lemhi Pass 7.5' Quadrangle). Access to the property is by the same single-track four-wheel-drive road that goes to the Lucky Horseshoe property, thence along a westerly bifurcation, and a hike of approximately one-quarter mile. The property is located entirely on land administered by the BLM.

No buildings or mining fixtures occur on the property; the only development present is an area scraped off by a dozer, a few trenches and an access road that is now inaccessible and revegetated. The same style of mineralization that occurs at Lucky Horseshoe is present at In Trust as well, though the zone does not appear to be continuous between the properties.

No physical hazards were noted on the property. Radiation readings collected from throughout the property show that most of the area is background. Higher levels of radiation, up to 1.5 mR/Hr were noted at areas of outcropping mineralization. The disturbed road areas are re-vegetated with indigenous grass, shrubs and trees. Dozer scrapes still expose much rock. No mitigation is required.

SITE ID-0485-00006: THORIUM DEPOSIT NO. 4,
BUFFALO MINE (DU 46)

This property is located adjacent to and east of the In Trust property. It occurs on both flanks of the divide between Flume Creek and Agency Creek, in the south half of section 10, and NW quarter of Section 15, T19N R25E (Lemhi Pass 7.5' Quadrangle). Access to the area is via the same road that approaches the In Trust property. The Idaho Fish and Game Commission has installed a gate approximately one-quarter mile from the property, necessitating a short hike.

The site covers an area of approximately 70 acres of scattered prospects, which have
been intermittently explored for copper and thorium. Signs of prospecting include pits, dozer cuts, trenches and access roads. The largest single area of disturbance is at (and near) the Buffalo mine, located in the southern portion of the site. No buildings or other structures are present. All of the prospects are mostly re-vegetated with indigenous grass and shrubs.

No open adits or shafts are present on the property. An open well exists on the Buffalo mine site. The well is cased with sixteen-inch diameter steel, and is open at surface. The casing stands approximately four feet above ground level so it would be difficult to accidentally fall in. When visited, the well had standing water at a depth of approximately 12 feet. This well is a risk to small children should one happen to walk through the area. No other significant physical hazards were noted.

Both the Buffalo Mine proper and Perimeter 1 cut expose low-level radioactive ore. The site is not near water or roads. The area should be considered in the low to moderate range due to its local radioactivity, but out of the way location.

SITE ID-0485-00007: RUFUS PROSPECT (DU 45)

The Rufus prospect is located in the northwest quarter of section 14, T19N R25E (Lemhi Pass 7.5' Quadrangle), in the Agency Creek drainage approximately one mile northwest of Lemhi Pass. Access requires a hike from the Agency Creek road up the steep open slope. The property occurs entirely on land administered by Salmon National Forest. It can be seen on an open hillslope above Agency Creek while traveling northwesterly from Lemhi Pass, but it is very inconspicuous and difficult to distinguish.

The property covers slightly over one acre and no buildings or mine-related fixtures are present on site. The area was prospected for copper, which occurs in sulfide minerals in milky quartz veins. Evidence of prospecting activity consists of one open adit and 4 caved adits. No roads or trenches are present.

No environmental hazards were noted. There is no running water on site, and sulfide minerals are not present in sufficient concentration to create an acid production problem. No radioactive minerals are present and radiation readings showed background values throughout the property. The site should be considered as a low risk for both physical and environmental factors.

SITE ID-0485-00008: LOWER PATTEE WORKINGS (DU 5)

The Lower Pattee workings are located in the southwest quarter of section 11, T19N R24E (Agency Creek 7.5' Quadrangle), on a moderate hillslope north of Pattee Creek. The prospect resides on land administered by the BLM. Access to the site is by traveling approximately three miles from the lower Agency Creek road on the Pattee Creek road.

The property covers slightly less than 5 acres and no buildings or mine-related fixtures were noted on site. The prospects appear to have been explored for copper. No visible mineralization was noted, though quartz veins and mafic dike material similar to that noted at other copper prospects is present. Evidence of prospecting includes several bull dozer cuts and small pits and one very small caved adit. All of the prospects are thoroughly re-vegetated with
indigenous grass and shrubs and are being extensively used by local fauna.

No physical hazards are present on the property, as the only small adit is fully caved and inaccessible. Similarly, no environmental hazards were noted; radiation level measurements show background values of 0.03 mR/Hr throughout the property, though the site was not revisited.

SITE ID-0485-00009: PATTEE CREEK WORKINGS (DI 208)

The Pattee Creek workings are located in the southwest quarter of section 1, T19N R24E, approximately 1.5 miles northeast of the lower Pattee workings (Goldstone Mountain 7.5' Quadrangle). The property is situated on land administered by the BLM and is accessed via the four-wheel-drive powerline road from the Pattee Creek road. It is located in a somewhat remote location, and is inaccessible to passenger-car traffic. The site is adjacent to a Lewis and Clark campsite.

This site is relatively small, covering less than 2 acres. No buildings or mine-related fixtures were noted on the premise. Mine development consists of four open adits, one caved adit, and four small prospect pits. The prospects are mostly re-vegetated with grass, shrubs and trees. The presence of small amounts of hydrated copper sulfate minerals suggests that copper was the focus of exploration activity.

No environmental hazards were noted on site. There is running water on the property but none of the mine dump material occurs within the water course and sulfide minerals are not present in enough concentration to create an acid production problem. Additionally, pH readings collected below the site show a value of 8.7. No radioactive minerals are present and radiation readings showed background values throughout the property though the site was not revisited. The four open adits provide a moderate physical hazard. The adits are developed in faulted ground. All have bad backs and there is a risk of caving. There is a moderate safety hazard due to the open workings being close to the historic campsite and trail.

SITE ID-0485-00010: WONDER LODE (DU 73)

The Wonder Lode is located on the east side of the South Fork of Agency Creek, approximately 3/4 mile south of the Copper Queen Mine in the southeast quarter of section 22, T19N R25E (Lemhi Pass 7.5' Quadrangle). Access to the property is via the South Fork of Agency Creek road to where the road switches back out of the drainage bottom. From here, the original road continued up the valley bottom, but has been washed out by high water and is only accessible to four-wheel drive vehicles. The property occurs exclusively on land administered by the BLM.

Originally the Wonder Lode was developed for copper and zinc ore, which was shipped to the Copper Queen mill. Later the property was evaluated for radioactive minerals (Sharp and Cavender, 1962). Exposures and historic literature show that the occurrence is a series of east-west-trending, high-angle, shear-hosted veins, some of which follow steeply inclined bedding. The site covers approximately 8 acres and is developed by a switch-back road that traverses the entire 1200-foot strike length of the vein system. Mineralization is best developed low in the
South Fork of Agency Creek drainage, and is developed by three now-caved adits. A wood-frame structure occurs in the drainage bottom and is partially covered by dump material from one of the adits.

No physical hazards were noted on the property; all underground development is caved and inaccessible. Cutbanks on the various trenches and roadways are mostly covered with grass, trees and shrubs, and have sloughed in nearly to the angle of repose. Two slight environmental hazards were noted. A mine waste dump occurs in the South Fork of Agency Creek drainage and is impeding free-flowing water. This may pose a water contamination problem, however, the dump material is non-sulfidic quartzite so metal or acid contamination is unlikely. Water pH measurements above and below the site, 8.6 and 8.4 respectively, show that acid production is not an issue. Ponded water above the obstruction has created an interesting wetland in this otherwise high-gradient stream drainage. Radioactive minerals were not observed in the exposed part of the vein system, however readings up to 1.7mR/Hr on the exposed vein demonstrate their presence. Radiation measurements collected throughout the remainder of the property were background. The Wonder Lode site should be considered in a low-risk category for physical hazards, but additional sampling of the dump adjacent to the creek and radiometric monitoring is warranted. An engineering evaluation of removing the waste dump from the stream might be an option.
REFERENCES


SITE INSPECTION REPORTS FOR THE LEMHI PASS AREA
A. SITE IDENTIFICATION
ID Number: 1 D - 0 4 8 5 - 0 0 0 0 1
Site/Mine Name: Summerwell's Adit  Primary Commodity: 172 (Copper)
IGS Number: DU-47

B. LOCATION DATA
USGS Quad: Lemhi Pass  LAT: LONG: OR
UTM Coord: 4983289 N 303402 E Zone 12 AND
Township: 19N Range: 25E Section: 16 Subdivision: E1/2
Meridian: 08 County: 059

C. ACCESS
Visible from: Nearest road X / Trail / Population center __
Access by: 2wd X / 4wd / Hike / Other __
Access disturbance in need of reclamation: Length / Width / Acres __
Road Log: About 300 feet up slope to north from Agency Creek road.
Recent human use: No Describe: __

D. SITE DESCRIPTION
Acreage: less than one Elevation: 6200
General slope (degrees): 0-10 / 11-35 X / >35 ___
Floodplain: Disturbance in / Adjacent to / NA __
Recent mineral activity N o Describe: __

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits 1 / Closed adits / Open inclines / Closed inclines __
Open shafts / Closed shafts / Stopes __
Other openings Type ___
Trenches ___ Length _____ / Prospects 2 / Open drill holes None
Pits >30 ft. deep / Pits <30 ft. deep ___ / Pit highwall length _______
Waste dumps: <0.1 ac X / 0.1 - 5 ac / >5 ac ___
Tailings: <0.1 ac / 0.1 - 5 ac / >5 ac ___
Heaps ___ / Dredge ___
Ponds ___ / Dams ___
Mills ___ Type ___ / Type ___ _____
Explosives ___ Describe: ___
Equipment/Machinery ___ / Headframes ___ / Trestles/ tramways ___
Powerlines ___
Structures ___ Type ___ / Condition: Good / Fair / Poor / Number Locked ___
Homesites ___
Other: ___

(08/97, swm)
F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: X / Describe: Sage growing on dump.

ANIMALS

GEOLOGY
Staining of soils: Describe: Minor CuOx on float/dump samples in quartzite.
Sulfide minerals: X Type(s): Trace of pyrite, mostly oxidized.
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: pH Conductivity Flow (GPM) Sketch #
Standing water in workings:
Water through/over tailings:
Waste rock:
Ore:
Adjacent water sources:
Ground water:
Surface water:
Surface H2O above site:
Surface H2O below site:
Evidence of aquatic life Location: Describe:

Water bed color: White / Yellow / Yellow-Orange / Orange
Brown / Green / Grey-Black / Other
Samples collected: Sketch #(s):

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)
Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers
Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe:

Other:

RADIATION
Background Sketch # mR/hr gamma WL alpha
Adit/Incline
Shaft
Other: (03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies None/ Sheetwash
Unstable Rock / Slope instability / Wind erosion

MITIGATION STATUS
None X Fencing / Signs / Safety hazards mitigated
Other: ________________________________

Mitigation condition: Good / Fair / Poor
Site ID tags: ____ / Locations: ________________________________

OPTIONAL: Identify the critical reclamation measures needed:

____ Cable nets, grates ______ Topsoil, soil amendments
____ Permanent seal ______ Revegetation
____ Gates ______ Stabilize/destroy structures
____ Backfill openings, pit ______ Drainage control
____ Recontour ______ Water treatment
____ Fences ______ Wildlife closure
____ Warning signs ______ No action
____ Plug open drill holes ______ Trash / clean up
X Other: Low priority to close the only open adit. It's probably not a problem as the open adit cannot be easily seen from the road. Requires strenuous hike uphill to reach adit.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA Yes Rover File name: Summerwe.cor

K. PHOTOGRAPHS
Number of photographs taken: None

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM HAZMAT / Other ________________________________
Reason: ________________________________

______________________________
______________________________
______________________________
______________________________

(03/95)
Figure 01-1: Site map of the Summerwell's Adit, Lemhi County, Idaho (USGS Lemhi Pass 7.5 topographic map).
## FEATURES - PROVIDE DIMENSIONS IN FEET

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<td>10</td>
<td>3</td>
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</tr>
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Field Notes:
Adit 1 goes in to approximately N20E direction. Adit is open, but sloughed in.

INSPECTED BY: V. Gillerman, F. Griggs  
INSPECTED BY: B. Otto  
TITLE: Idaho Geological Survey  
Fill out the following for each photo:

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</table>
### A. SITE IDENTIFICATION

Other BLM ID Number: ____________________________
Locatable _____ / Leasable _____ / Salable _____
Operator (last known): ____________________________
Commodities: Primary ____________________________ / Secondary ____________________________
Other Agency ID Number: ____________________________ Agency: ____________________________

### B. LOCATION DATA

Site is in _____ or within a mile _____ of:
- ACEC _____ / WSA _____ / Wilderness Area _____ / Riparian Area _____
- Nominated for Designation to National Wild & Scenic River System _____

### C. ACCESS

Distance in Miles to Closest Public:
- Road _____
- Potable Water _____
- Campground/Picnic Area _____
- Dwelling _____
- Water Source _____
- Trail _____
- School _____
- Other Public Use _____

### D. SITE DESCRIPTION

Nearest named drainage: ____________________________ Distance: __________

### G. POTENTIAL HAZARDOUS MATERIALS

Site is under regulatory action _____
- CERCLIS Number ____________________________ OR Federal Docket Number ____________________________

### H. RECLAMATION: Closure Information

Clearances:
- Threatened & Endangered Species ____________________________
- Cultural Resources ____________________________
- Historic ____________________________
- Other ____________________________

Date reclamation completed: ____________________________
Type of closure: ____________________________ Cost: ____________________________
Comments:

Monitoring frequency: ________ Dates of monitoring visits:

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)

(03/95)
### INTERVIEWS

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(03/95)
ABANDONED/INACTIVE MINE LAND INVENTORY
FIELD CHECKLIST

A. SITE IDENTIFICATION
ID Number: 1D - 04 5 - 00 02
Site/Mine Name: Copper Queen Mine Primary Commodity: 170 (Copper)
IGS Number: DU 64

B. LOCATION DATA
USGS Quad: Lemhi Pass LAT: __________ LONG: __________ OR
UTM Coord: 4982211 N 304890 E Zone 12 AND
Township: 19N Range: 25E Section: 22 Subdivision: NW / NE and NE / NW
15 Subdivision: S 1/4
Meridian: 08 County: 059

C. ACCESS
Visible from: Nearest road 3 / Trail 3 / Population center 1
Access by: 2wd X 4wd / Hike / Other
Access disturbance in need of reclamation: Length _____ / Width _____ / Acres _____
Road Log: 1/4 mile up South fork of Agency Creek (Copper Queen Creek) from confluence with Agency Creek.

Recent human use: X Describe: Beer Cans, Camp fires, plastic bottles, local residents on ATV's driving on roads on weekends.

D. SITE DESCRIPTION
Acreage: 30 Elevation: 6200
General slope (degrees): 0-10 ___ / 11-35 X / >35
Floodplain: Disturbance in need of reclamation: Length _____ / Adjacent to X / NA
Recent mineral activity No Describe: All Mining activity is pre-1940's.

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits 6 / Closed adits 5 / Open inclines / Closed inclines
Open shafts 2 / Closed shafts 1 / Stopes 4
Other openings ____ Type ____
Trenches ____ Length _____ / Prospects ____ / Open drill holes None
Pits >30 ft. deep ____ / Pits <30 ft. deep ____ / Pit highwall length ________
Waste dumps: <0.1 ac 8 / 0.1 - 5 ac 1 / >5 ac ______
Tailings: <0.1 ac ____ / 0.1 - 5 ac ____ / >5 ac ______
Heaps ____ / Dredge ____
Ponds ____ / Dams ____
Mills Mill logged, separately see file CuQuMill.cor Type ____ ____ ____
Explosives Describe: ____________________________
Equipment/Machinery ____ / Headframes ____ / Trestles/tramways ____
Powerlines ______
Structures 4 Type Cabins, two fallen down and two in major disrepair.
Condition: Good ____ / Fair ____ / Poor X / Number Locked ____
Homesites ____
Other: ____________________________

(08/97, swm)
F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: X / Describe: *trees growing on dumps, sage and grass growing on dumps and exploration areas.*

ANIMALS

GEOLOGY
Staining of soils X Describe: *Fe oxides, Cu oxide stain on rocks in dumps.*
Sulfide minerals X Type(s): *Bornite, Pyrite.*
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: *None*
Standing water in workings: 
Water through/over tailings: 
waste rock: 
ore: 

Adjacent water sources:
Ground water: 
Surface water: 
Surface H2O above site: 
Surface H2O below site:

Evidence of aquatic life X Location: Describe: *Unidentified bugs.*

Water bed color: White / Yellow / Yellow-Orange / Orange
Brown X / Green / Grey-Black / Other

Samples collected: No Sketch #(#): 

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos 
Petrochemical Products / Dump sites 
Power Substations / Transformers 
Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe: 

Other:

RADIATION Sketchn mR/hr gamma WL alpha
Background 
Adits 3 and 7 
Shaft 
Other: *Cabin site / ID point* 

(03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies / Sheetwash
Unstable Rock / Slope instability / Wind erosion

MITIGATION STATUS
None / Fencing / Signs / Safety hazards mitigated

Other: __________

Mitigation condition: Good / Fair / Poor
Site ID tags: / Locations: __________

OPTIONAL: Identify the critical reclamation measures needed:

- [X] Cable nets, grates
- [X] Permanent seal
- [X] Gates
- [ ] Backfill openings, pit
- [ ] Recontour
- [ ] Fences
- [X] Warning signs
- [ ] Plug open drill holes
- [X] Trash / clean up
- [ ] Other: Easily accessible site, physical safety is primary concern. No significant environmental degradation present. Recommend closing open mine workings: nothing else is of primary importance. Open adits and shafts can be gated.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA
Yes / Rover File name: CopperQu.cor

K. PHOTOGRAPHS
Number of photographs taken: 24: Roll 00-1, negative #7430, frames 1-24

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM / HAZMAT / Other

Reason: Recommend visit by BLM mining engineer to determine best possible way to close workings.

(03/95)
Figure 02-1: Sketch map of the Copper Queen Mine site, Lemhi County, Idaho (USGS Lemhi Pass 7.5' topographic map).
Figure 02-2: Sketch map, with field notes, of the Copper Queen Mine, Lemhi County, Idaho.
Figure 02-3: Site map of the Copper Queen Mine, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Recommended Mitigation</th>
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<tbody>
<tr>
<td>Dump 1</td>
<td>50</td>
<td>20</td>
<td>6</td>
<td>None</td>
</tr>
<tr>
<td>Adit 1</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>OPEN, should close/fence, adjacent to road.</td>
</tr>
<tr>
<td>Adit 2</td>
<td>10</td>
<td>3</td>
<td>2</td>
<td>OPEN, should close/fence.</td>
</tr>
<tr>
<td>Dump 2</td>
<td>25</td>
<td>20</td>
<td>8</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 3</td>
<td>30</td>
<td>6</td>
<td>6</td>
<td>OPEN, close.</td>
</tr>
<tr>
<td>Stope 1</td>
<td>50</td>
<td>10</td>
<td>10</td>
<td>OPEN, close.</td>
</tr>
<tr>
<td>Stope 2</td>
<td>30</td>
<td>10</td>
<td>30</td>
<td>OPEN, close.</td>
</tr>
<tr>
<td>Adit 4</td>
<td>Closed</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Adit 5</td>
<td>Closed</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Hydraulic pit</td>
<td>200</td>
<td>50</td>
<td>50</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 6</td>
<td>Closed</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Adit 7</td>
<td>50</td>
<td>6</td>
<td>6</td>
<td>OPEN, close.</td>
</tr>
<tr>
<td>Dump 7</td>
<td>50</td>
<td>30</td>
<td>8</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 8</td>
<td>Closed/caved</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Dump 8</td>
<td>60</td>
<td>80</td>
<td>10</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 9</td>
<td>20</td>
<td>6</td>
<td>6</td>
<td>None.</td>
</tr>
<tr>
<td>Dump 9</td>
<td>40</td>
<td>20</td>
<td>6</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 10</td>
<td>Caved/closed</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Dump</td>
<td>30</td>
<td>20</td>
<td>6</td>
<td>None.</td>
</tr>
<tr>
<td>Shaft 1</td>
<td>30</td>
<td>30</td>
<td>+30</td>
<td>OPEN, needs fence.</td>
</tr>
<tr>
<td>Pit 1</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>Fence.</td>
</tr>
</tbody>
</table>

Field Notes: See attached sheet
INSPECTED BY: V. Gillerman, F. Griggs, B. Otto
TITLE: IGS
DATE: 6/14/2000
INSPECTED BY: V. Gillerman
TITLE: IGS
DATE: 7/2000
Waste Dump 1: Dump bisected by access road; dump is in creek (but dump is not sulfidic material)

Adit 1: Adit is partially open. Cu Ox on working face.

Adit 2: Partially open and accessible, Cu Ox on face, minor pyrite in dump float.

Dump 2: Wood trellis above dump, 25 feet long by 20 feet across x 8 feet deep, dump does not reach creek.

Adit 3: Open, accessible and hazardous. Copper mineralization appears to have only slight increase in mR/h over background.

Stope 1: Caved and mostly closed.

Stope 2: Open, nasty hazard. Stope 1 and 2 are probably connected in the subsurface but have not yet caved to surface. Obvious and dangerous hazard.

Closed Adit 4: Totally closed, no danger. Probably is along apex of Cu Queen vein.

Closed Adit 5: (site) Three closely spaced, caved adits, no danger. Possibly along trace of low-angle helicoidal fault.

Hydraulic Pit: Steel hydraulic pipe in creek; hillside was removed by mining, scar is nicely healed.

Closed Adit 6: Wood-framed portal entrance, entirely caved, no danger.

Open Adit 7: Directly above stream approx 50 feet. Portal has good back and looks safe. Abandoned mine sign was posted at portal. Slumps up-slope approx 30 feet above portal, may be from cave-in.

Dump 7: Dump from adit 7, clean quartzite, does not encroach on stream.

Adit 8: Caved; working is located along Blue Lupine vein.

Adit 9: Quartz vein, N55E, 81W dip, at small prospect. Vein is along sub-vertical shear which merges into low-angle fault in roof of adit.

Adit 10: Caved adit, farthest NE workings on the Blue Lupine vein, looks like continuous stoping between adits 10 and 8.

Dump 10: From adit 10, quartzite, no significant sulfide.

Shaft 1: Badly caved shaft, deep, open, lots of timbers and steel sticking out, hazard that should be taken care of.

Adit 11: Caved but partially open, exposed decline occurs near portal and is dangerous, highwall above entry to portal is near vertical and is a steep, dangerous hazard.
### Fill out the following for each photo:

<table>
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<th>Roll Number</th>
<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
</tr>
</thead>
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<tr>
<td>Roll 00-1, neg # 7430</td>
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<td>180</td>
<td>Copper Queen Mill.</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>100</td>
<td>Copper Queen Adit 1.</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>050</td>
<td>Copper Queen Adit 2.</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>260</td>
<td>Overview - Adit 2 trestle in foreground.</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>025</td>
<td>Adit 3 / Stope 1, looking downslope.</td>
</tr>
<tr>
<td></td>
<td>06</td>
<td>075</td>
<td>Stope 1, looking downslope.</td>
</tr>
<tr>
<td></td>
<td>07</td>
<td>065</td>
<td>Copper Queen Stope 2</td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>065</td>
<td>Copper Queen Stope 2, looking downslope.</td>
</tr>
<tr>
<td></td>
<td>09</td>
<td>060</td>
<td>Copper Queen Stope 2 overview.</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>270</td>
<td>Hydraulic escarpment (?)</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>050</td>
<td>Adit 6, Copper Queen Vein.</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>090</td>
<td>Adit 7, Blue Lupine vein, Copper Queen Mine.</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>110</td>
<td>Adit 8, Blue Lupine vein.</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>285</td>
<td>Topo benches, possible location of low angle fault.</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>010</td>
<td>Overview of meadow on ridge (fault surface ?).</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>050</td>
<td>Adit 9, from south of creek.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>050</td>
<td>Closeup of Adit 9.</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>050</td>
<td>Adit 9, low-angle fault pattern in quartzite.</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>050</td>
<td>Adit 9 - fault slicks (hanging wall goes S20E).</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>050</td>
<td>Quartz vein in rib of Adit 9.</td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>250</td>
<td>Adit 10, caved (Blue Lupine vein).</td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>330</td>
<td>Cabin at Copper Queen Mine.</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>270</td>
<td>Looking down Shaft 1.</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>280</td>
<td>Adit 11.</td>
</tr>
</tbody>
</table>
A. SITE IDENTIFICATION

Other BLM ID Number: ____________________________
Locatable _____ / Leasable _____ / Salable _____
Operator (last known): __________________________
Commodities: Primary __________________________ / Secondary ____________
Other Agency ID Number: ________________________ Agency: ________________

B. LOCATION DATA

Site is in _____ or within a mile _____ of:
ACEC _____ / WSA _____ / Wilderness Area _____ / Riparian Area _____
Nominated for Designation to National Wild & Scenic River System _____

C. ACCESS

Distance in Miles to Closest Public:
Road _____  Dwelling _____  School _____
Potable Water _____  Water Source _____  Trail _____
Campground/Picnic Area _____  Other Public Use _____

D. SITE DESCRIPTION

Nearest named drainage: __________________________ Distance: _________

G. POTENTIAL HAZARDOUS MATERIALS

Site is under regulatory action _____
CERCLIS Number __________________________ OR
Federal Docket Number __________________________

H. RECLAMATION: Closure Information

Clearances: Threatened & Endangered Species __________________________
Cultural Resources __________________________
Historic __________________________
Other __________________________

Date reclamation completed: __________________________ Cost: __________
Comments: __________________________________________
_________________________________________________________________
_________________________________________________________________

Monitoring frequency: ________ Dates of monitoring visits: ____________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

(NOTE: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)
I. INTERVIEWS

Name
Address
Phone
Affiliation
Comments:

Name
Address
Phone
Affiliation
Comments:

Name
Address
Phone
Affiliation
Comments:

(03/95)
Figure 02-4: Copper Queen Mill. View looking 180°. (Roll 00-1, neg. #7430, frame 1. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-5: Copper Queen Adit 1. View looking 100°. (Roll 00-1, neg. #7430, frame 2. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-6: Adit 2. View looking 050°. (Roll 00-1, neg. #7430, frame 3. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-7: Copper Queen overview. Adit 2 trestle in foreground, Shaft in background. View looking 260°. (Roll 00-1, neg. #7430, frame 4. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-8: Adit 3/Stope 1, partially caved. View looking 025°. (Roll 00-1, neg. #7430, frame 5. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-9: Stope 1. Looking down slope vertically. View looking 025°. (Roll 00-1, neg. #7430, frame 6. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-10: Stope 2. View looking 065°. (Roll 00-1, neg. #7430, frame 7. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-11: Stope 2, taken down slope. View looking 065°. (Roll 00-1, neg. #7430, frame 8. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-12: Stope 2 overview, taken from small dump. View looking 060°. (Roll 00-1, neg. #7430, frame 9. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-13: Hydraulic mining escarpment (?). View looking 270°. (Roll 00-1, neg. #7430, frame 10. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-14: Adit 6. View looking 050°. (Roll 00-1, neg. #7430, frame 11. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-15: Adit 7, Blue Lupine vein. View looking 090°. (Roll 00-1, neg. #7430, frame 12. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-16: Adit 8, on Blue Lupine vein. View looking 110°. (Roll 00-1, neg. #7430, frame 13. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-17: Benches, possible location of low angle fault. View looking 285°. (Roll 00-1, neg. #7430, frame 14. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-18: Overview of meadow on ridge (apex of low angle fault?). View looking 010°. (Roll 00-1, neg. #7430, frame 15. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-19: Adit 9 from south of creek to north. View looking 050°. (Roll 00-1, neg. #7430, frame 16. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-20: Adit 9 close up. View looking 050°. (Roll 00-1, neg. #7430, frame 17. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-21: Adit 9, low-angle fault pattern in quartzite. View looking 050°. (Roll 00-1, neg. #7430, frame 18. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-22: Slickensides at Adit 9. Slicks show hanging wall goes S20E. View looking 050°. (Roll 00-1, neg. #7430, frame 19. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-23: Quartz vein in rib on Adit 9. View looking 050°. (Roll 00-1, neg.# 7430, frame 20. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-24: Adit 10, caved. Last working on Blue Lupine vein. View looking 250°. Roll 00-1, neg. # 7430, frame 21. Photograph by V.S. Gillerman, June 14, 2000.

Figure 02-25: Cabin. View looking 330°. (Roll 00-1, neg. # 7430, frame 22. Photograph by V.S. Gillerman, June 14, 2000.)
Figure 02-26: Shaft 1, looking down. View looking 270°. (Roll 00-1, neg. # 7430, frame 23. Photograph by V.S. Gillerman, June 14, 2000.)

Figure 02-27: Adit 11. View looking 280°. (Roll 00-1, neg. # 7430, frame 24. Photograph by V.S. Gillerman, June 14, 2000.)
# ABANDONED/INACTIVE MINE LAND INVENTORY
## FIELD CHECKLIST

### A. SITE IDENTIFICATION

**ID Number:** 1 D - 0 4 8 5 - 0 0 0 0 3

**Site/Mine Name:** Copper Queen Mill

**Primary Commodity:** 170

**IGS Number:** DU 64M

### B. LOCATION DATA

**USGS Quad:** Lemhi Pass

**LAT:** N 304640 **LONG:** E Zone 12 AND

**Township:** 19N **Range:** 25E **Section:** 15 **Subdivision:** E1/2 SW1/4

**Meridian:** 08 **County:** 059

**Surface:** BLM / Non-BLM

### C. ACCESS

**Visible from:** Nearest road / Trail / Population center

**Access by:** 2wd / 4wd / Hike / Other

**Access disturbance in need of reclamation:** Length / Width / Acres

**Recent human use:** Yes

**Describe:** Camping

### D. SITE DESCRIPTION

**Acreage:** 5 **Elevation:** 6200

**General slope (degrees):** 0-10 / 11-35 / >35

**Floodplain:** Disturbance in / Adjacent to / NA

**Recent mineral activity:** NO

**Describe:**

### E. MINING/EXPLORATION FEATURES (Provide numbers of features)

**Open adits:** 0 / **Closed adits:** 2 / **Open inclines:** / **Closed inclines:**

**Open shafts:** / **Closed shafts:** / **Stopes:**

**Other openings:** Type

**Trenches:** Length / Prospects / Open drill holes

**Pits >30 ft. deep:** / **Pits <30 ft. deep:** / **Pit highwall length:**

**Waste dumps:** <0.1 ac / 0.1 - 5 ac / >5 ac

**Tailings:** <0.1 ac / 0.1 - 5 ac / >5 ac

**Heaps:** / **Dredge:**

**Ponds:** / **Dams:** 2

**Mills:** 1 **Type:** Flotation/gravity? Machinery is gone

**Explosives:** Describe:

**Equipment/Machinery:** / **Headframes:** / **Trestles/tramways:**

**Powerlines:**

**Structures:** Type

**Condition:** Good / Fair / Poor

**Homesites:**

**Other:**

(08/97, swm)
### F. ENVIRONMENTAL FEATURES

#### VEGETATION

Vegetation: Healthy **X** / Stressed ____ / Dead ____ / Nonexistent ____

Evidence of natural revegetation: ____ / Describe: __________________________

#### ANIMALS

Evidence: **X** / Presence: ____ / Describe: Deer, Elk

#### GEOLOGY

Staining of soils **No** Describe: __________________________

Sulfide minerals **Tr** Type(s): Trace of Chalcopyrite

Tailings: Confined ____ / Unconfined **X** / Unknown ____

#### HYDROLOGY

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<th>Water flowing from workings</th>
<th>pH</th>
<th>Conductivity</th>
<th>Flow (GPM)</th>
<th>Sketch #</th>
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<td>Standing water in workings:</td>
<td>____</td>
<td>____</td>
<td>____</td>
<td>____</td>
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<tr>
<td>Water through/over tailings:</td>
<td>____</td>
<td>8.5</td>
<td>110</td>
<td>20</td>
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Adjacent water sources:

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<th>Conductivity</th>
<th>Flow (GPM)</th>
<th>Distance</th>
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<td>Surface water:</td>
<td>____</td>
<td>____</td>
<td>____</td>
<td>____</td>
<td>____</td>
</tr>
</tbody>
</table>

Surface H2O above site: Site A, Fig 1 8.3 110 20 50’ below upper dam.

Surface H2O below site: Site B, Fig 1 8.5 110 20 50’ below at lower dam.

Evidence of aquatic life **X** Location: ________ Describe: Unidentified bugs.

Water bed color: White ____ / Yellow ____ / Yellow-Orange ____ / Orange ____

Brown **X** / Green ____ / Grey-Black ____ / Other __________________________

Samples collected: 1 Sketch #(s): Tailings sample number 6/15/00.

### G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills ____ / Acid or Chemical odor ____ / Asbestos ____

Petrochemical Products ____ / Dump sites ____

Power Substations ____ / Transformers ____

Barrels, Tanks, Containers ____ Leaking ____ Contents: __________________________

Evidence of Underground Storage Tanks ____ Describe: __________________________

Other: __________________________

### RADIATION

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<th>Sketch #</th>
<th>mR/hr gamma</th>
<th>WL alpha</th>
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<td>Adit/Incline</td>
<td>____</td>
<td>____</td>
</tr>
<tr>
<td>Shaft</td>
<td>____</td>
<td>____</td>
</tr>
<tr>
<td>Other: Large dump</td>
<td>____</td>
<td>0.15 - 0.2</td>
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</table>
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills ____ / Gullies ____ / Sheetwash ____
Unstable Rock ____ / Slope instability ____ / Wind erosion ____

MITIGATION STATUS
None ____ / Fencing ____ / Signs ____ / Safety hazards mitigated ____
Other: ________________________________

Mitigation condition: Good ____ / Fair ____ / Poor ____
Site ID tags: _____ / Locations: ________________________________

OPTIONAL: Identify the critical reclamation measures needed:

____ Cable nets, grates ____ Topsoil, soil amendments
____ Permanent seal ____ Revegetation
____ Gates ___ Stabilize/destroy structures
____ Backfill openings, pit ____ Drainage control
____ Recontour ____ Water treatment
 ___ Fences ____ Wildlife closure
 ___ Warning signs ____ No action
 ___ Plug open drill holes ____ Trash / clean up
 ___ Other: Mill needs attention: pick up junk, possibly close access across dump to
mill building and shafts, put up danger signs.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on
attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA Yes Rover File name: CuQuMill.cor

K. PHOTOGRAPHS
Number of photographs taken: 9: Roll 00-2, Negative # 7421, frames 1-9.

L. ACTION
Site requires immediate investigation ____ by: Law Enforcement ____ / BLM ____
HAZMAT ____ / Other ____

Reason: ____________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________
_____________________________________________________

(03/95)
Figure 03-1: Site map of the Copper Queen Mill, Lemhi County, Idaho.
Figure 03-2: Sketch map, with field notes, of the Copper Queen Mill Site, Lemhi County, Idaho.
Figure 03-3: Area map of the Copper Queen Mill Site, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adit 1</td>
<td>Caved</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Dump 1</td>
<td>25</td>
<td>25</td>
<td>3</td>
<td>None.</td>
</tr>
<tr>
<td>Surveyed claim corner</td>
<td></td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Prospect 1</td>
<td>100</td>
<td>40</td>
<td>3</td>
<td>None.</td>
</tr>
<tr>
<td>Other 1 (?)</td>
<td>+300</td>
<td>300</td>
<td>surficial</td>
<td>None.</td>
</tr>
<tr>
<td>Mill</td>
<td>150</td>
<td>50</td>
<td>25</td>
<td>Hazardous cleanup</td>
</tr>
<tr>
<td>Other 3 surveyed corner</td>
<td></td>
<td></td>
<td></td>
<td>NW corner of claim.</td>
</tr>
<tr>
<td>Other 4, cabin</td>
<td>25</td>
<td>15</td>
<td>12</td>
<td>None.</td>
</tr>
<tr>
<td>Log dam</td>
<td>100</td>
<td>10</td>
<td>10</td>
<td>None.</td>
</tr>
<tr>
<td>Other 5, log tailings dam</td>
<td>50</td>
<td>10</td>
<td>20</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 2</td>
<td>Caved</td>
<td></td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Dump 2</td>
<td>20</td>
<td>15</td>
<td>5</td>
<td>None.</td>
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</tbody>
</table>

Field Notes:
See attached sheet.

INSPECTED BY: V. Gillerman, F. Griggs, B. Otto
TITLE: IGS
DATE: 6/16/2000

INSPECTED BY: ________________________ TITLE: ___________ DATE: ________

(03/95)
Adit 1: Above ditch approx. 150 feet, closed, in Precambrian quartzite, Cu staining on dump, no sulfides present.

Surveyed mineral monument - PLS 5575, Cadastral survey by USFS, MS 993, Corner 4.

Prospect 1: Cat cut on ridge top, exposes quartzite w/Mg or Mn staining, no sulfide.

Mill: Standing but badly deteriorated. Obvious attraction and is a hazard; lots of loose timbers, badly deteriorated staircase, nails etc. Mill is visible from access road. Probably was ball/flotation/gravity circuit. No machinery remaining; no chemicals. GPS point taken at NE corner of building foundation. Vertical concrete wall and timber construction; tin roof coming off and flaps in the wind. Wall siding is mostly gone. About three levels with concrete walls.

Other 4: Cabin, standing open and in disrepair. Roof coming off. GPS point taken at NE corner.

Log dam: Badly deteriorated log dam approx 10 feet high. Does not block stream flow.

Adit 2: Caved to surface; Approx 20 feet long, no sulfide present, Trace amount of Cu, Mn and Fe oxides.

Dump 2: small dump on hill slope; no sulfides present.
Fill out the following for each photo:

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<th>Direction</th>
<th>Location/Feature</th>
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<td>340</td>
<td>Surveyed claim corner.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>010</td>
<td>Hill-slope hydraulic operation (?)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>140</td>
<td>Waste dump, mill in background.</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>000</td>
<td>Mill, looking north.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>240</td>
<td>Mill foundation.</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>180</td>
<td>View of claim corner 1 - MS993, mill in background.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>230</td>
<td>View of mill from access road.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>295</td>
<td>Mill tailings along stream bank.</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>330</td>
<td>Mill tailings dam.</td>
</tr>
</tbody>
</table>
BLM AML INVENTORY ID Number: **ID-0485-00003**  
**SUPPLEMENTAL OFFICE DATA SHEET**  
IGS: **DU 64M**

### A. SITE IDENTIFICATION

Other BLM ID Number: ____________________________

Locatable _____ / Leasable _____ / Salable _____

Operator (last known): ____________________________

Commodities: Primary ____________________________ / Secondary ____________________________

Other Agency ID Number: _________________________  
Agency: ____________________________

### B. LOCATION DATA

Site is in _____ or within a mile _____ of:

- ACEC _____
- WSA _____
- Wilderness Area _____
- Riparian Area _____

Nominated for Designation to National Wild & Scenic River System _____

### C. ACCESS

Distance in Miles to Closest Public:

- Road ______
- Dwelling ______
- School ______
- Potable Water ______
- Water Source ______
- Trail ______
- Campground/Picnic Area ______
- Other Public Use ______

### D. SITE DESCRIPTION

Nearest named drainage: ____________________________  
Distance: ______

### G. POTENTIAL HAZARDOUS MATERIALS

Site is under regulatory action ______

CERCLIS Number ____________________________ OR

Federal Docket Number ____________________________

### H. RECLAMATION: Closure Information

Clearances:  
- Threatened & Endangered Species
- Cultural Resources
- Historic
- Other

Date reclamation completed: ____________________________  
Type of closure: ____________________________  
Cost: ____________________________

Comments: __________________________________________

______________________________

______________________________

______________________________

Monitoring frequency: ________  
Dates of monitoring visits: __________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

__________________________________________

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)

(03/95)
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</table>
Figure 03-4: Survey claim corner. View looking 340°. (Roll 00-2, neg. # 7431, frame 1. Photographed by V.S. Gillerman, June 16, 2000.)

Figure 03-5: Hill slope hydraulic operation (?). View looking 010°. (Roll 00-2, neg. # 7431, frame 2. Photographed by V.S. Gillerman, June 16, 2000.)
Figure 03-6: Waste dump, mill in background. View looking 140°. (Roll 00-2, neg # 7431, frame 3. Photographed by V.S. Gillerman, June 16, 2000.)

Figure 03-7: Mill looking north. View looking 360°. (Roll 00-2, neg. # 7431, frame 4. Photographed by V.S. Gillerman, June 16, 2000.)
Figure 03-8: Mill foundation. View looking 240°. (Roll 00-2, neg. # 7431, frame 5. Photographed by V.S. Gillerman, June 16, 2000.)
Figure 03-9: View of Copper Queen #1 with mill in background. View looking 180°. (Roll 00-2, neg. # 7431, frame 6. Photographed by V.S. Gillerman, June 16, 2000.)
Figure 03-10: View of mill from access road. View looking 230°. (Roll 00-2, neg. # 7431, frame 7. Photographed by V.S. Gillerman, June 16, 2000.)

Figure 03-11: Mill tailings along stream bank. View looking 295°. (Roll 00-2, neg. # 7431, frame 8. Photographed by V.S. Gillerman, June 16, 2000.)
Figure 03-12: Mill tailings dam. View looking 330°. (Roll 00-2, neg. #7431, frame 9. Photographed by V.S. Gillerman, June 16, 2000.)
BUREAU OF LAND MANAGEMENT
ABANDONED/INACTIVE MINE LAND INVENTORY
FIELD CHECKLIST

A. SITE IDENTIFICATION
ID Number: I D - 0 4 8 5 - 0 0 0 0 4
Site/Mine Name: Lucky Horseshoe Mine Primary Commodity: 610 (Thorium)
IGS Number: DU 36

B. LOCATION DATA
USGS Quad: Lemhi Pass LAT: LONG: OR
UTM Coord: 4984819 N 303365 E Zone 12 AND
Township: 19N Range: 25E Section: 9 Subdivision: Center and E 1/2
Meridian: 08 County: 059
Surface: BLM / Non-BLM Mineral Estate: BLM / Non-BLM

C. ACCESS
Visible from: Nearest road / Trail / Population center
Access by: 2wd / 4wd / Hike / Other
Access disturbance in need of reclamation: Length / Width / Acres
Road Log: Access along Flume Ck road via Agency Ck road, approximately 3/4 mile on single track dirt road, near Lewis and Clark trail.
Recent human use: No Describe:

D. SITE DESCRIPTION
Acreage: 20 Elevation: 6300
General slope (degrees): 0-10 / 11-35 / >35
Floodplain: Disturbance in / Adjacent to / NA
Recent mineral activity Describe: In the 1970's.

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits / Closed adits / Open inclines / Closed inclines
Open shafts / Closed shafts / Stopes
Other openings / Type Mine benches / open cuts.
Trenches / Length / Prospects / Open drill holes
Pits >30 ft. deep / Pits <30 ft. deep / Pit highwall length
Waste dumps: <0.1 ac / 0.1 - 5 ac / >5 ac
Tailings: <0.1 ac / 0.1 - 5 ac / >5 ac
Heaps / Dredge
Ponds / Dams
Mills / Type
Explosives Describe:
Equipment/Machinery / Headframes / Trestles/tramways
Powerlines
Structures / Type Wood frame cabin
Condition: Good / Fair / Poor
Number Locked
Homesites
Other:

(08/97, swm)
### ENVIRONMENTAL FEATURES

#### VEGETATION
Vegetation: Healthy **X** / Stressed ____ / Dead ____ / Nonexistent ____
Evidence of natural revegetation: ____ / Describe: __________________________

#### ANIMALS
Evidence: **X** / Presence: ____ / Describe: **Deer, Elk, Moose**

#### GEOLOGY
| Staining of soils | **No** / Describe: __________________________ |
| Sulfide minerals | **No** / Type(s): __________________________ |
| Tailings: Confined ____ / Unconfined ____ / Unknown ____ |

#### HYDROLOGY
| Water flowing from workings | **No water present on site** |
| Standing water in workings: | ____ |
| Water through/over tailings: | ____ |
| Waste rock: | ____ |
| Ore: | ____ |

| Adjacent water sources: | Ground water: |
| | ____ |
| | Surface water: |
| | ____ |
| | Surface H₂O above site: |
| | ____ |
| | Surface H₂O below site: |
| | ____ |
| Evidence of aquatic life: | Location: Describe: __________________________ |

Water bed color: **White** / **Yellow** / **Yellow-Orange** / **Orange**
**Brown** / **Green** / **Grey-Black** / **Other**

Samples collected: ____ Sketch # (s): __________________________

### POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

- Chemical piles or spills ____ / Acid or Chemical odor ____ / Asbestos ____
- Petrochemical Products ____ / Dump sites ____
- Power Substations ____ / Transformers ____
- Barrels, Tanks, Containers ____ Leaking ____ Contents: __________________________
- Evidence of Underground Storage Tanks ____ Describe: __________________________

Other: __________________________

#### RADIATION
| Background | Sketch # | mR/hr gamma |
| | | **0.05/2 onsite** |

**HOT**

| Pit 2 (Per. 3): | Sketch # | 5.0 average over large area. |
| Adit 2 & Per. 4: | | **0.2** |
| Other: **Ore zone** | | **1** |
| Stockpile: | | **1** |

(See field notes for additional data, whole body exposure readings)

(03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills _____ / Gullies _____ / Sheetwash _____
Unstable Rock _____ / Slope instability _____ / Wind erosion _____

MITIGATION STATUS
None _____ / Fencing _____ / Signs _____ / Safety hazards mitigated _____
Other: ____________________________________________

Mitigation condition: Good _____ / Fair _____ / Poor _____
Site ID tags: _____ / Locations: ____________________________

OPTIONAL: Identify the critical reclamation measures needed

- Cable nets, grates
- Permanent seal
- Gates
- Backfill openings, pit
- Recontour
- Fences
- Warning signs
- Plug open drill holes

Topsoil, soil amendments
Revegetation
Stabilize/destroy structures
Drainage control
Water treatment
Wildlife closure
No action
Trash / clean up

X Other: Should fence or close pit area to keep tourists out, due to radiation and dust hazard. Check for active claims.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA
Yes
Rover File name: R061617A.cor

K. PHOTOGRAPHS
Number of photographs taken: 23: Roll 00-2, Negative # 7431, frames 13-24.
Roll 00-3, Negative # 4256, frames 1-11.

L. ACTION
Site requires immediate investigation _____ by: Law Enforcement _____ / BLM _____
HAZMAT _____ / Other ______

Reason: ____________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

(03/95)
Figure 04-1: Sketch map, with field notes, of the Lucky Horseshoe Mine site, Lemhi County, Idaho.
Figure 04-2: Area map of the Lucky Horseshoe Mine site, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
## M. FEATURES - PROVIDE DIMENSIONS IN FEET

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
</tr>
</thead>
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<tr>
<td>Adit 1</td>
<td>50</td>
<td>6</td>
<td>6</td>
<td>OPEN, gate?</td>
</tr>
<tr>
<td>Dump 1</td>
<td>35</td>
<td>30</td>
<td>10</td>
<td>None.</td>
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<tr>
<td>Road 1</td>
<td>800</td>
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<td>None.</td>
</tr>
<tr>
<td>Road 2</td>
<td>800</td>
<td>20</td>
<td>6</td>
<td>None.</td>
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<tr>
<td>Perimeter 1</td>
<td>200</td>
<td>50</td>
<td>20</td>
<td>None.</td>
</tr>
<tr>
<td>Road 3</td>
<td>600</td>
<td>20</td>
<td></td>
<td>None.</td>
</tr>
<tr>
<td>Perimeter 2</td>
<td>250</td>
<td>50</td>
<td>20</td>
<td>None.</td>
</tr>
<tr>
<td>Adit 2</td>
<td>200</td>
<td>6</td>
<td>6</td>
<td>OPEN, gate?</td>
</tr>
<tr>
<td>Adit 3</td>
<td>Caved</td>
<td></td>
<td></td>
<td>None.</td>
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<tr>
<td>Other 1</td>
<td>30</td>
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<td>12</td>
<td>None.</td>
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<td>Road 5</td>
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<td>None.</td>
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<tr>
<td>Perimeter 3</td>
<td>250</td>
<td>50</td>
<td>10</td>
<td>None.</td>
</tr>
<tr>
<td>Perimeter 4</td>
<td>250</td>
<td>50</td>
<td>10</td>
<td>None.</td>
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</tbody>
</table>

Field Notes:
See attached page.

INSPECTED BY: V. Gillerman  TITLE: IGS Geologist  DATE: 7/2000  (03/95)
Offsite background radioactivity: 0.05 - 0.1 mR/hr total.
Onsite background radioactivity: 0.2 - 0.5 mR/h.
The radiation readings were taken with a calibrated dosimeter at waist height (i.e. total body exposure).

Adit 1: open, portal sloughed but back (roof) of adit is in good shape. No ore apparent at portal.

Dump 1: Hematite-stained, non sulfidic.

Road 1: Lowest cat cut on hill-slope, located directly below powerline.

Road 2: Above road 1, approximately 80 feet; terminates north of powerline. Cat cuts expose folded quartzite with quartz-specularite (?) veins and replacements.

Perimeter 1: located at end of Road 3 (mine bench).

Adit 2: Open, back is OK but suspect. Could cave by slabbing along low-angle cleavage. Radioactivity at portal is 0.2 mR/hr, suggests adit did not hit ore zone.

Other 1: Cabin; OK shape, not in danger of collapse.

Perimeter 2: Bench upon which the cabin (Other 1) sits. Apex of Fe-stone strata.

Perimeter 3: Top mine bench, approximate top of specularite (?) / Fe-stone strata. Radioactivity is 5.0 mR/h average over large area; ore zone range is 2.0 - 9.0 mR/h. Ore zone material is black, specularite- and biotite-rich, schistose cataclasite to breccia with alkali feldspar megacrysts.

Stockpiles west end of Perimeter 3: Radioactivity is 1.5 - 2.0 mR/h.

Road 5: Not a road, but represents an apexing fold nose in the Fe-stone strata (N70W, 0 degrees dip on fold axis)

Perimeter 4: Prospect cut, no Fe-stone exposed, probably stratigraphic footwall; Schistose, chloritic silt/sandstone with en echelon pits and vugs filled with brown earthy substance that I can't identify. Radioactivity is 0.2 mR/h above open pit, suggests ore zone does not extend vertically above pit level.

NOTE: In first field visit, many of black, fine grained quartz veins were thought to contain tourmaline, as this is common regionally. However, subsequent examination of literature and thin sections, suggests the black color is due to fine-grained specular hematite which is abundant in the Lemhi Pass area.

This very visible open cut is easily accessible with two wheel drive or four wheel drive vehicles. The site lies within or very near the route taken by Lewis and Clark, and commemorative trail markers are very near the site. One open adit in fractured rock is the most visible hazard. The large cuts also expose radioactive thorium. Readings of up to 6 mR/hr over a large area were obtained. Local readings to near 10 mR/hr approach threshold of health risk according to BLM HAZMAT personnel. The possibility of Alpha radiation contamination exists due to potential airborne dust.
Fill out the following for each photo:

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<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
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<tr>
<td>00-2, Neg. #7431</td>
<td>13</td>
<td>270</td>
<td>Similar style folds in outcrop (Axis E-W, plunge 20°W).</td>
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<tr>
<td></td>
<td>14</td>
<td>020</td>
<td>Adit 1 at Lucky Horseshoe Mine.</td>
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<tr>
<td></td>
<td>15</td>
<td>250</td>
<td>Quartz- specularite (?) replacement vein.</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>250</td>
<td>Quartz- specularite (?) on fold axis.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>020</td>
<td>Fold in black specularite (?), Fe-stone, above cabin.</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>020</td>
<td>Fold in specularite (?) Fe-stone above cabin.</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>270</td>
<td>Adit portal at cabin (Adit goes in N25°W orientation).</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>340</td>
<td>Adit portal at cabin (Adit goes in N25°W orientation).</td>
</tr>
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<td></td>
<td>21</td>
<td>340</td>
<td>Argillite/quartzite with black vein specularite (?) stockwork.</td>
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<td>00-3, Neg. #4256</td>
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<td>Fold axis in Fe-stone above cabin-level adit.</td>
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<tr>
<td></td>
<td>02</td>
<td>110</td>
<td>Same as 001 but closer view.</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>020</td>
<td>Fold nose/contact between specularite (?) veins, and quartzite.</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>020</td>
<td>Cataclasite in talus: sample LH-4.</td>
</tr>
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<td></td>
<td>05</td>
<td>020</td>
<td>Opaline silica replacement: sample LH-5.</td>
</tr>
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<td></td>
<td>06</td>
<td>020</td>
<td>Black biotite/specularite (?) Fe-stone in talus.</td>
</tr>
<tr>
<td></td>
<td>07</td>
<td>020</td>
<td>Bedded specularite (?)/argillite with cataclasite zones.</td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>020</td>
<td>Bedded specularite (?)/argillite with cataclasite zones.</td>
</tr>
<tr>
<td></td>
<td>09</td>
<td>020</td>
<td>Bedded specularite (?)/argillite with cataclasite zones.</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>020</td>
<td>Geologists expounding on outcrop.</td>
</tr>
</tbody>
</table>

(03/95)
A. SITE IDENTIFICATION
Other BLM ID Number:
Locatable ______/ Leasable ______/ Salable ______
Operator (last known): ________________________________
Commodities: Primary ________________________/ Secondary ________________________
Other Agency ID Number: ___________________________ Agency: ________________________

B. LOCATION DATA
Site is in ______ or within a mile ______ of:
ACEC ______/ WSA ______/ Wilderness Area ______/ Riparian Area ______
Nominated for Designation to National Wild & Scenic River System ______

C. ACCESS
Distance in Miles to Closest Public:
Road ______ Dwelling ______ School ______
Potable Water ______ Water Source ______ Trail ______
Campground/Picnic Area ______ Other Public Use ______

D. SITE DESCRIPTION
Nearest named drainage: _____________________________ Distance: ______

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action ______
CERCLIS Number _____________________________ OR
Federal Docket Number _____________________________

H. RECLAMATION: Closure Information
Clearances: Threatened & Endangered Species _____________________________
Cultural Resources _____________________________ Historic _____________________________
Other _____________________________

Date reclamation completed: _____________________________ Cost: _____________________________
Type of closure: _____________________________ Comments: _____________________________

Monitoring frequency: ________ Dates of monitoring visits: _____________________________

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)
### I. INTERVIEWS

<table>
<thead>
<tr>
<th>Name</th>
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<th>Affiliation</th>
<th>Comments</th>
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<th>Comments</th>
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</table>

(03/95)
Figure 04-3: Similar style folds in outcrop. Fold axis ~E/W N80 W, plunging 20° W. View looking 270°. (Roll 00-2, neg. # 7431, frame 13. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-4: Adit at Lucky Horseshoe Mine. View looking 020°. (Roll 00-2, neg. # 7431, frame 14. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-5. Quartz specularite (?) vein replacement. View looking 250°. (Roll 00-2, neg.# 7431, frame 15. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-6. Quartz specularite (?), possibly on fold axis. View looking 250°. (Roll 00-2, neg.# 7431, frame 16. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-7: Mylonite shear. (Roll 00-2, neg.# 7431, frame 17. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-8: Fold axis showing specularite (?), lowest bench of site. View looking 270 °. (Roll 00-2, neg.# 7431, frame 18. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-9: Fold axis showing specularite (?), lowest bench of site. View looking 270°. (Roll 00-2, neg.# 7431, frame 19. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-10: Fold axis showing specularite (?), lowest bench of site. View looking 270°. (Roll 00-2, neg.# 7431, frame 20. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-11: Fold in black specularite (?), Fe stone above cabin. View looking 020°. (Roll 00-2, neg.# 7431, frame 21. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-12: Fold in black specularite (?), Fe stone, above cabin. View looking 020°. (Roll 00-2, neg.# 7431, frame 22. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-13: Adit portal, adit goes in N25°W orientation, adjacent to cabin. View looking 340°. Roll 00-2, neg.# 7431, frame 23. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-14: Argillite/quartzite with black vein specularite (?) stock work. View looking 030°. (Roll 00-2, neg.# 7431, frame 24. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-15: Fold axis in Fe stone, above cabin level bench. View looking 250°. (Roll 00-3, neg.# 4256, frame 1. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-16: Fold axis in Fe stone, closer view. View looking 110°. (Roll 00-3. Neg.# 4256, frame 2. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-17: Fold nose and contact between specularite (?) veins and quartz. View looking 020°. (Roll 00-3, neg.# 4256, frame 3. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-18: Cataclasite in talus, sample site for sample LH-4. (Roll 00-3, neg.# 4256, frame 4. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-19: Opaline/silica replacement, sample site for sample LH-5. (Roll 00-3, neg.# 4256, frame 5. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-20: Black biotite/specularite Fe stone in talus. (Roll 00-3, neg.# 4256, frame 6. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-21: Bedded specularite (?)/argillite with cataclasite zones. View looking 050°. (Roll 00-3, neg.# 4256, frame 7. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-22: Bedded specularite (?)/argillite with cataclasite zones. View looking 050°. (Roll 00-3, neg.# 4256, frame 8. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-23: Bedded specularite (?)/argillite with cataclasite zones. View looking 050°. (Roll 00-3, neg.# 4256, frame 9. Photograph by V.S. Gillerman, June 16, 2000.)

Figure 04-24: Breccia in feldspar/granitic zone. Sample site for sample LH-7. View looking 050°. (Roll 00-3, neg.# 4256, frame 10. Photograph by V.S. Gillerman, June 16, 2000.)
Figure 04-25: Geologist expounding on outcrop. View looking 050°. (Roll 00-3, neg.# 4256, frame 11. Photograph by V.S. Gillerman, June 16, 2000.)
**SITE IDENTIFICATION**

ID Number: **1 D 0 4 8 5 0 0 0 0 5**

Site/Mine Name: **In Trust**

Primary Commodity: **610 (Thorium)**

IGS Number: **DU 35**

---

**LOCATION DATA**

USGS Quad: **Lemhi Pass**

LAT: _______________  LONG: _______________ OR

UTM Coord: **4984251 N 304121 E**

Zone **12** AND

Township: **19N**

Range: **25E**

Section: **9**

Subdivision: **SE1/4**

Section: **10**

Subdivision: **SW1/4**

Meridian: **08** County: **Lemhi**

Surface: **BLM X** / **Non-BLM**

Mineral Estate: **BLM X** / **Non-BLM**

---

**ACCESS**

Visible from: Nearest road ____ / Trail ____ / Population center ____

Access by: 2wd ____ / 4wd X ____ / Hike ____ / Other ____

Access disturbance in need of reclamation: Length ____ / Width ____ / Acres ____

Road Log: [Access via Flume Ck road to locked gate, then by foot]

---

Recent human use: **No** Describe: _________

---

**SITE DESCRIPTION**

Acreage: **10**

Elevation: **5800**

General slope (degrees): 0-10 ____ / 11-35 X ____ / >35 ____

Floodplain: Disturbance in ____ / Adjacent to ____ / NA ____

Recent mineral activity ____ Describe: _________

---

**MINING/EXPLORATION FEATURES** (Provide numbers of features)

<table>
<thead>
<tr>
<th>Feature</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open adits</td>
<td>0</td>
</tr>
<tr>
<td>Closed adits</td>
<td>____</td>
</tr>
<tr>
<td>Open inclines</td>
<td>____</td>
</tr>
<tr>
<td>Closed inclines</td>
<td>____</td>
</tr>
<tr>
<td>Open shafts</td>
<td>____</td>
</tr>
<tr>
<td>Closed shafts</td>
<td>____</td>
</tr>
<tr>
<td>Stopes</td>
<td>____</td>
</tr>
<tr>
<td>Other openings</td>
<td>____</td>
</tr>
</tbody>
</table>

Trenches: **6**

Length: **150**

Prospects: **4**

Open drill holes: **0**

---

Pits >30 ft. deep ____ / Pits <30 ft. deep ____ / Pit highwall length ________

Waste dumps: <0.1 ac ____ / 0.1 - 5 ac ____ / >5 ac ____

Tailings: <0.1 ac ____ / 0.1 - 5 ac ____ / >5 ac ____

Heaps ____ / Dredge ____

Ponds ____ / Dams ____

Mills ____

Type ____

Type ____

Condition: Good ____ / Fair ____ / Poor ____ / Number Locked ____

Homesites ____

---

Explosives ____

Describe: _________

Equipment/Machinery ____ / Headframes ____ / Trestles/tramways ____

Powerlines ____

Type ____

Other: _________
BLM AML INVENTORY FIELD CHECKLIST

ID Number: ID-0485-00005
IGS: DU 35

F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: / Describe:

ANIMALS

GEOLOGY
Staining of soils: No / Describe:
Sulfide minerals: No / Type(s):
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: No water on site.
Standing water in workings:
Water through/over tailings:
waste rock:
ore:

Adjacent water sources:

Ground water:
Surface water:
Surface H2O above site:
Surface H2O below site:

Evidence of aquatic life / Location: Describe:

Water bed color: White / Yellow / Yellow-Orange / Orange
Brown / Green / Grey-Black / Other

Samples collected: / Sketch #(s):

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers

Barrels, Tanks, Containers / Leaking / Contents:
Evidence of Underground Storage Tanks / Describe:

Other:

RADIATION
Background
Trench/Road 4
Trench/Perimeter 2
Ore: outcrop/stockpile
Other: Road 5/ore outcrop

Sketch # mR/hr total WL alpha

(03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills __/ Gullies __/ Sheetwash ___
Unstable Rock ___/ Slope instability ____/ Wind erosion ___

MITIGATION STATUS
None ___/ Fencing ___/ Signs ___/ Safety hazards mitigated ___
Other: _____________________________
Mitigation condition: Good ____/ Fair ____/ Poor ____
Site ID tags: _____ / Locations: _____________________________

OPTIONAL: Identify the critical reclamation measures needed:

___ Cable nets, grates
___ Permanent seal
___ Gates
___ Backfill openings, pit
___ Recontour
___ Fences
___ Warning signs
___ Plug open drill holes
___ Other:

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA Yes Rover File name: R061720B.cor

K. PHOTOGRAPHS
Number of photographs taken: 2; Roll 00-3, Negative# 4256, Frames 13, 14

L. ACTION
Site requires immediate investigation ____ by: Law Enforcement ____/ BLM ____
HAZMAT ____/ Other _____________________________
Reason: ____________________________________________
__________________________________________________
__________________________________________________
__________________________________________________
__________________________________________________

(03/95)
Figure 05-1: Sketch map with field notes of the In Trust Mine site, Lemhi County, Idaho.
Figure 05-2: Site map for the In Trust Mine mine, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
**M. FEATURES - PROVIDE DIMENSIONS IN FEET.**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
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</thead>
<tbody>
<tr>
<td>Perimeter 1</td>
<td>150</td>
<td>150</td>
<td>20</td>
<td>None.</td>
</tr>
<tr>
<td>Perimeter 2</td>
<td>250</td>
<td>300</td>
<td>30</td>
<td>None.</td>
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<td>Road 1</td>
<td>100</td>
<td>30</td>
<td>15</td>
<td>None.</td>
</tr>
<tr>
<td>Road 2</td>
<td>100</td>
<td>30</td>
<td>15</td>
<td>None.</td>
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<tr>
<td>Prospect 1</td>
<td>50</td>
<td>25</td>
<td>5</td>
<td>None.</td>
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<tr>
<td>Road 3</td>
<td>250</td>
<td>15</td>
<td>5</td>
<td>None.</td>
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<td>Road 4</td>
<td>250</td>
<td>30</td>
<td>20</td>
<td>None.</td>
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<tr>
<td>Prospect 2</td>
<td>40</td>
<td>15</td>
<td>3</td>
<td>None.</td>
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<tr>
<td>Road 5</td>
<td>150</td>
<td>15</td>
<td>5</td>
<td>None.</td>
</tr>
<tr>
<td>Road 6</td>
<td>150</td>
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<td>15</td>
<td>None.</td>
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<td>Road 7</td>
<td>100</td>
<td>15</td>
<td>3</td>
<td>None.</td>
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</tbody>
</table>

**Field Notes:**
See attached sheet

**INSPECTED BY:** F. Griggs, B. Otto
**TITLE:** IGS
**DATE:** 6/17/2000

**INSPECTED BY:** V. Gillerman
**TITLE:** IGS
**DATE:** 7/2000

(03/95)
NOTES

Perimeter 1: Cat cut, lowest on hill. No exposure, no anomalous radiation (0.05). Float of schistose quartzite with minor float of K-feldspathic cataclasite.

Perimeter 2: Cat cut, exposes small outcrop of Fe-stone - 0.5 mR/h.

Road 1 (to north) and Road 2 (to south): are not roads, but the margins of a trench cut into the floor of the perimeter 2 cat cut. Exposes Fe stained micaceous quartzite.

Prospect 1: Cat cut, mostly chloritic schistose quartzite. Found several samples in dump/talus of Fe-stone that were radioactive with readings of 0.5 mR/hr.

Road 3: Access road to prospect that exposes massive specularite (?)-microcline-specularite + quartz. (Tourmaline may be specularite).

Road 4: Prospect trench, exposes highly cleaved, schistose quartzite/siltstone, no metal present.

Prospect 2: Small cat cut, no rocks exposed.

Road 5: Cat cut/trench: no exposure but abundant float of sheared black iron stone. Readings of 0.4 mR/hr.

Road 6: Cat cut/trench; minor float of scrappy specularite (?), no Fe. Iron stone nearby had 0.3 - 0.5 mR/hr readings.

Road 7: Cat cut/trench; no exposure, same rocks as in Road 6.
BLM AML INVENTORY FIELD CHECKLIST
PHOTO LOG

ID Number: **ID-0485-00005**
IGS: **DU 35**

Fill out the following for each photo:

<table>
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<th>Roll Number</th>
<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
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</thead>
<tbody>
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<td>13</td>
<td>100</td>
<td>Bench of perimeter 1 with trench in foreground.</td>
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<td>“”</td>
<td>14</td>
<td>60</td>
<td>Outcrop of massive microcline and specularite (?)</td>
</tr>
</tbody>
</table>

(03/95)
A. SITE IDENTIFICATION
Other BLM ID Number: ________________________________
Locatable _______/ Leasable _______/ Salable _______
Commodities: Primary ___________________________ / Secondary ___________________________
Operator (last known): ________________________________
Other Agency ID Number: ____________________________ Agency: ____________________________

B. LOCATION DATA
Site is in ______or within a mile ______of:
   ACEC ______/ WSA ______/ Wilderness Area ______/ Riparian Area ______
   Nominated for Designation to National Wild & Scenic River System ______

C. ACCESS
Distance in Miles to Closest Public:
   Road ______  Dwelling ______  School ______
   Potable Water ______  Water Source ______  Trail ______
   Campground/Picnic Area ______  Other Public Use ______

D. SITE DESCRIPTION
Nearest named drainage: ____________________________ Distance: ______

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action ______
   CERCLIS Number ____________________________ OR
   Federal Docket Number ____________________________

H. RECLAMATION: Closure Information
Clearances: Threatened & Endangered Species ____________________________
   Cultural Resources ____________________________
   Historic ____________________________
   Other ____________________________
   Date reclamation completed: ____________________________
   Type of closure: ____________________________ Cost: ____________________________
   Comments: __________________________________________
   Monitoring frequency: ______ Dates of monitoring visits: ____________________________

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)

(03/95)
I. INTERVIEWS

Name
Address
Phone
Affiliation
Comments:

Name
Address
Phone
Affiliation
Comments:

Name
Address
Phone
Affiliation
Comments:
Figure 05-3: Bench of Perimeter 1, with trench in background. View looking 100°. (Roll 00-3, neg.# 4256, frame 13. Photograph by B. Otto, June 17, 2000).

Figure 05-4: Outcrop of massive microcline and specularite (?). View looking 060°. Roll 00-3, neg.# 4256, frame 14. Photograph by B. Otto, June 17, 2000).
BUREAU OF LAND MANAGEMENT
ABANDONED/INACTIVE MINE LAND INVENTORY
FIELD CHECKLIST

A. SITE IDENTIFICATION
ID Number: 1D - 0485000006
Site/Mine Name: Thorium Deposit 4 / Buffalo Mine Primary Commodity: Cu, Zn, Th
IGS Number: DU 46

B. LOCATION DATA
USGS Quad: Lemhi Pass LAT: ___________ LONG: ___________ OR
UTM Coord: 4983674 N 304425 E Zone 12 AND
Township: 19N Range: 25E Section: 10 Subdivision: SW1/4
Section: 15 Subdivision: NW 1/4
Meridian: 08 County: 059

C. ACCESS
Visible from: Nearest road X Trail __ Population center __
Access by: 2wd __ 4wd X Hike __ Other __
Access disturbance in need of reclamation: Length __ Width __ Acres __ Road Log: __________
Recent human use: __ Describe: __________

D. SITE DESCRIPTION
Acreage: ___________ Elevation: ___________ 6500
General slope (degrees): 0-10 ___ 11-35 X >35 __
Floodplain: Disturbance in __ Adjacent to __ NA __
Recent mineral activity __ Describe: __________

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits ___ Closed adits 3 ___ Open inclines ___ Closed inclines ___
Open shafts ___ Closed shafts ___ Stopes
Other openings 1 Type 16 inch culvert-lined well: standing water at approx 12 feet.
Trenches ___ Length ___ Prospects ___ 13 ___ Open drill holes ___
Includes 3 large prospects. Perimeter 1 is large dozer cut prospect.
Pits >30 ft. deep ___ Pits <30 ft. deep ___ Pit highwall length ___
Waste dumps: <0.1 ac ___ 0.1 - 5 ac ___ >5 ac ___
Tailings: <0.1 ac ___ 0.1 - 5 ac ___ >5 ac ___
Heaps ___ Dredge ___
Ponds ___ Dams ___
Mills ___ Type ___ ___ ___
Explosives ___ Describe: __________
Equipment/Machinery ___ Headframes ___ Trestles/tramways ___
Powerlines ___ Type ___ ___ ___
Structures ___ Type ___ ___ ___
Condition: Good ___ Fair ___ Poor ___ Number Locked ___
Homesites ___
Other: __________

(08/97, swm)
BLM AML INVENTORY FIELD CHECKLIST

ID Number: ID-0485-00006
IGS: DU 46

F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: Yes / Describe: Grass and sage growing strongly on most prospects and dumps.

ANIMALS

GEOLOGY
Staining of soils X Describe: Local Fe staining.
Sulfide minerals - Type(s):
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: No water on site
Standing water in workings:
Water through/over tailings:
Waste rock:
Ore:
Adjacent water sources:
Ground water:
Surface water:
Surface H2O above site:
Surface H2O below site:

Evidence of aquatic life Location: Describe:

Water bed color: White / Yellow / Yellow-Orange / Orange
Brown / Green / Grey-Black / Other

Samples collected: Sketch #(s):

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers

Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe:

Other:

RADIATION
Background/onsite
Prospect 6:
Per. 1 Pit
Other: Buffalo Vein

(See Field Notes for additional data)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills [X] / Gullies [ ] / Sheetwash [ ]
Unstable Rock [ ] / Slope instability [ ] / Wind erosion [ ]

MITIGATION STATUS
None [X] / Fencing [ ] / Signs [ ] / Safety hazards mitigated [ ]
Other: [ ]

Mitigation condition: Good [ ] / Fair [ ] / Poor [ ]
Site ID tags: [ ] / Locations: [ ]

OPTIONAL: Identify the critical reclamation measures needed:

[ ] Cable nets, grates [ ] Topsoil, soil amendments
[ ] Permanent seal [ ] Revegetation
[ ] Gates [ ] Stabilize/destroy structures
[ ] Backfill openings, pit [ ] Drainage control
[ ] Recontour [ ] Water treatment
[ ] Fences [ ] Wildlife closure
[ ] Warning signs [ ] No action
[ ] Plug open drill holes [X] Trash / clean up
[ ] Other: (?) Cover pit area and adits to reduce radiation exposure.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA  Yes  Rover File name: RO61815A.cor

K. PHOTOGRAPHS
Number of photographs taken:  5: Roll 00-3, Negative # 4256, Frames 15 - 19.

L. ACTION
Site requires immediate investigation [ ] by: Law Enforcement [ ] / BLM [ ]
HAZMAT [ ] / Other [ ]
Reason: [ ]
[ ]
[ ]
[ ]
[ ]
[ ]
[ ]

(03/95)
Figure 06-1: Sketch map with field notes of the Thorium Deposit #4/Buffalo Mine sites, Lemhi County, Idaho.
Figure 06-2: Site map for the Thorium Deposit #4 / Buffalo Mines, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generic line 1</td>
<td>150</td>
<td>25</td>
<td>15</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Generic line 2</td>
<td>60</td>
<td>20</td>
<td>5</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Generic line 3</td>
<td>120</td>
<td>20</td>
<td>5</td>
<td>Nat. reveg.</td>
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<tr>
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<td>Generic line 4</td>
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<td>25</td>
<td>5</td>
<td>Nat. reveg.</td>
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<tr>
<td>Generic point 1</td>
<td></td>
<td></td>
<td>1/4 PLS corner.</td>
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</tr>
<tr>
<td>Prospect 2</td>
<td>150</td>
<td>40</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Adit 1</td>
<td></td>
<td>Caved</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dump 1</td>
<td>200</td>
<td>100</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Line 6</td>
<td>200</td>
<td>20</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Line 7</td>
<td>200</td>
<td>20</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Other 1</td>
<td>1.5</td>
<td>1.5</td>
<td>12</td>
<td>None.</td>
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<tr>
<td>Adits 2 and 3</td>
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<td>Caved</td>
<td></td>
<td></td>
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<tr>
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<td>250</td>
<td>250</td>
<td>25</td>
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<td>50</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
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<td>Nat. reveg.</td>
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<td>Nat. reveg.</td>
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Field Notes:

INSPECTED BY: **F. Griggs**  
TITLE: **IGS**  
DATE: **6/18/2000**

INSPECTED BY: **B. Otto**  
TITLE: **Consultant**  
DATE: **6/18/2000**

INSPECTED BY: **V. Gillerman**  
TITLE: **IGS**  
DATE: **7/2000**

(03/95)
Fill out the following for each photo:

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<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
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<tr>
<td>00-3, Neg.# 4256</td>
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<td>160</td>
<td>Overview of site 006, Lemhi Range in Background.</td>
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<tr>
<td></td>
<td>16</td>
<td>060</td>
<td>Prospect 2, cat cut shows revegetation.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>330</td>
<td>Caved Adit 1, Quartz Fe Ox vein in face.</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>320</td>
<td>Open well; 16 inch diameter, 12 feet to water.</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>040</td>
<td>Overview of site ID 0485-006.</td>
</tr>
</tbody>
</table>
THORIUM DEPOSIT #4

Offsite background radioactivity: 0.05 mR/h
Onsite background radioactivity: <0.2 mR/h

Generic line 1: Cat cut / prospect, horizontal cut in hill, no anomalous radioactivity, background is 0.02 mR/h.

Generic line 2: Cat cut, no exposure, no anomalous radioactivity.

Generic line 3: Cat cut, no exposure, no anomalous radioactivity.

Prospect 1: Cat cut 90 degrees to hill-slope, background radiation.

Prospect 2: Cat cut high on hill-slope; siltstone/quartzite on dump, 0.03 mR/h

Line 4: Cat cut / prospect, slightly Fe-stained fine-grained quartzite, 0.03 mR/h

Generic point 1: quarter corner of sections 10 and 15, T19N, R25E, post in rock cairn.

Prospect 3: Cat cut / prospect, fine-grained quartzite, no Fe staining, 0.03 mR/h
Large shallow open pit, approximately 200' across.

Perimeter 1: Cat cut / prospect that exposes N20W quartz-hematite veins. (Veins are 0.6 - 1.0 mR/hr and have reddish Fe stain.)

Prospect 4: Cat cut in unaltered Tertiary vesicular basalt.

Prospect 5: Cat cut / prospect, quartz-porphyry rhyolite lavas, no alteration but abundant Fe staining.
Radioactivity is background - 0.05 mR/h

Prospect 6: Cat cuts on or near Proterozoic / Tertiary fault zone, lots of breccia float, Background radiation - 0.03 mR/h; 0.4-1.0 mR/h especially in pit with black and red iron stain with nearby orange gossan pieces only 0.2 mR/h. Minor copper stain.

Note: The thorium veins are red hematite-rich to black veins and breccia rock, which is clearly radioactive (over 0.4 mR/h). This is in contrast to some nearby large blocks of light to yellow or orange-brown color gossan and fault breccia with low to background radioactivity (less than 0.2 mR/h). The brown iron-stained material looks Tertiary and does not appear to be related to the radioactive veins. It is interpreted as iron stain related to a fault which traverses the saddle and has down-dropped unaltered and un-mineralized Tertiary volcanics against the PC rocks and Th veins. Float of rounded stream cobbles suggest a thin sliver of basal Tertiary conglomerate may have occupied a fault-related depression where the saddle now is now.

See next page for Buffalo Mine.
BUFFALO MINE AREA:

Adit 1: Caved quartz-Fe Ox vein exposed in face, radiation measured at 0.6 - 1.0 mR/hr. Over 50' width around vein. Vein is N20°W, 75°W strike and dip.

Dump 1: revegetated dump, Fe Ox stained, no sulfide present, much was radioactive.

Line 6: Cat cut / prospect, cut through 4 foot thick vein of bull quartz.

Line 7: Cat cut / prospect cut through Fe Ox vein (radioactive).

Drill-hole 1: Open vertical drillhole, steel casing exposed, no water present in area.

Other 1: 16 inch well cased with culvert, open with standing water at about 12 feet depth.

Adits 2 and 3: Caved, dry; quartz-tourmaline(?)-hematite breccias laying around, looks like fault-controlled Tertiary veins that propagate through Precambrian mineralization.
A. SITE IDENTIFICATION
Other BLM ID Number: ________________________________
Locatable ____/ Leasable ____/ Salable ____
Operator (last known): ________________________________
Commodities: Primary ________________ / Secondary ________________
Other Agency ID Number: ________________________________ Agency: ________________________________

B. LOCATION DATA
Site is in _____ or within a mile _____ of:
ACEC ____/ WSA ____/ Wilderness Area ____/ Riparian Area ____
Nominated for Designation to National Wild & Scenic River System ____

C. ACCESS
Distance in Miles to Closest Public:
Road _____ Dwelling _____ School _____
Potable Water _____ Water Source _____ Trail _____
Campground/Picnic Area _____ Other Public Use _____

D. SITE DESCRIPTION
Nearest named drainage: ________________________________ Distance: _______

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action _____
CERCLIS Number ________________________________ OR
Federal Docket Number ________________________________

H. RECLAMATION: Closure Information
Clearances: Threatened & Endangered Species ________________________________
Cultural Resources ________________________________
Historic ________________________________
Other ________________________________

Date reclamation completed: ________________________________
Type of closure: ________________________________ Cost: ________________________________
Comments: ________________________________

Monitoring frequency: _______ Dates of monitoring visits: ________________________________
______________________________
______________________________
______________________________
______________________________
______________________________

(NOTE: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)

(03/95)
INTVIEWS

Name

Address

Phone

Affiliation

Comments:

Name

Address

Phone

Affiliation

Comments:

Name

Address

Phone

Affiliation

Comments:

(03/95)
Figure 06-3: Overview of site, Lemhi range in background. View looking 160°. (Roll 00-3, neg.# 4256, frame 15. Photograph by B. Otto, June 18, 2000.)

Figure 06-4: Prospect 2, cat cut shows re-vegetation. View looking 060°. (Roll 00-3, neg.# 4256, frame 16. Photograph by B. Otto, June 18, 2000.)
Figure 06-5: Adit 1, caved. Quartz, Fe oxide vein in face. View looking 330°. (Roll 00-3, neg.# 4256, frame 17. Photograph by B. Otto, June 18, 2000.)
Figure 06-6: Open well, 16" in diameter, +12 feet deep to standing water. View looking 320°. (Roll 00-3, neg.# 4256, frame 18. Photograph by B. Otto, June 18, 2000.)

Figure 06-7: Overview of site. View looking 040°. (Roll 00-3, neg.# 4256, frame 19. Photograph by B. Otto, June 18, 2000.)
### A. SITE IDENTIFICATION

ID Number: 1D 0 4 8 5 0 0 0 7 7
Site/Mine Name: **Rufus Prospect**  Primary Commodity: 170 (Copper)
IGS Number: DU 45

### B. LOCATION DATA

<table>
<thead>
<tr>
<th>USGS Quad: Lemhi Pass</th>
<th>LAT:</th>
<th>LONG:</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTM Coord: 4983502 N 305989 E Zone 12 AND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Township: 19N Range: 25E Section: 14 Subdivision: NW 1/4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meridian: 08 County: Lemhi</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### C. ACCESS

Visible from: Nearest road X / Trail / Population center __ Access by: 2wd / 4wd / Hike X / Other __
Access disturbance in need of reclamation: Length / Width / Acres
Road Log: **Along Agency Creek road**

Recent human use: No Describe: __

### D. SITE DESCRIPTION

Acreage: 15 Elevation: 6700
General slope (degrees): 0-10 / 11-35 X / >35 __
Floodplain: Disturbance in ___ / Adjacent to ___ / NA __
Recent mineral activity No Describe: __

### E. MINING/EXPLORATION FEATURES (Provide numbers of features)

| Open adits 1 / Closed adits 4 / Open inclines / Closed inclines |
| Open shafts / Closed shafts / Stopes |
| Other openings / Type |
| Trenches ___ Length ___ / Prospects ___ / Open drill holes ___ |
| Pits >30 ft. deep ___ / Pits <30 ft. deep ___ / Pit highwall length ___ |
| Waste dumps: <0.1 ac ___ / 0.1 - 5 ac 5 / >5 ac ___ |
| Tailings: <0.1 ac ___ / 0.1 - 5 ac ___ / >5 ac ___ |
| Heaps ___ / Dredge ___ |
| Ponds ___ / Dams ___ |
| Mills ___ Type ___ / ___ |
| Explosives ___ Describe: |
| Equipment/Machinery ___ / Headframes ___ / Trestles tramways ___ |
| Powerlines ___ |
| Structures ___ Type ___ |
| Condition: Good ___ / Fair ___ / Poor ___ / Number Locked ___ |
| Homesites ___ |
| Other: |

(08/97, swm)
F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: Yes / Describe: Sage, Grass, trees growing on old workings.

ANIMALS

GEOLOGY
Staining of soils Describe:
Sulfide minerals X Type(s): Bornite, Chalcocite, Chalcopryte, Pyrite, Sphalerite.
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: No water on site
Standing water in workings: ______
Water through/over tailings: ______
Waste rock: ______
Ore: ______

Adjacent water sources:
Ground water:
Surface water:
Surface H2O above site:
Surface H2O below site:

Evidence of aquatic life Location: Describe:

Water bed color: White / Yellow / Yellow-Orange / Orange / Brown / Green / Grey-Black / Other

Samples collected: Sketch #(s):

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers
Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe:

Other:

RADIATION
Background
Adits 1, 2, 4
Shaft
Other:

Sketch # mR/hr total WL alpha
0.05-0.1 mR/hr
0.2-0.3 mR/hr
0.2-0.3 mR/hr

(03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies / Sheetwash
Unstable Rock / Slope instability / Wind erosion

MITIGATION STATUS
None / Fencing / Signs / Safety hazards mitigated
Other:

Mitigation condition: Good / Fair / Poor
Site ID tags: / Locations:

OPTIONAL: Identify the critical reclamation measures needed:

- Cable nets, grates
- Permanent seal
- Gates
- Backfill openings, pit
- Recontour
- Fences
- Warning signs
- Plug open drill holes

X Other: Close the open adit, everything else is fine.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA Yes Rover File name: R061820A.cor

K. PHOTOGRAPHS
Number of photographs taken: 1: Roll 00-3. Negative #4256. Frame 20.

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM
HAZMAT / Other

Reason:
Figure 07-1: Sketch map of the Rufus Prospect site, Lemhi County, Idaho.
Figure 07-2: Site map of the Rufus Mine Site, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
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</thead>
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<tr>
<td>Adit 1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>None</td>
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<tr>
<td>Dump 1</td>
<td>20</td>
<td>35</td>
<td>5</td>
<td>None</td>
</tr>
<tr>
<td>Adit 2</td>
<td>Caved</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Adit 3</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Nat Reveg.</td>
</tr>
<tr>
<td>Adit 4</td>
<td>Caved</td>
<td></td>
<td></td>
<td>None</td>
</tr>
<tr>
<td>Adit 5</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Sloughed In.</td>
</tr>
</tbody>
</table>

Field Notes:

INSPECTED BY: F. Griggs  
TITLE: IGS  
DATE: 6/18/2000

INSPECTED BY: B. Otto  
TITLE: IGS  
DATE: 6/18/2000

INSPECTED BY: V. Gillerman  
TITLE: IGS  
DATE: 7/2000
Adit 1: Sloughed in but still open. Precambrian quartzite with azurite coatings on fractures, small quartz-azurite vein exposed near portal.

Dump 1: Slight Fe and Cu staining, no sulfide.

Adit 2: Caved, slight Cu staining on float, 2-3 inch vein exposed in back. Dump from adit is same as dump 1.

Adit 3: Caved, azurite on dump, trace of Fe stain on quartzite.

Adit 4: Caved, quartz vein material on dump with chalcocite, bornite, chalcopyrite, pyrite, sphalerite and azurite.

Adit 5: Totally caved, quartzite host, no staining, no Cu.
Fill out the following for each photo:

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<tr>
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<td>90-3, Neg.# 4256</td>
<td>20</td>
<td>295</td>
<td>Adit 1, sloughed in but open.</td>
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A. SITE IDENTIFICATION
Other BLM ID Number: ____________________________
Locatable _____/ Leasable _____/ Salable _____
Operator (last known): ____________________________
Commodities: Primary _________________/ Secondary _________________
Other Agency ID Number: ____________________________ Agency: ____________________________

B. LOCATION DATA
Site is in _____or within a mile _____of:
ACEC _____/ WSA _____/ Wilderness Area _____/ Riparian Area _____
Nominated for Designation to National Wild & Scenic River System _____

C. ACCESS
Distance in Miles to Closest Public:
Road ________ Dwelling ________ School ________
Potable Water ________ Water Source ________ Trail ________
Campground/Picnic Area ________ Other Public Use ________

D. SITE DESCRIPTION
Nearest named drainage: ____________________________ Distance: ________

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action _____
CERCLIS Number ____________________________ OR
Federal Docket Number ____________________________

H. RECLAMATION: Closure Information
Clearances: Threatened & Endangered Species ____________________________
Cultural Resources ____________________________ Historic ____________________________
Other ____________________________
Date reclamation completed: ____________________________
Type of closure: ____________________________ Cost: ____________________________
Comments: ____________________________

Monitoring frequency: ________ Dates of monitoring visits: ____________________________

(NOTE: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)
<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Phone</th>
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<th>Comments</th>
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<th>Affiliation</th>
<th>Comments</th>
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<th>Comments</th>
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</tbody>
</table>

(03/95)
Figure 07-3: Adit 1, partially caved, still open. View looking 295°. (Roll 00-3, neg.# 4256, frame 20. Photograph by B. Otto, June 18, 2000.)
**BUREAU OF LAND MANAGEMENT**

**ABANDONED/INACTIVE MINE LAND INVENTORY**
**FIELD CHECKLIST**

### A. SITE IDENTIFICATION

ID Number: **ID-04850008**

Site/Mine Name: **Lower Pattee Workings**

Primary Commodity: **No mineralization exposed.**

IGS Number: **DU 5**

### B. LOCATION DATA

<table>
<thead>
<tr>
<th>USGS Quad</th>
<th>Agency Creek</th>
<th>LAT:</th>
<th>LONG: OR</th>
<th>USGS Coord: 4984359 N 296309 E Zone 12 AND</th>
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<td>Range: 24E</td>
<td>Section: 11 Subdivision: <strong>SW 1/4</strong></td>
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<tr>
<td>Meridian</td>
<td>08</td>
<td>County: <strong>Lemhi</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface:</td>
<td>BLM X</td>
<td>Non-BLM</td>
<td>Mineral Estate: BLM X</td>
<td>Non-BLM</td>
</tr>
</tbody>
</table>

### C. ACCESS

Visible from: Nearest road **X** / Trail **I** / Population center **I**

Access by: 2wd **X** / 4wd **I** / Hike **X** / Other **I**

Access disturbance in need of reclamation: Length **I** / Width **I** / Acres **I**

Road Log: **Pattee Creek road, accessed from Agency Ck. road**

Recent human use: **I** Describe: __________________________________________________________

### D. SITE DESCRIPTION

Acreage: **20**

Elevation: **5400**

General slope (degrees): 0-10 **I** / 11-35 **X** / >35 **X**

Floodplain: Disturbance in **I** / Adjacent to **I** / NA **I**

Recent mineral activity **I** Describe: _____________________________________________________

### E. MINING/EXPLORATION FEATURES (Provide numbers of features)

- Open adits: **0** / Closed adits: **1** / Open inclines: **I** / Closed inclines: **I**
- Open shafts: **I** / Closed shafts: **I** / Stopes: **I**
- Other openings: **I** Type: ____________________________________________________________
- Trenches: **0** Length: **I** / Prospects: **5** / Open drill holes: **I**
- Pits >30 ft. deep: **I** / Pits <30 ft. deep: **I** / Pit highwall length: **I**
- Waste dumps: <0.1 ac: **I** / 0.1 - 5 ac: **I** / >5 ac: **I**
- Tailings: <0.1 ac: **I** / 0.1 - 5 ac: **I** / >5 ac: **I**
- Heaps: **I** / Dredge: **I**
- Ponds: **I** / Dams: **I**
- Mills: **I** Type: **I**
- Explosives: **I** Describe: ____________________________________________________________
- Equipment/Machinery: **I** / Headframes: **I** / Trestles/tramways: **I**
- Powerlines: **I**
- Structures: **I** Type: _______________________________________________________________
- Condition: Good: **I** / Fair: **I** / Poor: **I** / Number Locked: **I**
- Homesites: **I**
- Other: ____________________________________________________________

(08/97, swm)
F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy / Stressed / Dead / Nonexistent
Evidence of natural revegetation: Yes / Describe: Sage, grass, wild rose growing abundantly.

ANIMALS

GEOLGY
Staining of soils No / Describe: 
Sulfide minerals No / Type(s): 
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings: No water on site / Conductivity / Flow (GPM) / Sketch #
Standing water in workings: 
Water through/over tailings:
waste rock: 
ore: 

Adjacent water sources:
Ground water:
Surface water:
Surface H2O above site:
Surface H2O below site:

Evidence of aquatic life / Location: Describe:

Water bed color: White / Yellow / Yellow-Orange / Orange 
Brown / Green / Grey-Black / Other

Samples collected: / Sketch #(s):

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers

Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe:

Other:

RADIATION
Sketch # mR/hr gamma WL alpha
Background 
Adit/incline 
Shaft 
Other: (03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies / Sheetwash
Unstable Rock / Slope instability / Wind erosion

MITIGATION STATUS
None / Fencing / Signs / Safety hazards mitigated
Other:

Mitigation condition: Good / Fair / Poor
Site ID tags: / Locations:

OPTIONAL: Identify the critical reclamation measures needed:

- Cable nets, grates
- Permanent seal
- Gates
- Backfill openings, pit
- Recontour
- Fences
- Warning signs
- Plug open drill holes
- Other:

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA
Yes
Rover File name: R061915A.cor

K. PHOTOGRAPHS
Number of photographs taken: 1: Roll 00-3, Negative # 4256, Frame 23.

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM / HAZMAT / Other

Reason:

(03/95)
Figure 08-1: Site map of the Lower Pattee Creek Workings (USGS Agency Creek 7.5 ° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
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<tbody>
<tr>
<td>Prospect 1</td>
<td>30</td>
<td>10</td>
<td>5</td>
<td>Nat. Reveg.</td>
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<tr>
<td>Prospect 2</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>Nat. Reveg</td>
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<tr>
<td>Adit 1</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Nat. Reveg</td>
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<tr>
<td>Prospect 3</td>
<td>100</td>
<td>30</td>
<td>5</td>
<td>Nat. Reveg</td>
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<td>Prospect 4</td>
<td>20</td>
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<td>5</td>
<td>Nat. Reveg</td>
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<tr>
<td>Prospect 5</td>
<td>20</td>
<td>10</td>
<td>5</td>
<td>Nat. Reveg</td>
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<tr>
<td>Road 1</td>
<td>300</td>
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<td>Nat. Reveg</td>
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<tr>
<td>Road 2</td>
<td>150</td>
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<td>Nat. Reveg</td>
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<tr>
<td>Road 3</td>
<td>+500</td>
<td>15</td>
<td>5</td>
<td>Nat. Reveg</td>
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Field Notes:


(03/95)
Prospect 1: Small cat cut in quartzite, no mineralization.

Prospect 2: small cat cut, exposes barren quartz vein.

Adit 1: Probably is two side-by-side caved adits in quartzite, mafic dike exposed.

Prospect 3: Cat cut, exposes altered mafic dike in quartzite.

Prospect 4: Small round depression, exposes mafic dike, no mineralization.

Prospect 5: Small cut, no mineralization, exposes mafic dike.

Road 1: Road / cat cut, no mineralization exposed.

Road 2: Road / cat cut, no mineralization exposed, covered by muck from road 1.

Road 3: Access to prospects, totally re-vegetated and impassible.
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<tr>
<th>Roll Number</th>
<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>00-3, Neg.# 4256</td>
<td>23</td>
<td>05</td>
<td>Overview of site ID-0485-00008, looking North.</td>
</tr>
</tbody>
</table>
### SITE IDENTIFICATION

Other BLM ID Number: 

Locatable _____ / Leasable _____ / Salable _____

Operator (last known): 

Commodities: Primary ________________ / Secondary _______________________

Other Agency ID Number: ______________________ Agency: ____________________

### LOCATION DATA

Site is in _____ or within a mile _____ of:

- ACEC _____ / WSA _____ / Wilderness Area _____ / Riparian Area _____
- Nominated for Designation to National Wild & Scenic River System _____

### ACCESS

Distance in Miles to Closest Public:

- Road ____
- Potable Water ____
- Campground/Picnic Area ____
- Dwelling ____
- Water Source _____
- Trail ____
- Other Public Use _____

### SITE DESCRIPTION

Nearest named drainage: ___________________________ Distance: ______

### POTENTIAL HAZARDOUS MATERIALS

Site is under regulatory action _____

CERCLIS Number ____________________________ OR

Federal Docket Number ____________________________

### RECLAMATION: Closure Information

Clearances: Threatened & Endangered Species ____________________________

- Cultural Resources ____________________________
- Historic ____________________________
- Other ____________________________

Date reclamation completed: ____________________________ Cost: __________________

Comments: ____________________________________________

Monitoring frequency: _______ Dates of monitoring visits: __________________

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)
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</table>
Figure 08-2: Overview of site. View looking 005°. (Roll 00-3, neg.# 4256, frame 23. Photograph by B. Otto, 19 June, 2000.)
BUREAU OF LAND MANAGEMENT
ABANDONED/INACTIVE MINE LAND INVENTORY
FIELD CHECKLIST

A. SITE IDENTIFICATION
ID Number: 1 D 0 4 8 5 0 0 0 0 9
Site/Mine Name: Pattee Creek Workings Primary Commodity: 170 (Copper)
IGS Number: DI 208

B. LOCATION DATA
USGS Quad: Goldstone Mountain LAT: _______ LONG: _______ OR
UTM Coord: 4986137 N 298051 E Zone 12 AND
Township: 19N Range: 24E Section: 1 Subdivision: SW 1/4
Meridian: 08 County: Lemhi
Surface: BLM X/ Non-BLM ___ Mineral Estate: BLM X/ Non-BLM ___

C. ACCESS
Visible from: Nearest road ___/ Trail X ___/ Population center ___
Access by: 2wd ___/ 4wd X ___/ Hike ___/ Other ___
Access disturbance in need of reclamation: Length ___/ Width ___/ Acres ___
Road Log: Next to road up Pattee Creek. Lewis and Clark campsite trail marker.
Recent human use: Yes ___ Describe: Fire pit.

D. SITE DESCRIPTION
Acreage: 20 Elevation: 5600
General slope (degrees): 0-10 ___/ 11-35 X ___/ >35 ___
Floodplain: Disturbance in ___/ Adjacent to X ___/ NA ___
Recent mineral activity No ___ Describe:

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits 4 ___/ Closed adits 1 ___/ Open inclines ___/ Closed inclines ___
Open shafts ___/ Closed shafts ___/ Stope ___
Other openings ___ Type ___
Trenches 3 Length 150 ___/ Prospects 4 ___/ Open drill holes 0 ___
Pits >30 ft. deep ___/ Pits <30 ft. deep ___/ Pit highwall length ___
Waste dumps: <0.1 ac 5 ___/ 0.1 - 5 ac ___/ >5 ac ___
Tailings: <0.1 ac ___/ 0.1 - 5 ac ___/ >5 ac ___
Heaps ___/ Dredge ___
Ponds ___/ Dams ___
Mills ___ Type ___
Explosives ___ Describe:
Equipment/Machinery ___/ Headframes ___/ Trestles/tramways ___
Powerlines ___
Structures ___ Type ___
Condition: Good ___/ Fair ___/ Poor ___/ Number Locked ___
Homesites ___
Other:

(08/97, swm)
BLM AML INVENTORY FIELD CHECKLIST
ID Number: ID-0485-00009
IGS: D1 208

F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent
Evidence of natural revegetation: Yes / Describe: Trees, sage, grass.

ANIMALS

GEOLOGY
Staining of soils No / Describe:
Sulfide minerals X / Type(s): Trace galena.
Tailings: Confined / Unconfined / Unknown

HYDROLOGY
Water flowing from workings:
Standing water in workings:
Water through/over tailings:
Waste rock:
Ore:

Adjacent water sources:
Ground water:
Surface water: Stream 8.7 40 +100 200 ft
Surface H2O above site:
Surface H2O below site:

Evidence of aquatic life X Location: Describe: Bugs 200 feet down stream from workings.

Water bed color: White / Yellow / Yellow-Orange / Orange
Brown X / Green / Grey-Black / Other

Samples collected: No Sketch #:

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos
Petrochemical Products / Dump sites
Power Substations / Transformers

Barrels, Tanks, Containers Leaking Contents:
Evidence of Underground Storage Tanks Describe:

Other:

RADIATION Sketch # mR/hr gamma WL alpha
Background
Adit/Incline
Shaft
Other: 0.03

(03/95)
H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies / Sheetwash
Unstable Rock / Slope instability / Wind erosion

MITIGATION STATUS
None / Fencing / Signs / Safety hazards mitigated
Other:

Mitigation condition: Good / Fair / Poor
Site ID tags: / Locations:

OPTIONAL: Identify the critical reclamation measures needed

- Cable nets, grates
- Permanent seal
- Gates
- Backfill openings, pit
- Recontour
- Fences
- Warning signs
- Plug open drill holes

- Topsoil, soil amendments
- Revegetation
- Stabilize/destroy structures
- Drainage control
- Water treatment
- Wildlife closure
- No action
- Trash / clean up

Other: Close portals, they all have bad backs, susceptible to caving.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA
Yes. Rover File name: R061918A.cor

K. PHOTOGRAPHS
Number of photographs taken: 5: Roll 00-3, Negative #4256, Frame 24.
Roll 4, Negative #8584, Frames 1-4.

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM
HAZMAT / Other

Reason:

(03/95)
Figure 09-1: Site map of the Pattee Creek Workings, Lemhi County, Idaho (USGS Goldstone Mountain 7.5° topographic map).
### M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prospect 1</td>
<td>150</td>
<td>50</td>
<td>10</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Adit 1</td>
<td>5</td>
<td>4</td>
<td>2</td>
<td>Open, needs closure, Nat. reveg.</td>
</tr>
<tr>
<td>Adit 2</td>
<td>6</td>
<td>5</td>
<td>20</td>
<td>Open, needs closure, Nat. reveg.</td>
</tr>
<tr>
<td>Adit 3</td>
<td>6</td>
<td>4</td>
<td>10</td>
<td>Open, needs closure, Nat. reveg.</td>
</tr>
<tr>
<td>Adit 4</td>
<td>2</td>
<td>2</td>
<td>10</td>
<td>Open, needs closure, Nat. reveg.</td>
</tr>
<tr>
<td>Adit 5</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Prospect 2</td>
<td>60</td>
<td>20</td>
<td>5</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Prospect 3</td>
<td>120</td>
<td>40</td>
<td>15</td>
<td>Nat. reveg.</td>
</tr>
<tr>
<td>Prospect 4</td>
<td>70</td>
<td>15</td>
<td>8</td>
<td>Nat. reveg.</td>
</tr>
</tbody>
</table>

Field Notes:
See next page.

INSPECTED BY: F. Griggs TITLE: IGS DATE: 06/19/2000
INSPECTED BY: B. Otto TITLE: IGS DATE: 06/19/2000
Prospect 1: Small cut exposes base-metal/Cu vein in cleaved quartzite.

Adit 1: Open, exposes gouge / cleaved zone in schistose quartzite. Also exposes nicely developed horizontal fault zone in back. Lagging near portal.

Adit 2: Open, bad ground. Face exposes a low angle fault with associated quartz vein. Fold noses in sheared hanging wall above quartz vein suggest hanging wall moved east.

Adit 3: Caved but open. Brush growing in opening.

Adit 4: Sloughed but open, sheared quartzite with Cu Ox on dump.

Adit 5: Closed, adjacent to Adit 4.

Prospect 2: Cat cut, No exposure. Copper stain on float of schistose Precambrian quartzite.

Prospect 3: Cat cut exposes contact of Tertiary terrace gravel and schistose quartzite.

Prospect 4: Cat cut into colluvial quartzite, no mineralization exposed.

All prospects are lined up along a horizontal plane, which coincides with the flat vein / fault exposed in Adit 2. Looks like a low-angle fault / vein system.
Fill out the following for each photo:

<table>
<thead>
<tr>
<th>Roll Number</th>
<th>Frame Number</th>
<th>Direction</th>
<th>Location/Feature</th>
</tr>
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<tr>
<td>00-3. Neg.# 4256</td>
<td>24</td>
<td>145</td>
<td>Adit 1. Pattee Ck workings.</td>
</tr>
<tr>
<td>00-4. Neg.# 8584</td>
<td>1</td>
<td>120</td>
<td>Adit 2.</td>
</tr>
<tr>
<td>&quot;</td>
<td>2</td>
<td>60</td>
<td>Low-angle fault exposed in Adit 2.</td>
</tr>
<tr>
<td>&quot;</td>
<td>3</td>
<td>60</td>
<td>Same as above with flash.</td>
</tr>
<tr>
<td>&quot;</td>
<td>4</td>
<td>180</td>
<td>Adit 3 with brush in portal.</td>
</tr>
<tr>
<td>&quot;</td>
<td>5</td>
<td>270</td>
<td>Adit 4.</td>
</tr>
</tbody>
</table>

...
A. SITE IDENTIFICATION
Other BLM ID Number: ____________________________
Locatable _____/ Leasable _____/ Salable _____
Operator (last known): ____________________________
Commodities: Primary _________________________/ Secondary _________________________
Other Agency ID Number: ____________________________ Agency: ____________________________

B. LOCATION DATA
Site is in _____or within a mile _____of:
ACEC _____/ WSA _____/ Wilderness Area _____/ Riparian Area _____
Nominated for Designation to National Wild & Scenic River System _____

C. ACCESS
Distance in Miles to Closest Public:
Road ____________ Dwelling ____________ School ____________
Potable Water ____________ Water Source ____________ Trail ____________
Campground/Picnic Area ____________ Other Public Use ____________

D. SITE DESCRIPTION
Nearest named drainage: ____________________________ Distance: ____________

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action _____
CERCLIS Number ____________________________ OR
Federal Docket Number ____________________________

H. RECLAMATION: Closure Information
Clearances:
Threatened & Endangered Species ____________________________
Cultural Resources ____________________________
Historic ____________________________
Other ____________________________

Date reclamation completed: ____________________________ Cost: ____________________________
Comments: ____________________________

Monitoring frequency: ____________ Dates of monitoring visits: ____________________________
__________________________
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(NOTE: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)

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Figure 09-2: Adit 1, Pattee Creek workings. View looking 145°. (Roll 00-3, neg.# 4256, frame 24. Photograph by B. Otto, June 19, 2000.)

Figure 09-3: Adit 2. View looking 120°. (Roll 00-4, neg.# 8584, frame 1. Photograph by B. Otto, June 19, 2000.)
Figure 09-4: Adit 2, view of exposed low angle fault. View looking 060 °. (Roll 00-4, neg.# 8584, frame 2. Photograph by B. Otto, June 19, 2000.)

Figure 09-5: Adit 2, view of exposed low angle fault. Highlighted with flash unit. View looking 060 °. (Roll 00-4, neg.# 8584, frame 3. Photograph by B. Otto, June 19, 2000.)
Figure 09-6: Adit 3, with brush in portal area. View looking 180°. (Roll 00-4, neg.# 8584, frame 4. Photograph by B. Otto, June 19, 2000.)

Figure 09-7: Adit 4. View looking 270°. (Roll 00-4, neg.# 8584, frame 5. Photograph by B. Otto, June 19, 2000.)
A. SITE IDENTIFICATION
ID Number: ID-048500010
Site/Mine Name: Wonder Lode Primary Commodity: 170 (Cu)/540 (Th)
IGS Number: DU 73

B. LOCATION DATA
USGS Quad: Lemhi Pass LAT: LONG: OR
UTM Coord: 4981029 N 305118 E Zone AND
Township: 19N Range: 25E Section: 22 Subdivision: SE 1/4
Meridian: 08 County: Lemhi
Surface: BLM X Non-BLM ___ Mineral Estate: BLM X Non-BLM ___

C. ACCESS
Visible from: Nearest road X Trail ___ Population center ___
Access by: 2wd ___ 4wd ___ Hike X Other ___
Access disturbance in need of reclamation: Length ___ Width ___ Acres ___

Road Log: 0.5 mile walk up stream from Copper Queen Mine road, ___

Recent human use: No Describe: Dump crosses creek; non-sulfidic, locally radioactive quartzite.

D. SITE DESCRIPTION
Acreage: 30 Elevation: 6800
General slope (degrees): 0-10 ___ 11-35 X ___ >35 ___
Floodplain: Disturbance in X Adjacent to ___ NA ___
Recent mineral activity No Describe: Type Exploration roads connect prospects and adits.

E. MINING/EXPLORATION FEATURES (Provide numbers of features)
Open adits ____ / Closed adits 2 / Open inclines ____ / Closed inclines ____
Open shafts ____ / Closed shafts ____ / Stopes 2, caved to surface.
Other openings Type Exploration roads connect prospects and adits.
Trenches ___ Length ___ / Prospects 9 ___ / Open drill holes ___
Pits >30 ft. deep ___ / Pits <30 ft. deep ___ / Pit highwall length ___
Waste dumps: <0.1 ac 2 / 0.1 - 5 ac ___ / >5 ac ___
Tailings: <0.1 ac ____ / 0.1 - 5 ac ____ / >5 ac ____
Heaps ____ / Dredge ___
Ponds ____ / Dams ___
Mills ____ Type ____ / ___ / ___

Explosives Describe: ___
Equipment/Machinery ____ / Headframes ____ / Trestles/tramways____
Powerlines ____
Structures Type Cabin
Condition: Good ____ / Fair ____ / Poor X ____ / Number Locked ____
Homesites ____
Other: ___

(08/97. swm)
F. ENVIRONMENTAL FEATURES

VEGETATION
Vegetation: Healthy X / Stressed / Dead / Nonexistent  
Evidence of natural revegetation:  X  / Describe:  Sage trees and grass.  

ANIMALS

GEOLOGY
Staining of soils  X  Describe:  Trace hematite locally.  
Sulfide minerals  No  Type(s):  
Tailings: Confined / Unconfined / Unknown  

HYDROLOGY
Water flowing from workings:  
Standing water in workings:  
Water through/over tailings:  
waste rock:  
ore:  

Adjacent water sources:  
Ground water:  
Surface water:  
Surface H₂O above site:  Stream 8.6 110 1-2 60  
Surface H₂O below site:  Stream 8.4 60 1-2 120  

Evidence of aquatic life  No  Location:  Describe:  

Water bed color:  White / Yellow / Yellow-Orange / Orange  
Brown  X / Green / Grey-Black / Other  

Samples collected:  Sketch #(s):  

G. POTENTIAL HAZARDOUS MATERIALS (Provide numbers of features)

Chemical piles or spills / Acid or Chemical odor / Asbestos  
Petroleum Products / Dump sites  
Power Substations / Transformers  

Barrels, Tanks, Containers Leaking Contents:  
Evidence of Underground Storage Tanks Describe:  

Other:  

RADIATION
Background  0.03 mR/hr.  
Adit/roads  1.5-3.0 mR/hr.  Around vein  
Dump by creek  0.3-0.6 mR/hr.  
Other:  Dump sample  1.7 mR/hr.  

(See Field Notes for additional data)
BLM AML INVENTORY FIELD CHECKLIST

ID Number: JF-0485-00010
IGS: DU 73

H. RECLAMATION

SITE CONDITIONS
Erosion: Rills / Gullies / Sheetwash 
Unstable Rock / Slope instability / Wind erosion 

MITIGATION STATUS
None / Fencing / Signs / Safety hazards mitigated 
Other: 

Mitigation condition: Good / Fair / Poor 
Site ID tags: / Locations: 

OPTIONAL: Identify the critical reclamation measures needed

Cable nets, grates 
Permanent seal 
Gates 
Backfill openings, pit 
Recontour 
Fences 
Warning signs 
Plug open drill holes 

Other: Waste dump dams stream. Doesn't seem to be causing any harm, but should be looked at due to potential erosion.

I. SITE SKETCH
Show orientation, approximate scale, access route, adjacent drainages, and locations of features on attached sketch map. Use the feature symbols provided in the map legend on page 6.

J. GLOBAL POSITIONING SYSTEM DATA Yes 
Rover File name: R062015A.cor

K. PHOTOGRAPHS
Number of photographs taken: 3: Roll004, Negative # 8594, Frames 6-8

L. ACTION
Site requires immediate investigation by: Law Enforcement / BLM / HAZMAT / Other 
Reason: 

(03/95)
Figure 10-1: Sketch map with field notes of the Wonder Lode Mine site, Lemhi County, Idaho.
Figure 10-2: Site map of the Wonder Lode Mine, Lemhi County, Idaho (USGS Lemhi Pass 7.5° topographic map).
M. FEATURES - PROVIDE DIMENSIONS IN FEET.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Length</th>
<th>Width</th>
<th>Height or Depth</th>
<th>Mitigation</th>
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<tbody>
<tr>
<td>Prospect 1</td>
<td>80</td>
<td>20</td>
<td>5</td>
<td>Prospect part of road cut extension.</td>
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<tr>
<td>Prospect 2</td>
<td>100</td>
<td>20</td>
<td>5</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 3</td>
<td>80</td>
<td>20</td>
<td>5</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 4</td>
<td>120</td>
<td>30</td>
<td>10</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 5</td>
<td>100</td>
<td>20</td>
<td>5</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 6</td>
<td>150</td>
<td>30</td>
<td>10</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 7</td>
<td>200</td>
<td>30</td>
<td>15</td>
<td>&quot;</td>
</tr>
<tr>
<td>Prospect 8</td>
<td>120</td>
<td>30</td>
<td>15</td>
<td>&quot;</td>
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<td>Prospect 9</td>
<td>70</td>
<td>10</td>
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<td>&quot;</td>
</tr>
<tr>
<td>Adit 1</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Nat. Reveg.</td>
</tr>
<tr>
<td>Dump 1</td>
<td>20</td>
<td>5</td>
<td>5</td>
<td>Nat. Reveg.</td>
</tr>
<tr>
<td>Adit 2</td>
<td>Caved</td>
<td></td>
<td></td>
<td>Nat. Reveg.</td>
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<tr>
<td>Dump 2</td>
<td>60</td>
<td>30</td>
<td>20</td>
<td>Nat. Reveg.</td>
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Field Notes:
Prospects 1 through 9 are extensions of a dozer road cut that climbs the mountain side. See attached sheet.

INSPECTED BY: F. Griggs  
TITLE: IGS  
DATE: 6/20/2000

INSPECTED BY: B. Otto  
TITLE: IGS  
DATE: 6/20/2000
Radiation (whole body readings, total radiation):
   Offsite background: 0.05 mR/h.
   Below site: 0.1-0.2 mR/h.
   Adits: 1.5-3.0 mR/h.
   Dump by creek/cabin: 0.3-0.6 mR/h.
   Radiation halo extended approximately 20 feet from “vein” or black ore zone.

Prospect 1: Small cat cut, hematite stained quartzite, no mineralization noted.

Prospect 2: quartzite with specularite on fractures.

Prospect 3: Float, no exposure. Quartzite with minor specularite on fractures.

Prospect 4: Fe Ox in soil, small exposures of quartzite, Fe Ox and chlorite vein with minor specularite.

Prospect 5: Quartzite, chlorite and specularite on fractures, one 3 ft. outcrop.

Prospect 6: quartzite, chlorite and specularite on fractures, Fe Ox in soil.

Prospect 7: Turnaround in road, no outcrop, float of quartzite.

Prospect 8: Good outcrop of strongly broken quartzite, punky brown mixture of FeOx, and Mn (?) Oxides, radioactive (1.7 mR/hr). Outcrop exposes a highly fractured fold nose that plunges steeply west. Mineralization occurs along fold nose. Malachite in float.

Prospect 9: Punky brown FeOx vein in quartzite. Outcrop displays low angle post-ore fault with N10°W, 25-30° West dip. Slicks direction shows movement of hangingwall to North 70 East. This probably explains the offset of vein between prospects 6 and 8. Noted malachite on bench.

Adit 1: Caved, located below prospect 9, timbers sticking out of rubble.

Dump 1: clean quartzite on hillslope.

Adit 2: Caved, associated dump 2 probably represents about 1000 feet of underground development.

Dump 2: clean quartzite, dump blocks stream, marshy wetland has formed on up-gradient side.

Adit 3 and 2 caved stopes on west side of creek. Pyrite, tetrahedrite, sphalerite and quartz in east-west-trending vein. Workings probably date to the late 1800's.
Fill out the following for each photo:

<table>
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<th>Location/Feature</th>
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<td>110</td>
<td>Wonder Lode (bad lighting).</td>
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<td>&quot;</td>
<td>7</td>
<td>200</td>
<td>Adit 2, Wonder Lode dump.</td>
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<tr>
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<td>8</td>
<td>105</td>
<td>Wonder Lode overview, bottom prospect is number 8.</td>
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A. SITE IDENTIFICATION
Other BLM ID Number: ________________________________
Locatable _____ / Leasable _____ / Salable _____
Operator (last known): ________________________________
Commodities: Primary ____________ / Secondary ____________
Other Agency ID Number: ____________________________ Agency: ______________________

B. LOCATION DATA
Site is in _____ or within a mile _____ of:
   ACEC _____ / WSA _____ / Wilderness Area _____ / Riparian Area _____
   Nominated for Designation to National Wild & Scenic River System _____

C. ACCESS
Distance in Miles to Closest Public:
   Road _______ Dwelling _______ School _______
   Potable Water _______ Water Source _______ Trail _______
   Campground/Picnic Area _______ Other Public Use _______

D. SITE DESCRIPTION
Nearest named drainage: _______________________________ Distance: _________

G. POTENTIAL HAZARDOUS MATERIALS
Site is under regulatory action _______
   CERCLIS Number ___________________________ OR
   Federal Docket Number ___________________________

H. RECLAMATION: Closure Information
Clearances: Threatened & Endangered Species ______________________
           Cultural Resources ______________________
           Historic ______________________
           Other ______________________

Date reclamation completed: _______________________
Type of closure: _______________________
Cost: _______________________
Comments: _______________________

Monitoring frequency: _______ Dates of monitoring visits: _______________________
__________________________
__________________________
__________________________
__________________________

(Note: The letters for the items above correspond to those on pp. 1 - 3 of this Checklist)
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<td>Comments:</td>
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(03/95)
Figure 10-3: Wonder Lode overview. View Looking 110°. (Roll 00-4, neg. # 8584, frame 6. Photograph by B. Otto, June 20, 2000.)

Figure 10-4: Adit 2, Wonder Lode dump. View Looking 200°. (Roll 00-4, neg.# 8584, frame 7. Photograph by B. Otto, June 20, 2000.)
Figure 10-5: Wonder Lode overview, bottom most prospect is Prospect 8. View Looking 105°. Roll 00-4, neg.# 8584, frame 8. Photograph by B. Otto, June 20, 2000.)