

History of the Copper Cliff Mine, Adams County, Idaho

Victoria E. Mitchell

Staff Report 97-4
April 1997

Idaho Geological Survey
Morrill Hall, Third Floor
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INTRODUCTORY NOTE

This report was prepared under a cooperative agreement with the U.S. Forest Service, Region IV, as part of a project to identify and describe inactive and abandoned mines in the state of Idaho. Work on this project included preparing detailed histories of mines in Region IV that had significant recorded production. The information in this report is from a number of published and unpublished sources in the Idaho Geological Survey's mineral property files. Where not otherwise noted, most of the mine production data is drawn from the U.S. Geological Survey's (USGS) annual volumes on *Mineral Resources of the United States* (1882-1923) and the equivalent volumes produced by the U.S. Bureau of Mines (USBM) (*Mineral Resources of the United States*, 1924-1931, and *Minerals Yearbook*, 1932 to present). Information on underground workings and mine equipment is generally from the annual reports of the Idaho Inspector of Mines (IMIR) published from 1899 to 1979. After 1974, the Mine Inspector's office was known as the Mine Safety Bureau, a section of the Idaho Department of Labor and Industrial Services. Detailed accounts of mine operations are, for the most part, drawn from the annual reports prepared by the companies for the State Inspector of Mines; these reports were required by law and the information contained in them formed the basis of the Mine Inspector's annual reports. Reports of recent developments are taken from the Idaho Geological Survey's (IGS) annual reports on the developments in mining and minerals in Idaho (from 1984 to present) or from similar reports produced by the Survey's predecessor, the Idaho Bureau of Mines and Geology (IBMG) from 1975 to 1984. Other published sources are referenced in the text. A complete bibliography is included at the end of the report. Where direct quotations are taken from source materials, the original spelling and grammar are preserved even in cases where they do not conform to currently accepted usage.

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The Copper Cliff Mine is in Adams County in the Seven Devils mining district (Figure 1). The mine is located on Mann Creek, a tributary of Indian Creek, at an elevation of about 4,900 feet (Figure 2). The deposit consists of stratiform and stratabound disseminated copper minerals in iron-rich metamorphosed volcanic rocks of the Seven Devils Group (Figure 3). Ore minerals include bornite, chalcopyrite, chalcocite, malachite, chrysocolla, and azurite. The deposits appear to be volcanogenic, with some remobilization of the sulfides during regional metamorphism and shearing of the host rocks (Morganti, 1972).

The Copper Cliff Mine was located in the late 1960s (Close and others, 1982). Silver King Mines, Inc., of Salt Lake City, Utah, leased the mine from Noranda in 1970. (See Table 1 for companies operating at the mine.) The lease required minimum royalty payments of \$10,000 (based on a royalty of 50 cents per ton of mined ore), with a cumulative maximum payment of \$1 million. By 1988, \$571,714 had been paid on this lease (Silver King Mines, Inc./Pacific Silver Corporation 1988 Combined Annual Report). Morganti (1972) mapped the geology and studied the mineralization of the area shortly before the mine opened.

Silver King dedicated the Copper Cliff mill (Figure 4) in 1972. At that time, the capacity was 300 tons per day (tpd), but plans called for doubling its size when warranted.

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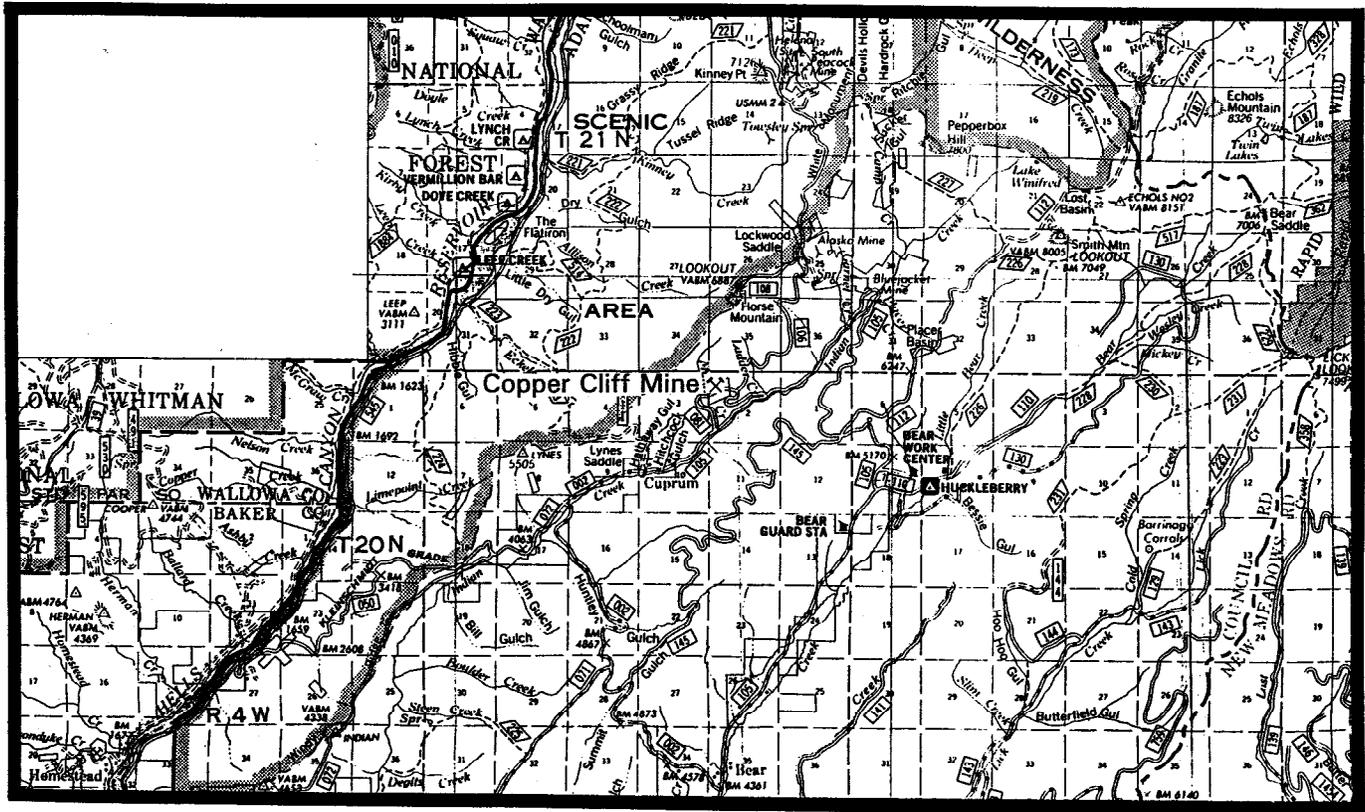


Figure 1. Map of northwestern Adams County and the Hells Canyon region, showing the location of the Copper Cliff Mine (U.S. Forest Service Payette National Forest map, scale $\frac{3}{8}$ inch = 1 mile).

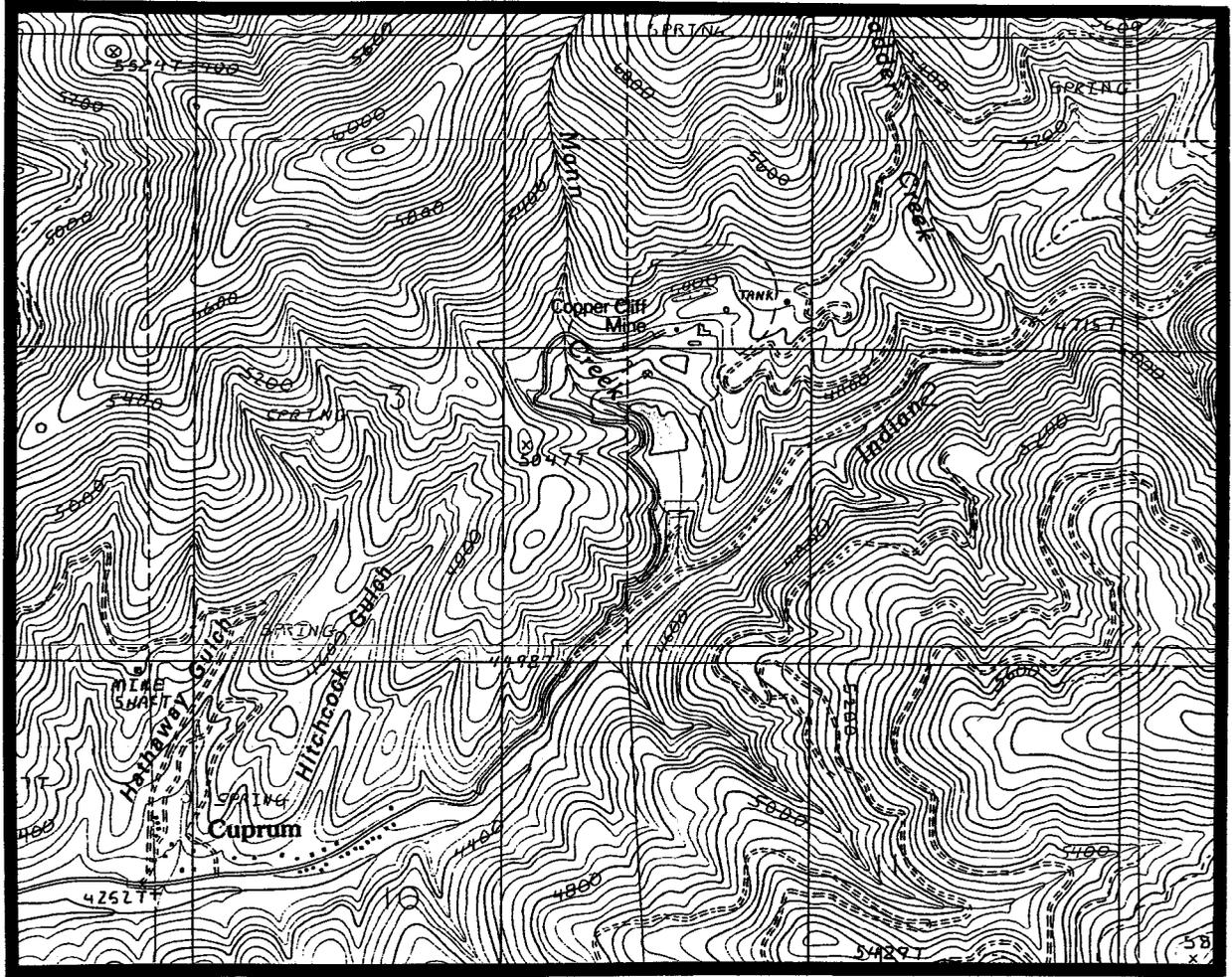


Figure 2. Topographic map of the Copper Cliff Mine (U.S. Geological Survey Cuprum 7.5-minute topographic map).



Figure 3. Geologic map of the Copper Cliff Mine and vicinity. **Tm** = Martin Bridge Formation; Phc, **Fws**, Edc, **Pfv** = Seven Devils Volcanics; JKd = Late Jurassic and Cretaceous (?) granodiorite, quartz diorite, diorite, and gabbro; Tcg, Tci = Columbia River Basalt; Qcg = colluvium and glacial deposits; Qtg = terrace gravels; Qal = alluvium. Heavy lines are faults; U indicates upthrown block and D, downthrown block (Gaston and Bennett, 1979).

Table 1. Companies operating at the Copper Cliff Mine.

Company Name	Officer	Date Incorporated	Charter Forfeited	Year(s) at Mine
Noranda	1	1	active	late 1960's- ²
Silver King Mines, Inc.	K. L. Stoker, President	May 7, 1962	active	1970- ²
Alta Gold, Inc.	Dan S. Bushnell, Chief Executive Officer	1988	active	1988- ²

¹Information not available in IGS's files.

²Latest information (1992) shows this company is still involved with the property.

In 1973, the company expanded reserves at the Copper Cliff to more than 2 million tons of copper-silver ore. Plans were made to increase production from 300 tpd to 800 tpd and to switch from underground to open-pit mining.

The mine produced 409 short tons of copper, valued at \$630,000 and containing more than 20,000 ounces of silver, in 1974. The concentrator at Cuprum was expanded to 800 tpd. Underground caving reached the surface, converting the mine to an open-pit operation (Figure 5).

A U.S. Bureau of Mines research project reviewed tailings pond design for the mine in 1975. Production for the year was 589 tons of copper, valued at \$756,000, and 36,000 ounces of silver. The concentrates were shipped to the Anaconda smelter in Montana. In February, the company shifted from a seven-day to a five-day work schedule as a result of increased costs and lower copper prices.

Production continued in 1976 and 1977, with the mine accounting for about a quarter of the state's copper output. The mine produced over 50,000 ounces of silver in 1976. In 1977, 150,000 tons of ore was produced from the open-pit mine and processed in the flotation mill.

Operations continued through 1979 without problems. In 1979, Texasgulf began shipping ore from its Iron Dyke Mine on the Oregon side of Hells Canyon to the Copper Cliff mill.

The mine was closed by the State of Idaho for a short time in 1980 for failure to submit an adequate reclamation plan. It was the only significant copper producer in the state outside the Coeur d'Alene district (Figure 6). In September, the company considered merging with a major German industrial firm. The deal would have given the German company a 30 to 35 percent interest in Silver King Mines, but it was called off at the end of the year.

Silver King continued operations for most of 1981 but closed down in December because of low metal prices. The mine was again the only major copper



Figure 4. Copper Cliff mill. 1994, with the highwall of the open pit in the background (Idaho Geological Survey photograph by Earl H. Bennett).

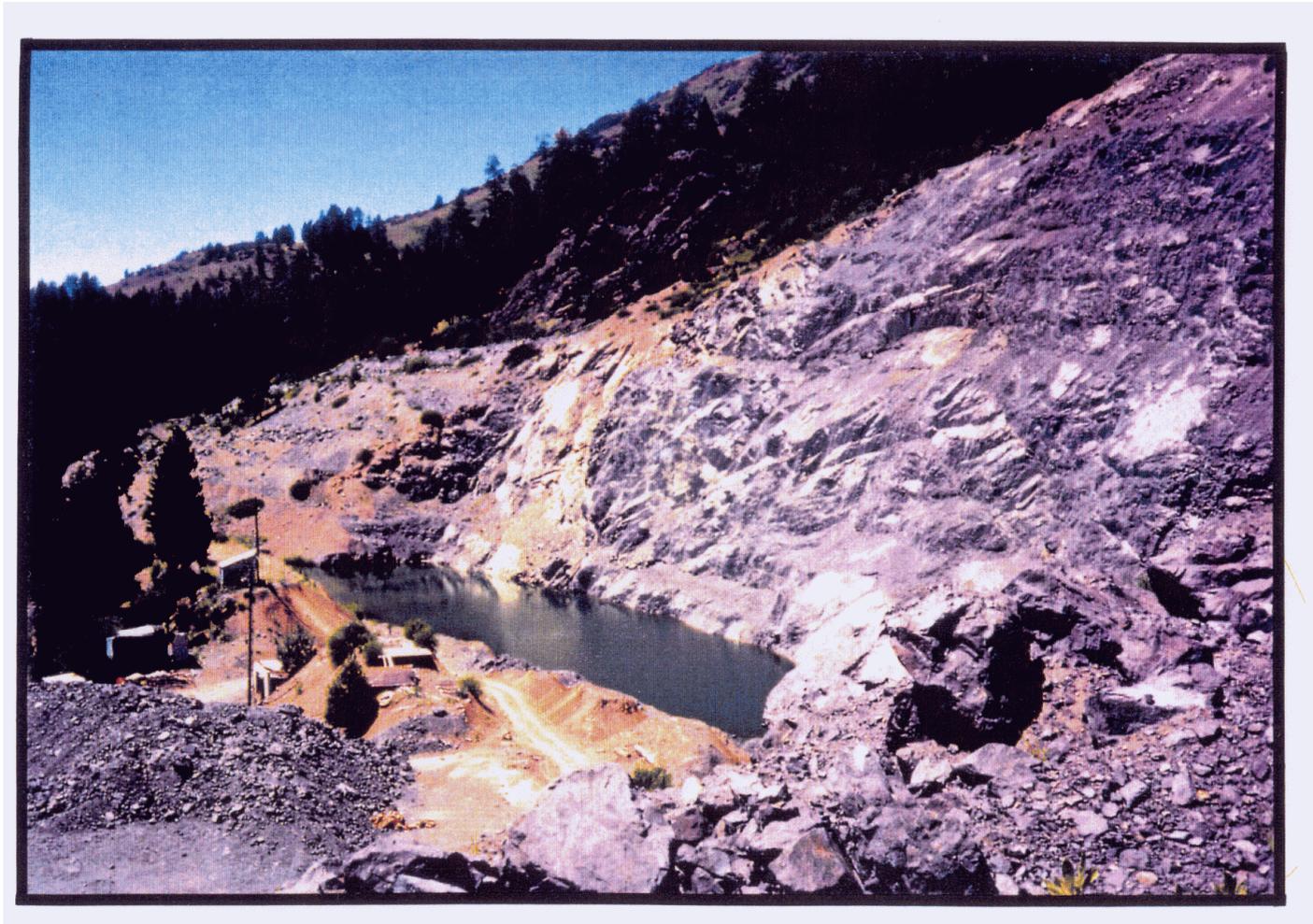


Figure 5. Open pit at the Copper Cliff Mine, 1994, showing the pond at the base of the highwall (Idaho Geological Survey photograph by Earl H. Bennett).



Figure 6. Copper Cliffs Mine. 1980 (photograph by Bill Bonnicksen, Idaho Geological Survey).

producer in Idaho outside Shoshone County. The mine and mill were inactive in 1982 and 1983, but the mill resumed processing ore from the Iron Dyke in 1984. However, low metal prices closed the mill on October 1, 1984. Some exploration work was conducted at the Copper Cliff mine in 1985.

Alta Gold, Inc., (a subsidiary corporation formed in 1988 to consolidate the mining properties of Silver King Mines and Pacific Silver Corporation) reopened the mine and mill in 1989. Plans called for producing 3 million pounds of copper over a 2-year period, the projected mine life. During 1989, about 90,000 tons of ore, containing 1 percent copper, was mined and milled. Thirty workers were employed at the operation. One-third of the anticipated production from the mine was sold forward to Prudential Bache.

In 1990, there was discussion about a possible merger between Alta Gold and Hecla Mining Company, but the deal was called off. The Copper Cliff Mine closed in mid-summer, although the company had about 50,000 tons of copper-silver ore stockpiled for later processing. The deposit was almost depleted, and the company was exploring for new ore reserves. Late in the year, the dam safety officer with the state Department of Water Resources notified Alta that the tailings dam at the mine needed modifications (Figure 7). Alta Gold did no work at the mine in 1991, and ore reserves were said to be exhausted.

Production from the Copper Cliff Mine between 1972 and 1981 was 876,929 tons of ore, which yielded 11 ounces of gold, 349,073 ounces of silver, and 12,547,883 pounds of copper. Exact figures for Alta Gold's 1989 and 1990 production are not available.



Figure 7. Tailings impoundments at the Copper Cliff Mine, 1994. The upper Impoundment (right) is Just south of the mill. The lower impoundment (far left) is about 50 feet downhill from the upper impoundment (Idaho Geological Survey photographs by Earl H. Bennett).

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