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Item 23

EUREKA DISTRICT

The Eureka mining district is located on the west slope of the Diamond Range in T18 and 19N, R53E, in the southeast part of Eureka County. The district extends from Secret Canyon on the north end to Adam Hill on the south end. Access to the district is north and east from U.S. Highway 50, along poor to well used dirt roads.

Rich silver and lead discoveries were first made in New York Canyon, south of Eureka, in the fall of 1864. Production did not begin until 1869 because the high lead content in the ore prevented treatment by conventional methods. After developing new smelting techniques and building the first successful smelter in 1869 (Lincoln, 1923) the district grew rapidly. With the completion of the Eureka and Palisade Railroad in October 1877, Eureka became the center of wagon and stage transportation for all eastern Nevada (Vandenberg, 1938). During this boom period, the Eureka Consolidated Mining Company and the Richmond Mining Company acquired most of the smaller claims and became the largest producers of ore in the district. About 1885 the bonanza ore was finally exhausted and the holdings were passed to leasees, and by 1891 most of the mining operations had shut down. Mining interest was briefly revived in 1905-6 with the consolidation of the Eureka Consolidated and Richmond Mining Companies and with the reopening of the smelter which had closed in 1890. However, that same year rain washed out the railroad and activity was again suspended. In 1963, the Hecla Mining Co., was named operator in a joint mining venture. Drilling for the project was completed in 1960. In 1963, the property was leased to several mining companies to provide capital to finance the first stage of the venture. Hecla then worked approximately 15 months dewatering and securing the underground workings. Recent field examinations, of the district indicates moderate interest in surface and subsurface exploration, probably the result of the recent increase in gold and silver prices. The district is being drilled and some of the older dumps are being reworked for

J. Tingley + P. Smith (1982) Mineral Inventory of Eureka — Shoshone Resource Area: NBMG OFR ~~82-10~~ 83-3/83-4

residual minerals. Peaking from 1870-1890, the total production of the district has been estimated by Nolan (1962) to be about $122 million, originating mostly from the Ruby Hill area.

The district is underlain by a thick section of Paleozoic calcareous sediments broken by post-Jurassic movement into structural blocks separated by fault zones of large displacement (Hague, 1892). Within the blocks, the rocks show evidence of local thrusting with the thrust faults broadly folded (Roberts, et al., 1967). Normal and transverse faulting also occurs within the blocks. Nolan (1962) suggests that the Eureka structural features are believed to represent near surface disturbances in front of the Roberts Thrust. The sediments are intruded by Late Mesozoic granite porphyry and quartz porphyry and Tertiary intrusions and flows are exposed locally throughout the district.

According to Nolan (1962) the Eureka ore bodies occur as 5 general types: irregular replacement deposits, the most numerous and economically feasible; bedded replacement deposits, fault zone deposits, disseminated deposits, and contact metasomatic bodies. Almost all the ore bodies occur in limestone and dolomite with dolomite the more favored rock type. Oxidization of the ore produced solution cavities over the larger ore bodies. The ore is oxidized to a depth of approximately 1,000 feet (Lincoln, 1923). According to Curtis (1884), the ore above the water table consists of galena, anglesite, cerussite, mimetite, and wolfenite in a gangue consisting of iron oxides with quartz and calcite. Below the water table, the ore consists of pyrite, arsenopyrite, galena, and sphalerite. The lead minerals carry more silver than gold and the iron minerals more gold than silver. Silver occurs both as a chloride and sulfide, and gold is found in its native state. Hague (1892) stated that all ores are ascending and were originally deposited as sulfides and were subsequently oxidized.

The Ruby Hill area, the major producer in the Eureka district, is underlain with brecciated Eldorado Dolomite (Cambrian). The formation forms the upper

plate of the Ruby Hill thrust zone and is cut with the NW trending, normal Ruby Hill Fault (Nolan, 1962). A quartz diorite plug of Late Cretaceous(?) age outcrops south of Ruby Hill. The early ores were oxidized sulfides in the upthrown side of the Ruby Hill fault. Sulfides were also found on the downthrown side, but working below the water table proved difficult because of flooding in the shafts. The Ruby Hill area has produced approximately $100 million of ore (Roberts, et al., 1967).

There is currently (1981) ongoing mining and leaching operations at the General Minerals Mine and the Western Windfall Mine, both open pit ventures. The Western Windfall is thought to be in the Late Cambrian Hamburg Dolomite, a sanded dolomite, where the original cement is destroyed (Wilson, 1976). The gold occurs in the sanded dolomite, principally along the contact between the Hamburg Dolomite and the overlying Dunderberg Shale or between the contact between the dolomite and the Tertiary andesitic intrusive rock. Anomalous amounts of arsenic, mercury, and silver are also present. In 1976, known reserves were estimated to be three million tons of .03 oz/ton gold, and a potential of several million tons of like grade.

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