



Idaho-Maryland Mining Corporation

SECTION 6

History





IDAHO-MARYLAND MINING CORPORATION

PRELIMINARY ASSESSMENT TECHNICAL REPORT
IDAHO-MARYLAND MINE, GRASS VALLEY, CALIFORNIA

6.0 HISTORY

Gold was discovered on the Idaho-Maryland property in 1862. Mining started in 1862, and gold production continued with few interruptions until closure in 1954. From 1954 to 1957, gold mining was replaced by government-subsidized tungsten production. The mine produced a total of 2,383,000 oz of gold from 5,546,000 tons of ore for an average grade of 0.43 oz/ton. Idaho-Maryland remains the second-largest historical underground producer of gold in California.

Two mills were operated on the property in the 1930s through 1950s, the Idaho mill and the New Brunswick mill. Both incorporated crushing, grinding, gravity separation, sulfide flotation, and gold smelting/refining. The Idaho mill also had a cyanidation plant and Merrill-Crowe recovery circuit to treat flotation concentrates and flotation tails sands. Flotation concentrate from the New Brunswick mill was also processed in the Idaho cyanidation circuit.

Historical production records from the 1930s and 1940s indicate overall gold recoveries ranging from 93.8% to 97.2% using gravity recovery, flotation of gravity tails, and cyanidation of flotation concentrate and flotation tails sands. Of the total gold produced during this period, recovery in the gravity circuit ranged from 61% to 69%. In the flotation circuit, recoveries ranged from 30% to 37%. Approximately 1.3% of the total gold recovered was via sands cyanidation. Gravity recovery methods used at the time included riffles, amalgamation plates and barrels, shaking tables, vanners, and jigs.

The Idaho-Maryland mine has been developed and mined progressively over a period from 1851 to 1956 and has been accessed by multiple shafts and winzes. The main shafts from surface were the Idaho, Old Brunswick, New Brunswick, and Round Hole, with two being intact vertical shafts, but flooded.

In 1991, the three-compartment, 3,460 ft deep New Brunswick vertical shaft was inspected throughout its entire length by remote underwater cameras and probes. The timbers, appeared to be in reasonable condition, except for the sections above the waterline. This shaft provided access to the Idaho-Maryland's 34 working levels. Most access drifts were 5 ft x 7 ft in cross-section, while the main haulage drifts were 6 ft x 8 ft. Hoisting is reported to have been accomplished with 6-ton skips.

The Round Hole shaft is a vertical, 5 ft diameter circular shaft, core-drilled to a vertical depth of 1,125 ft. This shaft was used for ventilation and to transport men and mine supplies, and is thought to still be open.

The "million ounce" stope in the Idaho No. 1 Vein was mined between 1862 and 1893 and reportedly required heavy timbering for support due to problematic ground conditions. Production in this area of the mine was terminated after a hoist fire destroyed the Idaho



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headframe. Much better ground conditions were experienced at the Brunswick mine, where the primary mining method was shrinkage stoping. At Brunswick, the stopes were developed by drifting on ore for their entire length, and then draw raises were developed upwards for approximately 20 ft and coned out to connect them together. Chutes were installed in the throat of the raises to load ore directly into the mine cars. Where ground support was required within the stopes, small pillars either were left in place or strategically placed timber posts were used. Flat-lying stopes were mined using the room-and-pillar method, and scraper hoists were used to transport ore to the track drift horizon.

Hydraulic tailings backfill was used in the later years of mine life, although references to the same type of backfill date back to 1947 in company reports. According to an ex-employee who worked at the mine for many years prior to closure, the backfill was used to fill various open stopes so that overlying ore could be accessed and mined. Stope productivity was reported to be low, on the order of 3 tons to 4 tons per shift.

Mining activities were curtailed in 1956 as labor costs were rising and the price of gold was fixed at \$35/oz.

More recent exploration at the Idaho-Maryland project conducted over the period of 1993 through to 2004 has consisted of an extensive geologic evaluation program and core drilling. This geologic data evaluation program was possible because of the excellent and comprehensive preservation of the Idaho-Maryland mine and mill records. These data are exhaustive and essentially complete, and were used to generate a consistent, property-wide structural geology model and vein set definition and chronology.

The available key historic data consisted of:

- 3,200 mine maps and drawings, including 1,257 linen maps (1" = 50 ft assay plans, geology plans and stope plans, 1" = 100 ft geologic cross-sections), with exploration drill hole geology and assays plotted on them
- 1,100 photographs (surface and underground)
- monthly development reports for 1921 to 1956
- monthly geological summary reports for 1936 to 1942
- eight ledgers of development and stope sampling assays
- assay reports of diamond drilling, channel samples, and muck car samples
- general manager's and mine superintendent's reports for 1947 to 1953
- mill production reports and cost summaries for 1934 to 1956.