



# EMGOLD MINING CORPORATION

## IDAHO - MARYLAND TECHNICAL REPORT

### 6.0 HISTORY

Gold was discovered on the Idaho-Maryland property in 1851. 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.

The Grass Valley Mining district has been the most productive gold area in the State of California. The mines in the district were known in California as the “Northern Mines” because they were not considered part of the Mother Lode gold belt. The first and second largest underground gold producing mines in the state, the Empire and Idaho-Maryland, are located about 2 miles (3 km) apart within the district.

The original claim on the Idaho-Maryland property was staked in 1851. High-grade gold mineralization was discovered in 1861 with the commencement of mining in 1862. All production during this time was from a single vein referred to as the Idaho Number 1 Vein. Production from 1862 to 1893 produced 1.0 million ounces of gold from 1.0 million tons of ore. Fire destroyed the Idaho mine hoist in 1894, which caused the lower mine workings to flood. The period from 1894 to 1914 saw intermittent gold production (approximately 75,000 ounces).

The claims around the deposit were consolidated in 1915 to form the Idaho-Maryland Mine. Metals Exploration Company of New York acquired control of the property, dewatered the mine, deepened the Idaho shaft to 2,000 ft (610 m) and moved the Union Hill stamp mill to the Idaho shaft area. Full production, however, was never achieved (only 27,000 ounces gold recovered). Control over the property changed in 1926 when Errol MacBoyle and Edwin Oliver created holdings that included the Idaho-Maryland, Brunswick, and Morehouse mines. Production commenced the same year.

From 1926 to 1942 the Idaho Mine produced 650,000 ounces of gold from 1.1 million tons of ore. The Brunswick Mine restarted production in 1934 after deepening its shaft to 3,460 ft and constructing a 750 t/d mill. Production from 1934 to 1955 consisted of 810,000 ounces of gold from 3.6 million tons of ore.

The mines were closed in 1942, due to the enactment of the Federal War Production Boards Limitation Order L-208, and were reopened again in 1945. Production was hampered by depleted operating funds, rising costs, skilled labor shortages, and negligible exploration and underground development work. Gold mining ceased in



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1954, being briefly replaced by government-subsidized tungsten production until 1957. Mining activity stopped altogether in 1957.

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 “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. 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.

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.



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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.

Significant volumes of sand tailings were placed underground in the New Brunswick Mine as hydraulic backfill. Information from Idaho-Maryland Mine Monthly Mining and Development reports from years 1949 through 1950 and Clark (2005) indicate that 5,400 tons of hydraulic sand backfill was deposited in the New Brunswick Mine in the year 1946, and 99,000 tons was pumped underground through February, 1950. According to a former 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.

Surface tailings were contained in shallow ponds typically 5-10 feet deep and most were deposited directly over native soil. It appears that most of these ponds were situated on the western side of the property. The largest of the known tailings impoundments was situated adjacent to Wolf Creek, and covered an area of approximately nine acres.

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 2009 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
- 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



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- general manager's and mine superintendent's reports for 1947 to 1953
- mill production reports and cost summaries for 1934 to 1956.

At the time of closure, the mine was owned by Idaho-Maryland Industries, Inc. In 1963 Idaho-Maryland Industries executed a Quit Claim Deed to William and Marian Ghidotti. Ownership of the mineral rights eventually passed to Mary Bouma, Erica Erickson, and William Toms (referred to as the BET Group) in 1983.

Emperor Gold Corporation (Emperor), a publicly listed, Canadian company became involved in the property in 1993. Emperor changed its name to Emgold Mining Corporation in August 1997. The prior project included dewatering and ore exploration activities at the Idaho-Maryland Mine which were proposed to occur from the New Brunswick site and use the nearby Sierra Pacific Industries, Inc. property as part of the infrastructure for the project. After completion and certification of the Final Environmental Impact Report for that project in October 1995, the County approved the project and issued to Emperor a Conditional Use Permit (CUP) in January 1996. In 1999, with a continuing decline in the price of gold, the Company dropped its lease option to purchase the property and temporarily abandoned the project until gold prices recovered. Then, in 2002, Emgold re-acquired the mineral and property rights to the Idaho-Maryland Project with an agreement with the BET Group, and formed Idaho-Maryland Mining Corporation.

Idaho-Maryland Mining Corporation conducted two gold exploration drilling programs in 2003 and 2004, resulting in a small increase in resources. A geotechnical drill program was also undertaken in 2004, during which industrial minerals resources were also defined. The results of the drilling programs were summarized in the 2004 AMEC Preliminary Assessment Technical Report by Stephen Juras, Qualified Person for AMEC.