

The Rediscovery of Precious Metals in the Eureka Mining District, Nevada and Associated Economic Analyses

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Precious metals were first discovered near Eureka, Nevada, in 1864, and mining and milling of ores containing gold, silver, lead, zinc, copper and other elements of possible interest have been sporadic since the early 1900's. More than five million ounces of gold and at least 100 million ounces of silver have been produced to date from the Eureka Mining District for a combined present value of at least \$2.2 billion.

On behalf of Norse Petroleum (U.S.) Incorporated, Campbell, Foss and Buchanan, Inc. initiated investigations in 1983 on a 1,700 acre property bounded on the south by the old Hamburg mine and includes the Croesus Mine, Dunderburg Mine, the Atlas Mine, the Eureka Tunnel and the Seventy Six Mine and surrounding properties on the north near Eureka. The investigations consisted of field reconnaissance, grid geochemical surveys and geophysical surveys combined with drilling and laboratory investigations. The 1984-85 drilling program resulted in the discovery of shallow mineralized zones less than 300 feet deep containing gold and silver of economic significance in both oxidized (bulk mineable) and sulfide zones. We have determined that 1) the geochemistry of arsenic and mercury are direct pathfinder elements and 2) that the magnetic characteristics of the mineralized zones may be another field guide to zones of high-grade mineralization.

During the course of the investigations, we have developed inexpensive computer techniques for rapid interpretation and presentation of geochemical and geophysical data generated during the program. We have also developed inexpensive computer techniques for the rapid evaluation of the economic feasibility of developing the zones encountered by applying sensitivity analyses and other financial evaluations to more than 40 mining parameters (both physical and economic). The economic viability of the deposits appear to be primarily controlled by 1) in situ ore grade, 2) market price, and 3) plant recovery (i.e. ore metallurgy).

By applying a program that integrates exploration and economic feasibility, we have concluded that the Eureka Mining District has only been partially developed to date and that additional ore bodies of substantial size and value can be expected. The development of such deposits appear to be feasible under current economic conditions, and any increase in the price of gold (above \$325.00) would only enhance the project's profitability. The lower the mining and processing costs, the lower the ore grade required for project viability. Large-volume low grade (or so-called bulk mineable) gold and silver deposits will continue to attract attention for years to come.

Bulk Mineable Precious Metal Deposits of the Western United States

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