

Bulk mineable gold potential in Nova Scotia: a new discovery

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Until the mid 1980s all historical gold production in Nova Scotia (1.2 million ounces) came from high grade, quartz vein type, lode gold deposits hosted in Cambro-Ordovician Meguma Group turbidites; the deposits have many similarities with the richer and more productive Victoria gold fields in the Bendigo area of southern Australia. However, in 1986 a Nova Scotia company (Seabright Resources, Incorporated), determined to make gold mining profitable in this region, undertook a feasibility study of the Touquoy Zone (Moose River Gold District) utilizing a bulk sample collected from an open pit. Gold mineralization in this zone occurs on the north limb of the Moose River anticline in carbonitized argillite that is devoid of quartz veining. The ore zone is bounded on three sides by steep, intersecting faults but remains open along its eastern extension. Mineralization occurs as: (1) disseminations throughout the argillite; (2) along microfractures in the argillite (including cleavage planes); and (3) in sulphides (aspy, py, po, cpy). Bulk test mill recovery (2.2 g/t) of fine-grained to micron-sized gold, using straight gravity, gave excellent recoveries. Present reserves in the main part of the ore body are 1.2 million tonnes of 1.2 g/t Au with additional potential known along strike. In addition to argillite-hosted gold mineralization in Nova Scotia, there have been numerous reports of gold occurring in greywacke (sulphide hosted) although no significant production has occurred. However, a recent discovery in the western Meguma Terrane of native gold in association with Au-Pb-Ag-Cu metal alloys containing trace amounts of Ge-Sb-As-Cr-Zn-Sn and hosted exclusively in strongly carbonitized greywacke suggest that potential new mineable reserves may be uncovered. Trenching has revealed mineralization is a 70 m thick section for 100 m along strike

and diamond drilling indicates mineralization continues below 50 m. Drill core assays of this sulphide-poor greywacke indicate Au grades as high as 6.9 g/t in sludge samples and 9.6 g/t in core samples. Company drilling further suggests that this unit is not unique to the property. Surface grab samples from outside the mineralized greywacke returned values of 0.32 g/t. Texturally, these native gold and gold-alloy grains differ from low Ag-bearing native gold encountered at other Meguma Group gold deposits. Many of these grains have a botryoidal, colloform type appearance while others are completely spherical. Cellular type textures with concentric, or semi-circular zonation, is manifest by exotic, native metal alloy mineralogy, possibly in solid solution. Similarly altered strata at the Caribou district (Hard Light Zone) are the only other greywackes in Nova Scotia to have returned ore grade gold analyses. This mineralization occurs adjacent to a crosscutting quartz-chlorite-carbonate stockwork-quartz vein system (No. 1 Flexure). Examination of heavy mineral concentrates from this zone indicate the presence of Pb-Au alloy mineralogy with similar spherical textures to those described above. Similar textures and compositions to those reported here are not documented from other lode-gold deposits, however, sulphide droplet textures observed in volcanogenic sulphide deposits do hold similarities. The recognition of these alloys and their close spatial association to pervasive, hydrothermal, carbonate alteration in greywackes adjacent to crosscutting fissure systems, demands a closer inspection of many other areas (particularly former gold districts) throughout the province. The recognition of this mineralogy further indicates that no lithology in the Meguma Terrane should be overlooked for its gold potential and that encouraging potential for large, bulk mineable deposits exists in this region.