

GOLD EXPLORATION, ROSSLAND-NELSON AREA, SOUTHEASTERN B.C.

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INTRODUCTION

Exploration companies have been successful in locating precious and base metal mineralization in Rossland and Ymir group rocks located in the Nelson-Salmo-Rossland areas of southern British Columbia (Figure 1). Recent discoveries have produced a renewed interest in several known prospects as well as considerable new and ongoing claim staking throughout the region.

To provide assistance to these and future exploration efforts, a geological and metallogenic map of the Rossland and Ymir Group rocks is being prepared as part of the Rocks to Riches program. The work will include a compilation of available geodata, including regional and detailed geological maps, mineral occurrence information and regional geochemical data. This report provides a summary of the project.

REGIONAL GEOLOGY

The study area lies within the Omineca Belt (Figure 2). North American terrane rocks include the Middle Proterozoic Windermere Supergroup and overlying Lower Cambrian Quartzite Range and Reno formations located in the southeast corner of the map area. To the west, these are structurally overlain by the north-trending Kootenay terrane consisting mainly of the Lower Paleozoic Lardeau Group and Active and Laib formations.

The Slide Mountain terrane is represented in the map-area by Upper Paleozoic rocks of the Milford Group. Early Jurassic Rossland and Ymir group rocks of Quesnellia comprise the thickest stratigraphic package, forming a broad northeast-trending belt in the central portion of the map area.

Much of the map area is cut by the Middle to Late Jurassic Nelson and related intrusions, including the important Rossland monzonite. Other intrusive suites

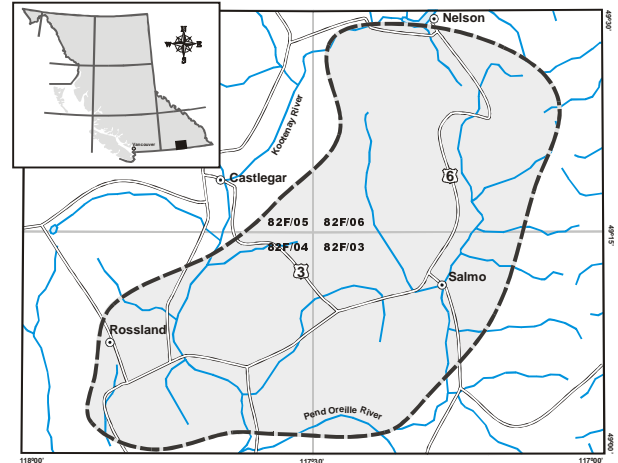


Figure 1: Location map of study area.

include Middle Cretaceous granitic rocks and several plutonic suites of Tertiary age. The Valhalla Complex occupies the northwest part of the map sheet. It contains mainly high-grade metamorphic rocks of uncertain age and several orthogneiss bodies of Cretaceous to Tertiary age.

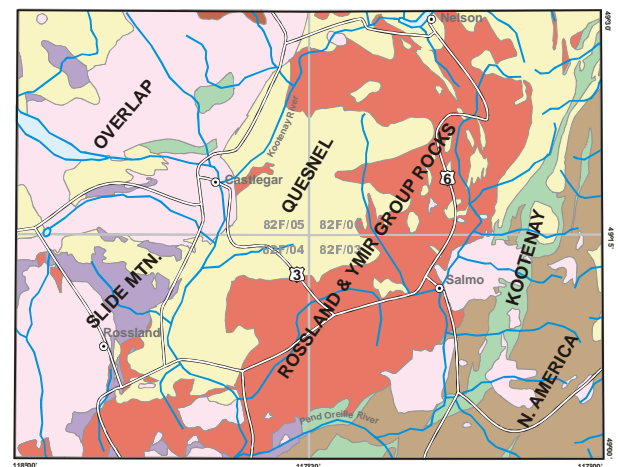


Figure 2: Generalized geological setting of the study area.

MINERAL OCCURRENCES

The area contains more than 380 known mineral occurrences and includes four historically important mining camps or areas (Figure 3). The Sheep Creek

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camp (Mathews, 1953) ranks sixth in the province in terms of total lode gold produced. The production came from “mesothermal” quartz veins mainly hosted by the Quartzite Range Formation. The Salmo belt in the southern Kootenay Arc (Fyles and Hewlett, 1959) contains carbonate-hosted lead-zinc deposits. The Rossland camp (Fyles, 1964; Höy and Dunne, 2001) ranks as the second largest gold producing camp in British Columbia. Gold-copper and polymetallic veins occur in the Elise Formation of the Rossland Group and in the Rossland stock. The deposits of the Ymir-Nelson area have produced more than 16,000 kg of gold and 190,000 kg of silver primarily from vein deposits in the Ymir Group and Elise Formation. Mineral deposit types include Au-Ag-Cu-Pb-Zn veins, porphyry molybdenum-copper deposits, shear-hosted gold occurrences and skarns.

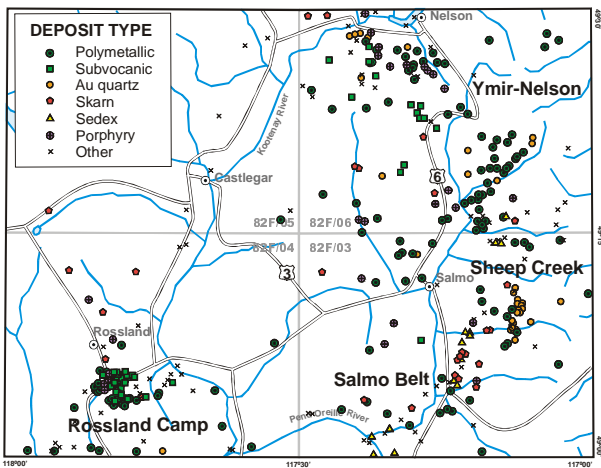


Figure 3: Distribution of known mineral occurrences.

REGIONAL GEOCHEMISTRY

A National Geochemical Reconnaissance (NGR) stream sediment and water survey was conducted in the Nelson (NTS 82F) mapsheet during 1977. Archived sediment pulps were re-analyzed in 1990 by epi-thermal instrumental neutron activation analysis (INAA). This new data along with original survey results were released in 1991 (Matysek *et al*, 1991). Published analytical information includes base metals, precious metals, pathfinders and rare earth elements. A total of 354 NGR sample sites are found within the southwest corner of the Nelson 1:250 000 map sheet (Figure 4).

To help understand the geochemical signature of the various deposit types, a number of stream sediment samples were recently collected and analyzed by inductively coupled plasma mass spectrometry (ICP/MS). This data will give additional information regarding anomaly recognition and will also provide a link between original NGR results and analytical methods currently being used by the exploration sector.

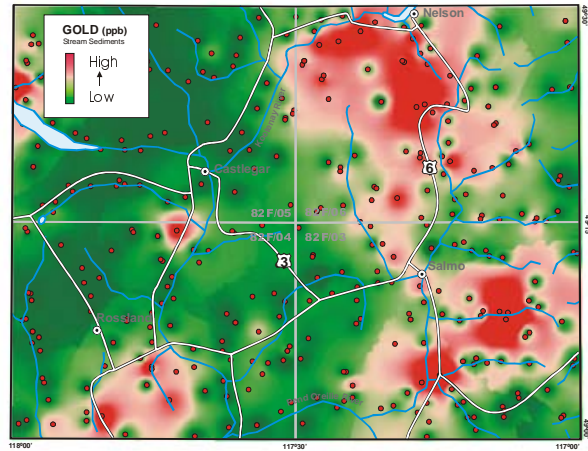


Figure 4: Distribution of NGR sample sites overlaying gridded INAA gold data.

Figure 5 compares original NGR results with new ICP/MS data for samples collected downstream from the porphyry molybdenum showing called Fresno (MINFILE 082FSW251). The results are similar for the listed metals with the exception of gold and silver that show an enhanced concentration for the sample material analyzed by ICP/MS. This pattern remains consistent for other data comparisons.

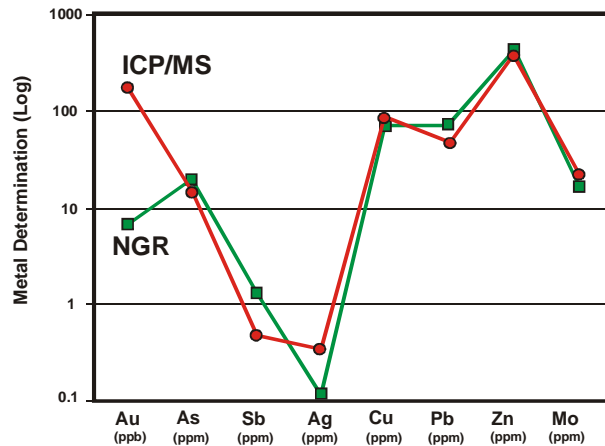


Figure 5: Comparison of original NGR data with new ICP/MS results.

SUMMARY

The project involves a metallogenic evaluation of the Rossland and Ymir Group rocks. Various geodata, including regional and detailed geological mapping, existing regional geochemical survey data, and mineral occurrence information will be integrated to produce geological and metallogenic map(s) (1:50 000 scale) that will be suitable for directing and focusing regional exploration programs.

The full colour digital and hard copy maps (base geology, mineral occurrences and regional geochemical data) plus accompanying metallogenic report are scheduled for release at the 2004 Roundup conference.

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