Geology of the West Kootenay Area (West Half of NTS 082F), Southern British Columbia: Regional Compilation and Mineral Potential

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Introduction

The West Kootenay Geology Project (Geoscience BC Project 2023-003), a collaborative research project between Geoscience BC and the BC Geological Survey, involves geological compilation and selective geological mapping in the four western 1:50 000 scale maps of the west half of the Nelson area (NTS 082F; Figure 1). The project is an extension to the east of the recently completed Boundary Project (Geoscience BC Project 2016-004) that completed the geological mapping, compilation and publication of six 1:50 000 scale maps in the east half of the Penticton area NTS 082E), which included the Greenwood, Franklin and Beaverdell mining camps (Höy and Jackaman, 2019).

This project includes compilation of geological data sourced from published maps, university theses and industry assessment reports. The digital compilation will be integrated into the BC Geological Survey's Digital Geology database and made available on the survey's MapPlace 2. As well, this project will include publication of individual 1:50 000 scale geological maps, suitable for mineral exploration companies, prospectors, resource-based field workers, Indigenous groups and others interested in the region's geology and mineral potential.

The West Kootenay area has an extensive history of mineral exploration and mining activity, and continues to be actively explored by both individuals and exploration companies. It includes the historical Rossland gold-copper camp (Höy and Dunne, 2001) that produced approximately 85 900 kilograms of gold and 109 500 kilograms of silver between 1894 and 1941. The Slocan silver camp, and the base- and precious-metal Nelson, Ymir and Salmo camps, lie immediately east of the project area and are planned as a second phase of the project (Figure 1).

Conclusion

In summary, the first phase of the project, scheduled for completion in 2024, has four main aims:

- Compilation of the geology of four 1:50 000 scale maps (NTS 082F/04, 05, 12, 13), extending eastward from the recently completed Boundary Project, augmented locally by geological mapping and potentially radiometric dating in key areas.
- Digital compilation of all locations, geological units and features that will be tied to the map compilations.
- Digitization of all linework, regional structural data, mineral occurrence data, radiometric dates and other geological data according to a format supplied by the BC Geological Survey and Geoscience BC, for inclusion in the BC Digital Geology database and available on MapPlace 2.
- Publication of individual 1:50 000 scale maps.

Compilation and publication of geological data will help define areas for new geological mapping and provide a focus for mineral-exploration target areas. This will aid in guiding responsible development in an area that has seen renewed mineral exploration in recent years.

A proposed second phase of the project could extend geological compilation and MapPlace 2 updates into the eastern 1:50 000 scale maps (NTS 082F/03, 06, 11, 13) of the west half of the Nelson map area (Figure 1).

Acknowledgments

A regional geological compilation and metallogenic study is based, in large part, on the work of previous geological mappers, including those in government, numerous university graduate students and their advisors, and geologists in the mineral-exploration industry. It is difficult to acknowledge all of these, but some notable workers include H. Little of the Geological Survey of Canada (GSC), who published a regional 'one inch to four miles' map of the west half of the Nelson map area (Little, 1960). The first comprehensive study of the Rossland camp, by C.W. Drysdale of the GSC, formed the template for all subsequent work there (Drysdale, 1915). Mapping of the Rossland gold camp by J. Fyles of the BC Geological Survey (BCGS; Fyles, 1984) formed the basis of a more detailed study of the camp by the senior author and K. Dunne, summarized in a 2001 BCGS bulletin (Höy and Dunne, 2001). P. Simony

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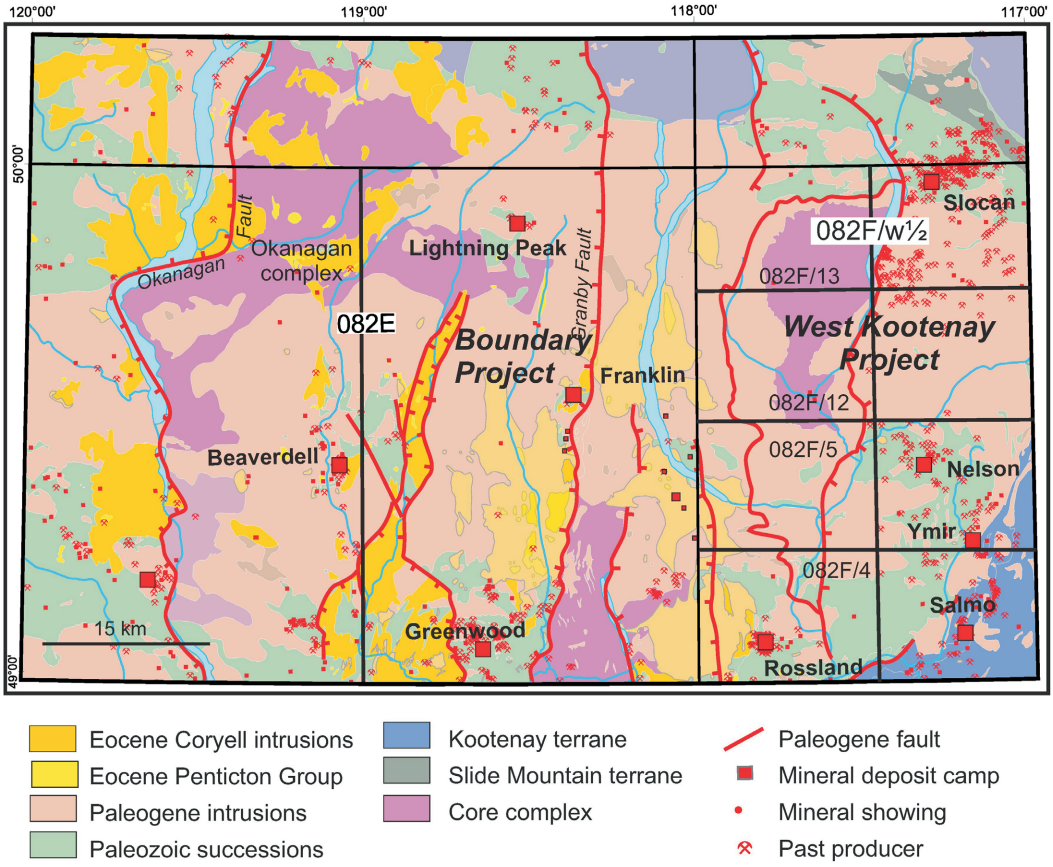

Figure 1. Regional geology and tectonic map showing location of the proposed project and the recently completed Boundary Project. Also shown are the main base- and precious-metal camps, as well as Paleogene extensional faults.

of the University of Calgary, and a number of his graduate students, played a key role in unravelling the structure of the area immediately north and east of Rossland, and contributed both published and unpublished maps to the authors' later work. Much of the northern part of the area (NTS 082F/12, 13) was mapped and compiled by S. Carr (Carr, 1986), a graduate student at Carleton University and now a professor in the Department of Earth Sciences at Carleton. Numerous others have contributed to the geological history of the Nelson, Rossland and Slocan mining camps and, although not referenced, their work is gratefully acknowledged.

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