CHAPTER 1

INTRODUCTION

The Rossland Group in southeastern British Columbia is a mafic volcanic arc succession deposited along the eastern edge of Quesnellia in Early Jurassic time (Figure 1-1, in back pocket). Chemical and isotopic evidence indicate that the volcanic rocks of this arc were contaminated by continental crustal rocks and, hence, may have been deposited, at least in part, along the western edge of the North American craton (Höy and Dunne, 1997). The Rossland Group is in fault contact with rocks of the Kootenay terrane to the east and locally overlain by remnants of a post-accretionary late Cretaceous clastic succession, the Sophie Mountain Formation, or by mafic flows of the extension-related Eocene Marion Formation. The characteristics, chemistry, tectonic setting and evolution of the Rossland Group have been described in detail by Höy and Dunne (1997).

The Rossland Group contains a variety of deposits typical of volcanic arcs. These include alkalic porphyry copper-gold deposits, numerous copper, gold and polymetallic veins, and copper and gold skarns. The gold-copper veins of the Rossland camp and silver-lead-zinc veins of the Nelson and Ymir camps have been major past producers of precious and base metals. Red Mountain Mines Ltd. at Rossland had limited production of molybdenite in the early 1960s. Although mineral exploration continues to be active in Rossland Group rocks, there are currently no operating mines.

This report focuses on deposits in the Rossland Group, particularly those that have had recent exploration, and on the metallogeny of the Nelson-Rossland map area. Mineral occurrences in the Nelson-Rossland map sheet are listed in Appendix 1 and plotted on Figure 1-1. Chapter 2 is an overview of the regional geology of the area, in part summarized from Bulletin 102 (Höy and Dunne, 1997). Chapter 3 classifies many of the deposits and occurrences in the Nelson-Rossland map area, provides a brief overview of the characteristics of deposit classes, and presents and describes examples of these classes. Profiles (type descriptions) of deposits are given in Lefebure and Ray (1995) and Lefebure and Höy (1996). The metallogeny of the Rossland copper-gold, silver-lead-zinc and molybdenite camps is the subject of Chapter 4.

PREVIOUS WORK

Previous geological mapping in the Nelson-Rossland map area has included reconnaissance mapping by the Geological Survey of Canada and the B.C. Ministry of Energy and Mines, as well as a number of university theses studies. These geological studies are described in Höy and Dunne (1997) and summarized in Chapter 2. A regional compilation map of the Nelson-Rossland area has been published by Höy and Dunne (1998) and is reproduced as Figure 1-1. Detailed mapping of many deposits and camps has also been done by exploration and mining companies. Much of this data is available in provincial assessment reports and is used and acknowledged in descriptions of individual deposits and camps in this paper.


This present study includes considerable new mapping of many deposits throughout the Nelson-Rossland map area. Within the Rossland camp, the study has concentrated on morphology, petrology, alteration and geochemistry of intrusive-related gold-copper veins, polymetallic veins, skarn and molybdenite deposits.

A number of the appendices present data or separate papers by other authors. For example, Appendix 5 is a detailed petrographic report by C. Leitch of many vein and skarn samples from the Rossland camp. Appendix 8, by C. Godwin and J. Gabites, presents and interprets new Pb-Pb isotopic data from many deposits throughout the Nelson-Rossland area, and Appendix 9, by K. Dunne, is a fluid inclusion analysis of many mineralized samples from a variety of deposits, including those of the Rossland camp.

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