



Ministry of Employment and Investment
Energy and Minerals Division
Geological Survey Branch

INTERIOR PLATEAU GEOSCIENCE PROJECT: SUMMARY OF GEOLOGICAL, GEOCHEMICAL AND GEOPHYSICAL STUDIES

Edited by Larry J. Diakow, P.Geo., John M. Newell, P.Eng.



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INTRODUCTION

By L.J. Diakow, British Columbia Geological Survey

The Interior Plateau (Figure 1) is one of the most promising, yet least explored areas of high mineral potential in British Columbia. In 1992, the Geological Survey of Canada and British Columbia Geological Survey initiated the Interior Plateau Project, operating under the auspices of the Mineral Development Agreement (1991-1995). The objectives of the project were to improve understanding of the geology and mineral deposits, test and develop exploration techniques suited for drift-covered terrain, and provide the best possible mineral potential assessment for the Interior Plateau region. The project brought together a team of 26 scientists, some of whom provided ancillary information for core programs that included mineral deposit studies (Figure 2), bedrock and surficial mapping, till and lake sediment geochemistry, and biogeochemistry, airborne magnetic, gamma-ray spectrometric and electromagnetic surveys (Figure 3). The Interior Plateau's dense forest, blanket of glacial sediments and Neogene volcanic rocks have hidden much of the older bedrock and hitherto hindered exploration. This volume contains summary reports for these programs.

Mapping programs were carried out in areas of varied topography from low-lying plateau terrain, typical of much of the Interior Plateau, to mountainous terrain which bor-

ders the plateau in the southwest. They focused on areas with known deposits, working outwards into less well-known prospective geology. Two mapping programs, in the southern Nechako River and northeastern Anahim Lake map areas, were conducted where epithermal precious metal and porphyry copper-molybdenum prospects are exposed in windows through the younger Neogene cover. Other mapping in the vicinity of the Fish Lake deposit and further to the north in the Charlotte Lake, Junker Lake (NTS 92N), Tatla Lake and Bussel Creek (NTS 93C) map areas encompassed prospective terrain for porphyry style deposits along the eastern margin of the Coast Belt and in the structurally complex zone marking the western margin of the Intermontane Belt. The results of these programs provide an updated stratigraphic and structural framework for ongoing mineral exploration.

The Interior Plateau contains a number of present and past-producing mines, including Blackdome, Gibraltar, Endako and Equity Silver, that all lie outside the region studied. A survey of mineral occurrences in the northern part of the Interior Plateau was carried out in order to document their characteristics and to establish local geologic setting and controls. These data are integrated in a conceptual model.

A high-resolution aeromagnetic survey covering fifty-nine 1:50 000-scale map sheets in the Interior Plateau is integral to better understanding of regional trends of stratigraphy, structure and mineral deposits in areas of poor outcrop. In addition, three multiparameter airborne geo-

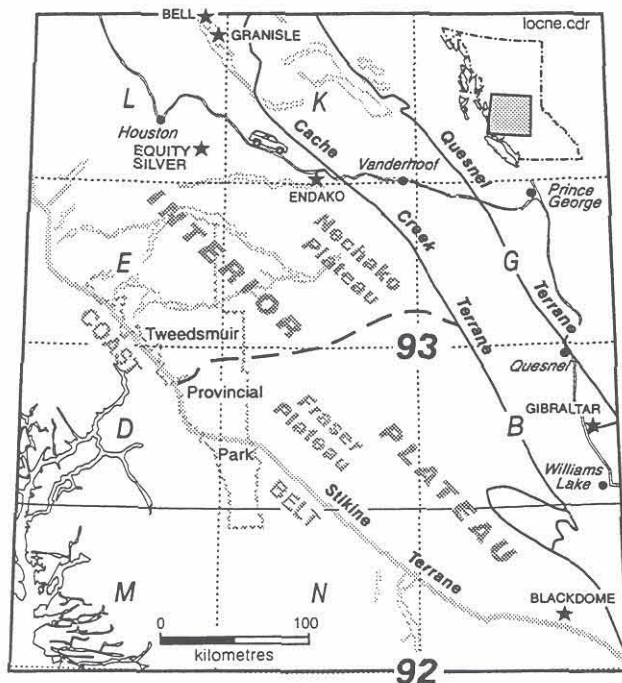
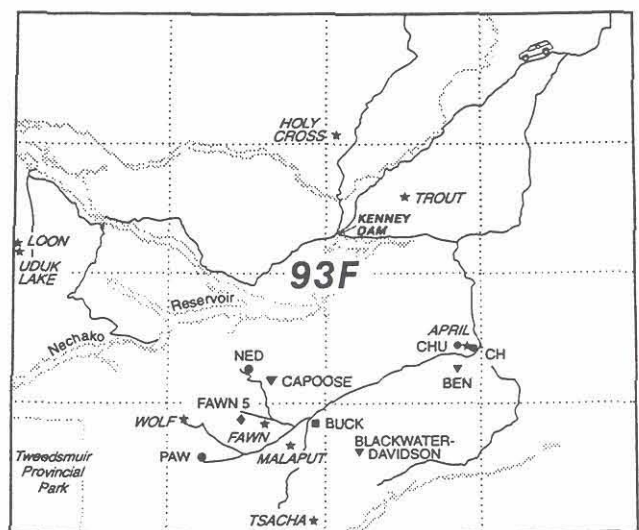
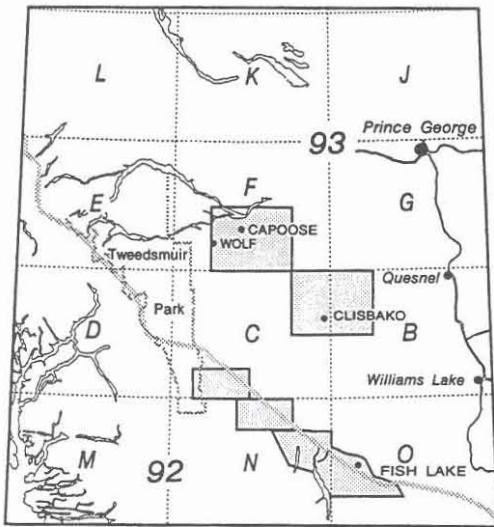


Figure 1. Location of the Interior Plateau and physiographic subdivisions and tectonostratigraphic terranes in south and central British Columbia.

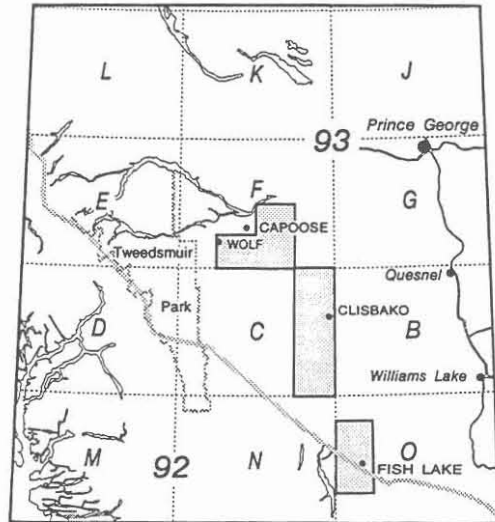


Mineral Deposit Studies

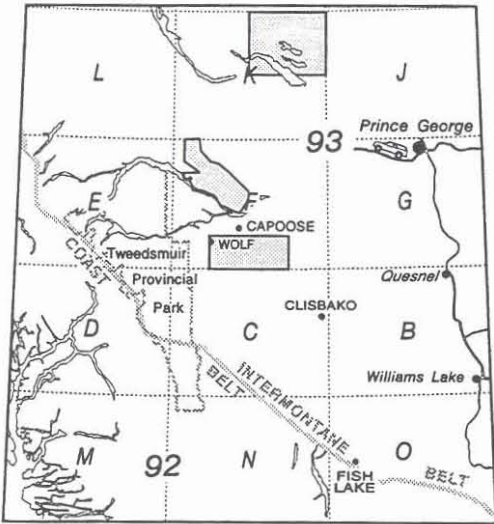
Figure 2. Location of metallic mineral occurrences studied in the southern Nechako Plateau.



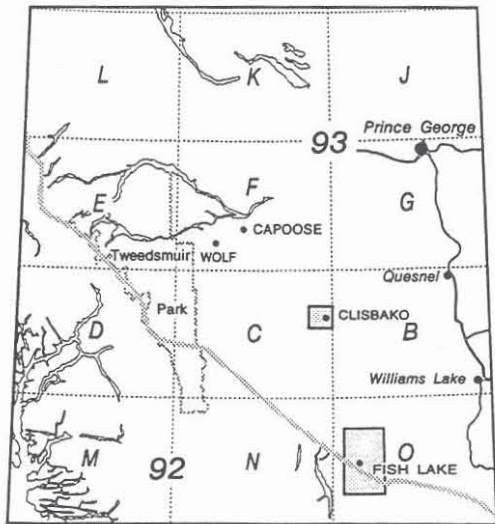
Bedrock Mapping



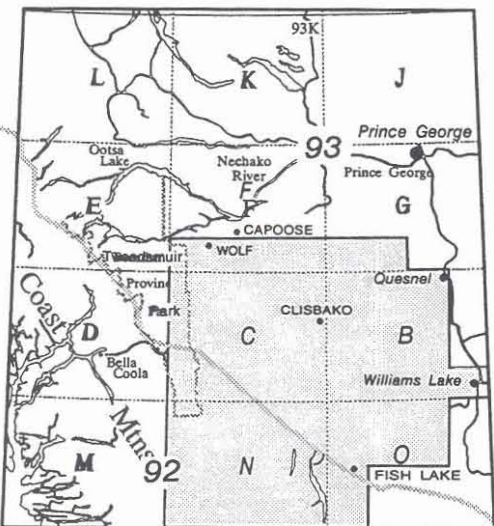
Surficial Geology and Till Geochemistry



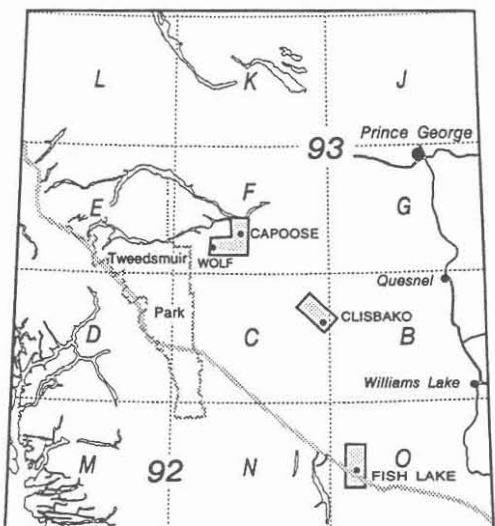
Lake Sediment Geochemistry



Biogeochemical Surveys



Aeromagnetic Survey



Airborne Gamma-ray, Magnetics/VLF Surveys

Figure 3. Location of geoscience programs in the Interior Plateau region.

physical surveys, centred on the Fish Lake, Clisbako and Wolf deposits, acquired gamma-ray spectrometric, magnetic and VLF-EM data at an elevation approximately one third of that of the regional aeromagnetic survey. The study was designed to test the application of these techniques in the vicinity of known prospects with differing parameters such as host lithology, mineralization and alteration. Detailed ground electromagnetic surveys were used locally to substantiate differences in till thickness and the location of buried intrusive contacts.

Studies of glacial deposits, supplemented by geochemical analysis of till samples were conducted in the Anahim Lake (NTS 93C) and Nechako River (NTS 93F) map areas and, in the Mount Tatlow and Elkin Creek map areas (NTS 92O) in the southern part of the Fraser Plateau. The main objectives of these projects were to map the distribution of Quaternary deposits, determine glacial history, identify geochemically anomalous areas, refine models of glacial dispersal and develop methods of drift

exploration applicable to the Interior Plateau. Three small, regional lake sediment geochemical surveys were completed in the Nechako River and the Fort St. James (NTS 93K) map areas, where Mesozoic and Cenozoic rocks host a variety of mineral deposits. The program, based on prior orientation studies, determined background levels for pathfinder elements, corroborated previous lake sediment anomalies, and outlined new areas for further exploration. Two biogeochemical surveys were carried out over the Fish Lake porphyry and Clisbako epithermal deposits to assess the potential of plant species for detecting different types of concealed mineral deposits.

Contributions of the Interior Plateau Project have significantly improved our understanding of geology in this region. Integration of geological studies from the different disciplines has led to new mineral discoveries and identified additional exploration targets. Advances have also been made in development of exploration techniques specifically suited to this part of the Canadian Cordillera.