

AN OVERVIEW OF THE INTERIOR PLATEAU PROGRAM

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(Contribution to the Interior Plateau Program
Canada - British Columbia Mineral Development Agreement 1991-1995)

KEYWORDS: Regional geology, Interior Plateau, multi-disciplinary, bedrock mapping, surficial geology, geochemistry, airborne geophysics, biochemistry.

INTRODUCTION

The Interior Plateau program is a major new initiative that is funded and operated under the guidelines of the Mineral Development Agreement 1991-1995 (MDA) between the governments of Canada and British Columbia. During the program geoscientists from both the Geological Survey of Canada and the British Columbia Geological Survey Branch will collaborate on a number of multi-disciplinary projects throughout the Interior Plateau region of British Columbia (Figures 1-4-1 and 1-4-2). Mineral exploration in this region has been severely hampered by glacial drift, Neogene lava flows, an obsolete geological database, and lack of modern geophysical or geochemical coverage. Geological environments favourable for mineral deposits exist in neighbouring areas (e.g., porphyry style deposits such as Endako and Gibraltar, the Equity Silver deposit and epithermal precious metal deposits like Silver Queen and Blackdome). Extrapolation of plutonic suites

and stratigraphy suggests there is potential for similar, undiscovered deposits in the Interior Plateau region.

The projects include regional geochemical and aeromagnetic surveys, 1:50 000-scale bedrock and surficial geological mapping, airborne multiparameter surveys and a biogeochemical survey (Table 1-4-1). The objective of these projects is to upgrade the existing geological and geophysical databases in order to provide a more accurate assessment of mineral potential, and to accumulate modern data for providing information vital to informed resource management and land-use decisions in the Interior Plateau region.

Field-based projects initiated in 1992 will conclude in 1994. Annual reports accompanied by maps will be published for projects active during a given year. A final volume synthesizing the Interior Plateau program is planned for publication in 1995.

TABLE 1-4-1
SCHEDULE OF SUB-PROJECTS IN THE
INTERIOR PLATEAU PROGRAM

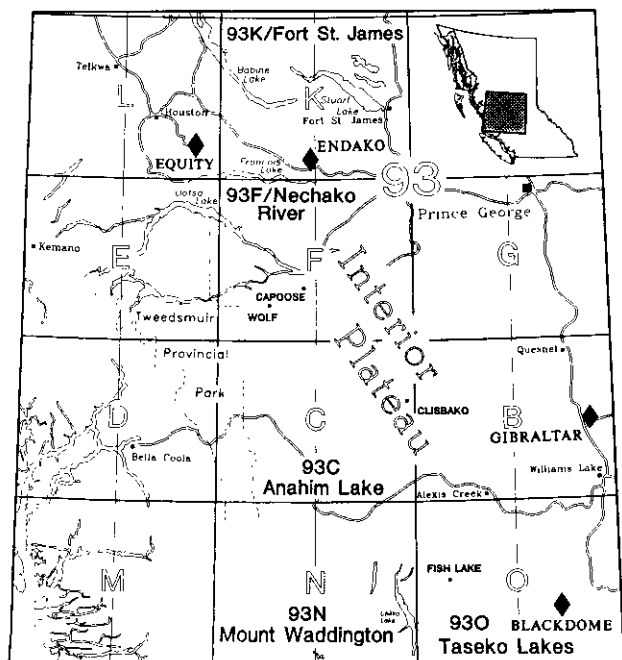


Figure 1-4-1. Major producing mines (shown by diamonds) and other significant mineral deposits in the Interior Plateau region.

Project/Coordinator	1992	1993	1994	1995
REGIONAL LAKE SEDIMENT GEOCHEMICAL SURVEY Wayne Jackaman ¹ Steve Cook ¹	Orientation Survey		█	█
	Full Survey		█	█
	Report and Map Preparation			█
AEROMAGNETIC TOTAL FIELD SURVEY Denis Teskey ²		█		
1:50,000 BEDROCK MAPPING Larry J. Diakow ¹ Peter van der Heyden ² Paul Schiarizza ¹ Cathy Hickson ²		█	█	
		█	█	
		█	█	
		█	█	
SURFICIAL GEOLOGY AND TILL GEOCHEMISTRY SURVEYS Peter Bohrowsky ¹ Alain Plouffe ²		█		
		█		
BIOGEOCHEMICAL SURVEY Colin Dunn ²		█		
AIRBORNE MULTIPARAMETER SURVEYS (Gamma ray, Magnetic and VLF) Robert Shives ² Ken Ford ² Bruce Ballantyne ² Don Harris ²		█		
		█		
		█		
		█		
				FINAL MAPS (1:50,000 1:100,000) and PROJECT VOLUME

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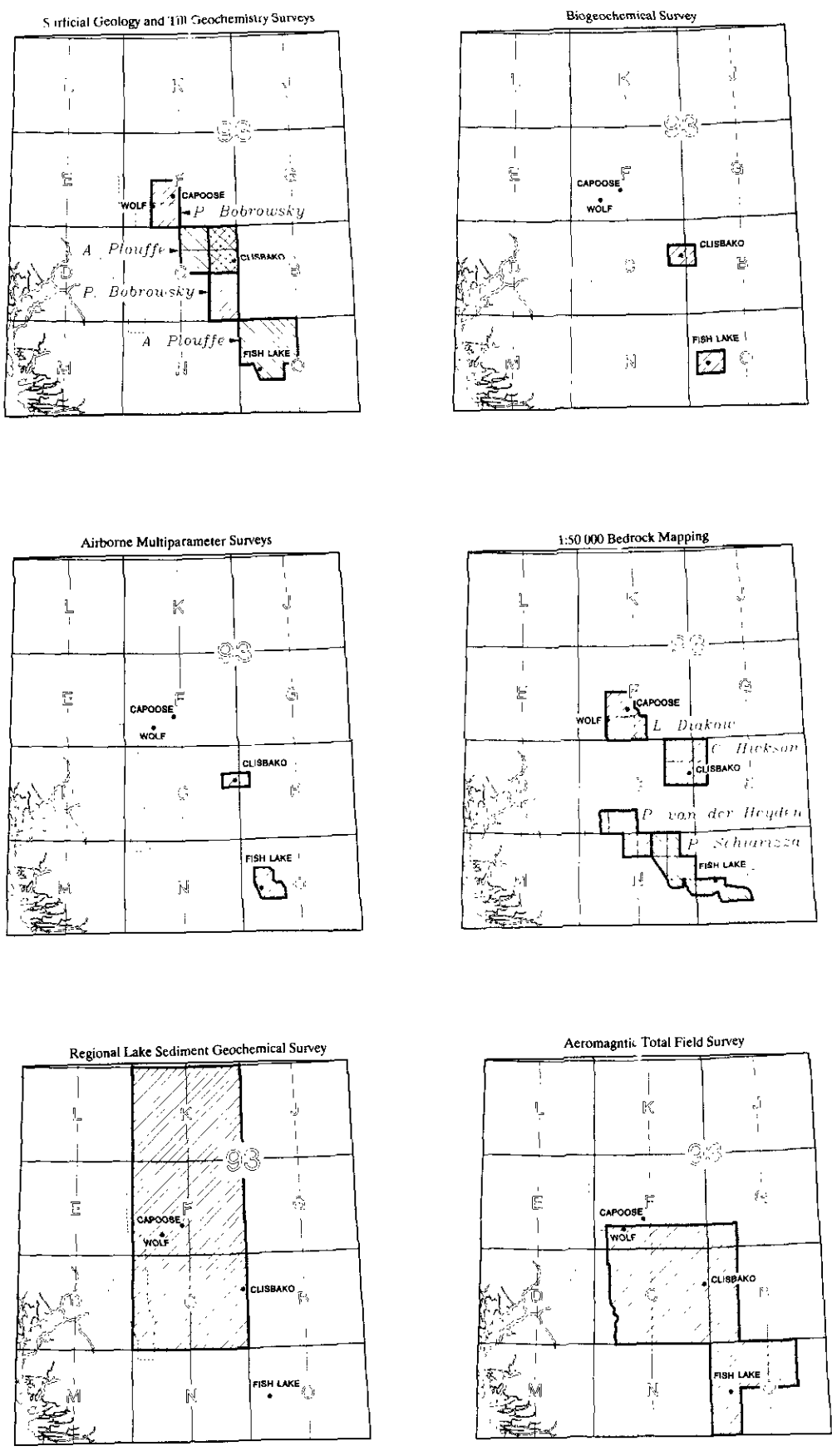


Figure 1-4-2. Location of projects in the Interior Plateau region.

REGIONAL GEOCHEMISTRY

In anticipation of a lake sediment Regional Geochemical Survey (RGS) covering the NTS 93C (Anahim Lake), 93F (Nechako River) and 93K (Fort St. James) map sheets, Stephen Cook, of the British Columbia Geological Survey Branch, carried out a lake sediment orientation study in the Vanderhoof-Houston region of the Interior Plateau in 1992. The purpose of this study is to evaluate the effectiveness of lake sediments as a sample medium for the regional sampling program. Studies were focused on sites that represent a variety of different lake types found draining each of two rock types most likely to be mineralized - plutons, with porphyry potential, and volcanic rocks of the Eocene Ootsa Lake Group with epithermal precious metal potential. Analyses from 625 lake-sediment samples obtained at 437 sites will determine the extent to which sediment geochemistry reflects the presence of nearby mineral occurrences, the effect of differing lake conditions, and the most effective sampling strategy for the RGS survey.

GEOPHYSICS

Denis Teskey of the Geological Survey of Canada is coordinating an aeromagnetic survey of an area in the Interior Plateau that will cover at least 30 adjoining 1:50 000 mapsheets. Data processing and interpretation, an integral part of this project, are necessary to minimize effects of thin but extensive sheets of Neogene flood basalts that may mask patterns due to older strata and deeper structures. Airborne geophysical surveys are planned for 1993. Processing of the digital data will follow with publication of a series of high-resolution residual total field maps at 1:50 000-scale and total field contour maps at 1:250 000-scale, planned for 1994.

Robert Shives, Ken Ford, Bruce Ballantyne and Don Harris of the Geological Survey of Canada initiated an applied geophysical study. They will carry out airborne gamma ray spectrometry (AGRS), magnetic and VLF-electromagnetic surveys over the two key mineral deposit types that represent likely exploration targets in the Interior Plateau region - the Clisbako epithermal precious metal occurrence and the Fish Lake porphyry copper-gold deposit.

Potassic alteration in rocks, present at both Clisbako and Fish Lake, provides excellent potential for successful application of the gamma ray spectrometric technique. Gamma ray spectrometry maps subtle variations in radioelement contents (K, U, Th) of bedrock and overburden. Where disruption of normal radioelement concentrations by mineralizing solutions can be recognized in bedrock or in derived surficial materials, the radioelements provide pathfinders to zones of alteration. Radioelement enrichment and depletion in concert with magnetic and VLF signatures can be interpreted and used as guides for mineral exploration.

Ground orientation and follow-up studies, in collaboration with other MDA projects, will include ground spectrometry, mineralogical studies and multimedia geochemical analyses, to explain the airborne patterns, to demonstrate practical applications of the data, and equally important, to foster the transfer of the relatively simple, inexpensive ground technique to the mapper and explorationist.

Ground tests were conducted in 1992 and aerial surveys will be completed in 1993. Colour contour and profile maps of radioelement, magnetic and VLF-EM data will be available at 1:50 000 and 1:100 000 scales for each area.

BEDROCK MAPPING

In 1992, two new bedrock mapping programs began along the eastern boundary of the Coast Belt and adjacent Intermontane Belt. Paul Schiarizza and Janet Riddell mapped about 1000 square kilometres in parts of the Mount Tatlow area (92O/5, 6, 12). This work established stratigraphic continuity with the recently mapped Chilk Lake - Taseko Lakes - Bridge River area to the south-southeast. The Yalakom fault transects the map area; consistent stratigraphic relationships across the fault imply approximately 115 kilometres of dextral displacement. The Fish Lake porphyry copper-gold deposit is in the Tatlow area. Uranium-lead geochronometry on zircon from a mineralized phase of the intrusion will help to approximate the timing of intrusion-related mineralization at Fish Lake.

Farther northwest, Peter van der Heyden, of the Geological Survey of Canada, mapped the Charlotte Lake (93C/3), Junker Lake east-half (93C/4E), and parts of the Bussel Creek (92N/14) map areas. Exploration prospects in this area include epithermal precious metal bearing veins and porphyry copper-molybdenum showings. These mapping projects will be geographically linked in 1994, providing contiguous 1:50 000-scale geological coverage along a vast tract of the eastern Coast Belt and western Intermontane Belt.

In much of central British Columbia, Eocene magmatism is manifest as a broad field of continental volcanic rocks and associated calcalkaline plutons. Several former producing mines and scattered prospects throughout the Interior Plateau represent epithermal-type precious metal mineralization related to this magmatic episode. During the 1993 field season a new mapping project, coordinated by Cathie Hickson, of the Geological Survey of Canada, is scheduled to begin in the central region of the Interior Plateau (93C/9, 16 and 93B/12, 13). The focus will be to revise Eocene stratigraphy and identify metallotectics. Eocene rocks in the area contain several precious metal occurrences; the most notable at this time is at the Clisbako property.

During 1992, Larry Diakow and Kim Grein, of the British Columbia Geological Survey Branch, mapped the Natalkuz Lake (93F/6) area in the northern part of the Interior Plateau. This area is underlain by Middle Jurassic and older volcanic and sedimentary rocks that are cut by the Late Cretaceous Capoose batholith. The Natalkuz fault, a northeast-trending linear structure, cuts across the map area and juxtaposes older Jurassic strata against a dominantly Eocene and younger volcanic pile. At the Capoose property in the Fawnie Range, finely disseminated silver is found within rhyolite sills and, nearby, a number of porphyry copper-molybdenum showings are known in the Capoose batholith. Rhyolitic rocks of the Ootsa Lake Group contain sparse pyrite; their potential as hosts for epithermal precious metals is perceived to be low in the area mapped. In 1993, work will continue with expansion of the mapping farther

south into the Fawnie Creek area where silicified Eocene rocks contain precious metals at the Wolf property.

SURFICIAL GEOLOGY AND GEOCHEMISTRY

Peter Bobrowsky, of the British Columbia Geological Survey Branch, leads a surficial geological mapping project at 1:50 000-scale in parts of the Anahim Lake (93C) and Nechako River (93F) map sheets. Both areas have potential for mineral deposits in porphyry and epithermal environments; however, an extensive veneer of drift has significantly hampered exploration in both areas. The project will present surficial data in thematic formats that will aid drift prospecting. The maps will also integrate glacial process information into a format which will provide an additional tool for effective exploration of the drift-covered terrain.

In 1992, two field parties mapped the surficial geology in the four easternmost map sheets of the Anahim Lake area. Till samples were routinely collected throughout the map area for geochemical analysis and provenance studies. In 1993 surficial and bedrock mapping are proposed in the Fawnie Creek area (93F/3) which will result in a fully integrated terrain-bedrock map.

Alain Plouffe of the Geological Survey of Canada is engaged in a two-part project that addresses regional surficial geochemistry and Pleistocene glacial history. The project area comprises the northwest quadrant of Taseko Lakes (92O) and the northeast quadrant of the Anahim Lake (93C) map sheets. Further detailed surveys will be conducted around the Clisbako and Fish Lake properties to collaborate with and support studies of other projects in the area.

The till samples will be analyzed for a variety of elements and results compiled on regional reconnaissance geochemical maps. These maps will establish background concentrations of elements in till over different bedrock lithologies. Such maps have applications in drift prospecting. The historical aspect of the drift investigations is of primary importance for interpretation of the regional geochemical maps.

BIOGEOCHEMISTRY

Colin Dunn of the Geological Survey of Canada is undertaking a project to evaluate the effectiveness of biogeochemistry as a prospecting tool by sampling at several mineralized test sites that encompass an area roughly equivalent to two 1:50 000-scale map sheets. In a previous case study, over the QR deposit in the Quesnel trough, the biogeochemical survey demonstrated that reconnaissance level biogeochemical mapping is effective. Data were obtained from tree-top organic material by helicopter in a fast, cost-effective, and efficient program. This technique can detect mineralized bedrock concealed by dense forest and/or a veneer of overburden. The Interior Plateau program will involve detailed ground and airborne biogeochemical reconnaissance surveys at the selected test sites - the Clisbako and Fish Lake properties. The orientation survey done in 1992 will be followed up by the full survey in 1993. The work will be carried out in collaboration with other project leaders in the area. Approximately 50 elements will be analyzed. The maps produced will focus attention on areas with anomalous concentrations of metals.

GENERAL

Results of the various projects conducted by staff of the B.C. Geological Survey Branch in the Interior Plateau region are summarized in this volume. These include the following papers:

- Riddell, J., Schiariazza, P., Gaba, R.G., Cairn, N. and Findlay, A.: Geology and Mineral Occurrences of the Mount Tatlow Map Area.
- Diakow, L.J. and van der Heyden, P.: An Overview of the Interior Plateau Program.
- Green, K.C. and Diakow, L.J.: The Fawnie Range Project - Geology of the Natalkuz Lake Map Area.
- Cook, S.J.: Preliminary Report on Lake Sediment Studies in the Northern Interior Plateau, Central British Columbia (93C, E, F, K, L).
- Giles, T.R. and Kerr, D.E.: Surficial Geology in the Chilanko Forks and Chezacut Areas (93C/1,8).
- Proudfoot, D.N.: Drift Exploration and Surficial Geology of the Clusko River (92C/9) and Toil Mountain (93C/16) Map Sheets.