



Province of British Columbia
Ministry of Energy, Mines and
Petroleum Resources
Hon. Anne Edwards, Minister

MINERAL RESOURCES DIVISION
Geological Survey Branch



B.C. GEOLOGICAL SURVEY BRANCH
MDA Project Summary

Information Circular 1992-25

1991-1995 MINERAL DEVELOPMENT AGREEMENT

Mining is important to British Columbia, ranking as the second largest goods producing industry in the province. It generates about \$3 billion in revenue annually for the provincial economy and is a cornerstone of regional development.

Some of the challenges facing the industry in the 1990s include: declining base metal reserves; technological change; environmental and safety concerns; completing land uses; aboriginal involvement; and, increasing international competitiveness.

The 1991-1995 Canada-British Columbia Mineral Development Agreement (MDA) will address these challenges through government and industry initiated projects to:

- guide and stimulate mineral exploration,
- enhance competitiveness and productivity,
- reduce environmental impacts, and
- encourage investment and diversification.

WHAT IS IT?

The MDA is an agreement between the governments of Canada and British Columbia to coordinate efforts to strengthen and diversify the province's mineral industry. Each government has committed \$5 million to mineral development programs scheduled to extend until March 31, 1995.

The MDA is one of a number of Subsidiary Agreements to the Canada-British Columbia Economic and Regional Development Agreement (ERDA) signed by Canada and British Columbia in 1984.

This is the second bilateral mineral agreement to be signed for B.C. The first MDA which expired in 1990, successfully funded over 130 mineral development projects.

The new MDA, which reflects changing priorities, builds on the first agreement with improvements in program structure, research priorities, administration and industry input.

WHAT WILL IT DO?

There are five programs funded under the MDA:

GEOSCIENCE

Work is being carried out by government staff and contractors to improve the geoscientific database and identify areas with high mineral potential. Projects will provide data for informed resource management and will help identify optimal land uses and continue to encourage exploration and development, through:

- airborne geophysical and regional geochemical surveys,
- bedrock and surficial geological mapping,
- compilation of MINFILE data, and
- development of comprehensive digital databases using GIS technology.

TECHNOLOGY DEVELOPMENT

Joint government/industry initiatives are being undertaken, to meet the challenges of environmental management. Projects focus on:

- environmental issues,
- improved mining technologies, and
- more efficient mineral processing techniques.

ECONOMIC DEVELOPMENT

Enhanced investment and diversification opportunities are being addressed through:

- cost-shared marketing and infrastructure studies,
- strategic studies of major institutional issues and constraints facing the industry,
- identifying opportunities for native involvement in mining, and
- funding for demonstration projects or conferences to highlight industry issues.

PUBLIC INFORMATION

A variety of public information activities and publications are being produced to:

- inform the general public and the industry of the existence and objectives of the MDA.
- enhance awareness and appreciation of the mining industry's contribution to B.C., and
- facilitate the transfer of information and technology developed under the agreement.

EVALUATION AND ADMINISTRATION

Funds allow for the necessary audit, evaluation and administration of the programs funded under the agreement.

MDA - 2						
5 - Year Funding Breakout						
AREA	1991-92 \$x1000	1992-93 \$x1000	1993-94 \$x1000	1994-95 \$x1000	1995-96 \$x1000	TOTAL \$x1000
Aiken Lake	158	193	206	165	60	782
N Van Isl		60	66	55	0	181
Int. Plateau						
Fawnie		114	152	150	70	486
Tatlayoko		100	106			206
GIS/MINFILE	57	40				97
Surf Map		50	56			106
RGS Orient		40				40
Ind Min		25	31			76
RGS Survey	134		381			515
RGS Arch		50	44	50	50	206
Publications		62	46	29		105
TOTAL	349	734	1088	449	180	28000

1992/93							
PROJECT	NUMBER	STOB 10	STOB 20	STOB 30	STOB 50	STOB 68	TOTAL
RGS ARCH	RS990		\$25,000		\$12,000	\$13,000	\$50,000
SURF MAP	PS940	\$2,000	\$45,000		\$3,000		\$50,000
RGS ORIENT	PL950	\$4,000	\$26,000		\$10,000		\$40,000
FAWNIE	PF920	\$7,585	\$88,745	\$1,500	\$11,670	\$4,500	\$114,000
TATLAYOKO	PT930	\$800	\$84,633	\$200	\$10,867	\$3,500	\$100,000
N VAN ISL	VI960		\$50,000		\$10,000		\$60,000
AIKEN LK	QT970		\$156,000	\$1,000	\$31,000	\$5,000	\$193,000
IND MIN	IV900		\$25,000				\$25,000
PUBLICATIONS	P980		\$62,000				\$62,000
MINFILE	PM910		\$40,000				\$40,000
TOTAL		\$14,385	\$602,378	\$2,700	\$88,537	\$26,000	\$734,000

REGIONAL GEOCHEMICAL SURVEYS

GSB Section: Environmental Geology

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
RS 990 1992-1995	Matysek/Jackaman Regional Geochemical Surveys	\$206 000	92N, O, P; 93G, H, J

Project Statement: Evaluation of the mineral potential of British Columbia through the ongoing development and maintenance of a high quality geochemical database consisting of stream sediment and water analytical data plus field site observations. Data is collected, compiled and published on an annual basis and includes results from new reconnaissance scale surveys as well as from the re-analysis of archived sediment samples for elements not included in the initial programs.

1992/93 Work Plan: 1) Production of RGS Open File data packages for RGS conducted in 92N, 92O and 92P.
2) Analysis of RGS Archive samples from 93G, 93H and 93J.

Publications: FW 1993-1.

Progress to Date: Project proceeding as scheduled. RGS Open File Data Packages for 92N, 92O and 92P published on July 7. Sediment pulps for updates 92G, 92H, and 92J have been returned from GSC storage facilities and have been prepared for analysis.

1:100 000 SURFICIAL MAPPING

GSB Section: Environmental Geology

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
PS 940 1992-1994	Bobrowsky/Matysek 1:50 000 Surficial Mapping	30 \$106 000	92C

Project Statement: This program will provide surficial data in map format which is important for drift exploration strategies. The main outcome of this study is to promote exploration activity in an area of high mineral potential (93C) which is drift covered, poorly understood from a Quaternary geologic perspective, and for which surficial map coverage is not available. Regional surficial geology mapping at a scale of 1:50 000 will provide the best coverage for exploration interest. Initial airphoto interpretation will be followed by ground truthing and drift sampling at the 1:50 000-scale of reliability. The target project is to map two 1:50 000 scale sheets on contract and two 1:50 000 sheets by GSB staff in 93C where complimentary bedrock mapping, aeromagnetic study and others studies are being undertaken as part of the MDA for the Interior region of B.C.

1992/93 Work Plan: Background data compilation involving literature review and air photo interpretation will require 2 months preparation in the spring of 1992, and will involve a preliminary field visit to determine ease of access and to identify which areas are best suited for detailed work. Fieldwork in the southern Interior will take place during July and August. A 4 week investigation will evaluate interpreted terrain polygons. Given the large area of mapping, air support will be important. Field methods include pebble fabric analysis in till, lithological pebble counts, boulder tracing, and recording glacial striations and geomorphic ice-flow indicators. Bulk sediment samples of various surficial sediment types will be collected and analyzed by grain size analysis and for a suite of elements. The contractor, Dr. D. Proudfoot, is providing two surficial maps at 1:50 000 scale of 93C/9 and 93C/16. GSB staff (D. Kerr and T. Giles) are providing two surficial maps at 1:50 000 scale of 93C/1 and 93C/8. Approximately 300 till samples will be obtained for the 4 map sheets. An additional 300 pebble samples (100 pebbles/sample) will accompany the till samples. These samples will be submitted for geochemical analysis. Surficial maps will be available for Roundup in 1993.

Progress to Date: Fieldwork for 1992 is complete; work is ongoing.

LAKE SEDIMENT STUDIES

GSB Section: Environmental Geology

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
PM 950 1992-1993	Cook/Sibbick Lake Sediment Studies	45 \$40 000	93C, F, K

Project Statement: Objectives of the Lake Sediment Studies project are two-fold: 1) to evaluate the use of lake and stream sediments as reconnaissance sampling media for proposed surveys of NTS mapsheets 93C, K and F; and 2) to provide a better understanding of the process of metal dispersion in the lake sediment environment.

1992/93 Work Plan:

- a) An evaluation of existing geochemical and limnological data from lakes in mapsheets 93C, F and K and adjacent areas to determine the effect of various limnological characteristics on geochemical dispersion.
- b) An analysis of regional lake sediment data from NTS mapsheets 93E and 93L.
- c) Detailed studies of lake and stream sediments. The program will centre on areas containing known mineral deposits (*i.e.* Wolf, Clisbako) within various geological environments and hosting lakes with differing limnological characteristics. An improved understanding of the relation between metal content and lake characteristics such as trophic activity, pH, Eh, relief and margin type is of particular importance.

Publications: FW 1993-1.

Progress to Date: This year's budget allocation is on track. Results will be available by the spring of 1993. This project is a precursor to a proposed RGS survey for the same map sheets.

INTERIOR PLATEAU PROJECT

GSB Section: Mapping and Resource Evaluation

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
PF 920 1992-1995	Diakow Interior Plateau Project Fawnie Range Program	90 \$486 000	93F/3, 6

Project Statement: The Fawnie Range program is part of a major new multidisciplinary geoscience project in the Interior Plateau physiographic region of west-central B.C. The Interior Plateau project is jointly executed by the B.C. Geological Survey Branch and the Geological Survey of Canada. The Fawnie Range program encompasses two 1:50 000 scale mapsheets (93F/3, 6) with two distinct environments and ages of precious metal deposition. The Capoose deposit has precious metal inclusions in base metals that are disseminated at contacts of Late Cretaceous (Maastrichtian) sub-volcanic rhyolite dikes and sills. By comparison, precious metals at the nearby Wolf deposit are in quartz-carbonate veins and breccia formed during hydrothermal activity associated with felsic volcanism and small-scale subsidence in the Eocene Ootsa Lake Group. Geologic mapping will divide volcanic-sedimentary successions, determine geologic controls and potential for epithermal veins and high-level porphyry deposits, and provide fundamental data for resource planning in the area.

1992/93 Work Plan: During 1992, geologic mapping will concentrate on mapsheet 93F/6 where generally higher topography, particularly in the Fawnie Range, provides in above average exposure and perhaps a more complete record of Mesozoic and Cenozoic lithostratigraphy. During the second and final year of fieldwork in 1993, mapping will be expanded southward into mapsheet 93F/3. The proposed Fawnie Range program encompasses important mineral exploration sites at Capoose and Wolf where regional geologic studies will be augmented by recent detailed deposit studies by Andrew (1988). Additional detailed work on mineralized-altered zones will be conducted where warranted.

Progress to Date: Fieldwork completed for 1992; making good progress.

INTERIOR PLATEAU PROJECT

GSB Section: Mapping and Resource Evaluation

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
PT 930 1992-1996	Schiarizza Interior Plateau Project Tatlayoko	75 \$206 000	92O/5, 6

Project Statement: The project area encompasses Mesozoic and Cenozoic volcanic, sedimentary and intrusive rocks along the transition from the Coast Mountains to the Intermontane belt. It includes a number of porphyry-style mineral occurrences, including the large-tonnage Fish Lake copper-gold deposit, as well as transitional and epithermal precious metal vein deposits. However, the present geologic database is insufficient to provide answers to fundamental questions regarding the controls and potential distribution of mineral occurrences. This project will address these questions and provide an evaluation of mineral potential that will aid exploration and provide a basis for informed land use decisions.

1992/93 Work Plan: May-June 15: prepare for fieldwork.
 June 15-August 31: fieldwork; geologic mapping will encompass the Fish Lake deposit and will tie in with the northern limits of the Taseko-Bridge River and Chilko Lake project areas.
 September-October: prepare Fieldwork report.
 November-December: prepare Open File maps (1:50 000 and/or more detailed).
 January: poster session for Cordilleran Roundup.
 February-March: office-based research.

Progress to Date: Fieldwork completed for 1992; making good progress.

QUATSINO SOUND

GSB Section: Mapping and Resource Evaluation

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
VI 960 1992-1995 (year 1 of 4)	Graham Nixon Quatsino Sound, Northern Vancouver Island	95 \$181 000	92L/5

Project Statement: This project will provide regional 1:50 000 geological maps of the Quatsino (92L/12) and Mahatta Creek (92L/5) sheets and the western halves of the Alice Lake (92L/6) and Port McNeill (92L/11) sheets on northern Vancouver Island. This area is underlain by Mesozoic rocks predominantly of the Vancouver and Bonanza groups and includes important porphyry copper (Island Copper), copper-gold skarn (Merry Widow), iron-skarn and gold-vein mineralization, including epithermal to transitional deposits. Metallogenic and mineral potential compilations will be prepared to stimulate exploration activity and assist in government land-use decision making.

1992/93 Work Plan: To geologically map 92L/5 (Mahatta Creek) at 1:50 000-scale to contribute to mineral exploration initiatives that are currently underway.

Progress to Date: Fieldwork completed September 26; making good progress to date.

NORTHERN QUESNEL TROUGH

GSB Section: Mapping and Resource Evaluation

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
QT 970 1991-1994 (year 2 of 4)	Ferri Northern Quesnel Trough (Aiken Lake)	90 \$782 000	94C/5

Project Statement: The northern Quesnel Trough, site of the recently discovered large-tonnage Mt. Milligan copper-gold porphyry, is a site of significant exploration activity. There is exploration for carbonate-hosted lead-zinc deposits to the east, in the Cassiar Terrane. The existing geological database is at 1:250 000 scale, inadequate to delineate areas of higher than average mineral potential. The main targets are copper-gold porphyries and carbonate hosted lead-zinc mineralization. Secondary targets are skarns and epithermal gold deposits.

1992/93 Work Plan: Map northwest along the Mesozoic volcanic arc to map sheet 94C/5 and cover parts of 94C/6, 12 and 94D/8. This area is contiguous with 1991 mapping; it will trace Mesozoic and Paleozoic sequences northwestward and define metallotects. Tectonically, the mapping contributes to a better understanding of the boundary between Quesnel and North American rocks.

Publications: OF 1992-11; Paper 1992-1; pp.127-145.

Progress to Date: Fieldwork for 1992 completed; making good progress to date.

INTERIOR PLATEAU PROJECT

GSB Section: Mapping and Resource Evaluation

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
IV 900 1992-1993	Contractor Interior Plateau Project Bedrock Geology and Assessment of Industrial Mineral Potential of Tertiary Rocks	143 \$76 000	93B/8W, 9W, 10E

Project Statement: Industrial mineral deposits are an important component of the Tertiary sequence in the Quesnel area. Ceramic clays and natural pozzolan are reported from the vicinity of Quesnel, and for a number of years diatomaceous earth has been produced from a quarry for the manufacture of insulation refractory bricks and industrial and domestic absorbents. There is also good potential to identify sources of bentonite and zeolites.

1992/93 Work Plan: During the summer of 1992, 1:50 000-scale geological mapping and sampling will be completed for NTS sheets 93B/8W, 9W and 10E. Following the field studies there will be laboratory analysis including XRD of all suspected zeolite and clay-bearing samples and microscopic and analytical studies of diatomaceous earth samples. The program will include publication of one and one-half 1:50 000 map sheets with a written assessment of the industrial minerals potential of the Tertiary volcano-sedimentary sequence.

Publications: N/A.

Progress to Date: In the process of writing an RFP for *Tertiary Bedrock Geology and Assessment of the Industrial Minerals Potential - Interior Plateau Project*. The contract should be in place by early October and the mapping done by early November.

PUBLICATIONS

GSB Section: Scientific Review

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
P 980 Ongoing	Grant Scientific Review	N/A \$105 000	B.C.

Project Statement: The Scientific Review Office will expedite the production of geological reports and maps for publication. Hardcopy maps will be digitally scanned to AUTOCAD format and additional drafting will be contracted. This project will ensure the timely production of research results which will be made available to the public and mining industry through the normal GSB publication process.

1992/93 Work Plan: Contract Scan Services to digitally scan hardcopy maps for the Whitesail, Purcell, Fantail/Edgar, Bralorne, Forest-Kerr and Hedley projects. Contract additional drafting to support the Toadogone and Cassiar projects.

Publications: Maps scanned and drafted in AUTOCAD format will accompany reports resulting from various geoscience projects completed by Geological Survey Branch staff.

Progress to Date: Ongoing.

MINFILE

Section: Geoscience Information

Project No. Project Timing	Project Leader Project Title	Field Days 5-Year Budget	NTS Map Area
PM 910 1992-93	Jones MINFILE	0 \$97 000	92P, 92I (N)

Project Statement: MINFILE is the Branch's computerized mineral inventory database of over 10 900 mineral, coal and industrial mineral occurrences in B.C. MINFILE/pc is a personal computer data-entry, search-and-report program for the MINFILE database. MINFILE is used extensively by industry and government for exploration planning, resource information, land use planning, and research. Coding of the database is 77% complete, of which 60% is released. PROPERTY FILE is the hardcopy reference material for MINFILE.

1992/93 Work Plan: Of the approximate 3100 remaining occurrences (includes 20% growth) to be coded, about 1100 will be coded and over 2200 will be edited/updated by the MINFILE team. As a priority, inhouse staff will edit and release 1200 occurrences within the first 5 months of the fiscal and code 600 occurrences during the rest of the year. Contractors will code 500 occurrences. This combined effort will complete coding for over 85% of B.C.'s mineral occurrences. The goal is to release a total of 26 map sheets (1860 occurrences). This will result in 75% of the total MINFILE being released.

The MINFILE/pc software will be enhanced, as identified in change requirements evolving from MINFILE team and client requests. A new computer platform will be defined for the MINFILE system to make it functional in a network environment. Computer system plans, based on Branch business objectives, are detailed in a separate report.

This does not specifically identify the component that is PAMD. Under the Partnership Agreement on Mineral Development (PAMD), the Geoscience Information Section will complete coding and preparation of mineral inventory maps for the 3 map areas, 092P, 092INE and 092INW. This will contribute to the coding of approximately 580 occurrences of the MINFILE database and lead to the publication of the 3 map areas.

Publications: IC 1991-3, 1992-2; OF 1990-32, 1992-9; 10 MINFILE mapsheets; Paper 1989 pp.613-617.

Progress to Date: An invitation to quote for coding 3 map sheets has been initiated.