

MINERAL RESOURCES DIVISION Geological Survey Branch

GEOLOGICAL FIELDWORK 1990

A summary of Field Activities and Current Research

PAPER 1991-1

# MINERAL RESOURCES DIVISION Geological Survey Branch

#### British Columbia Cataloguing in Publication Data

Main entry under title: Geological fieldwork. — 1974-

> (Paper, ISSN 0226-9430) Annual.

Issuing body varies: 1974–1980, Geological Division; 1981–1985, Geological Branch; 1986– , Geological Survey Branch.

Subseries, 1979—, of: Paper (British Columbia. Ministry of Energy, Mines and Petroleum Resources)
"A summary of field activities of the Geological Division, Mineral Resources Branch."
ISBN 0381-243X=Geological fieldwork

1. Geology — British Columbia — Periodicals.
2. Geology, Economic — British Columbia — Periodicals.
3. Mines and mineral resources — British Columbia — Periodicals. I. British Columbia. Geological Division. II. British Columbia. Geological Branch. III. British Columbia. Geological Survey Branch. IV. British Columbia. Ministry of Energy, Mines and Petroleum Resources. V. Series: Paper (British Columbia. Ministry of Energy, Mines and Petroleum Resources)

QE187.G46 Rev. Dec. 1987 557.11'05

VICTORIA BRITISH COLUMBIA CANADA

January 1991

#### **FOREWORD**

Geological Fieldwork 1990: A Summary of Field Activities and Current Research is the sixteenth in this publication series. It contains reports on activities and project results during a year in which the Geological Survey Branch had budgets reduced due to the end of the Canada/British Columbia Mineral Development Agreement (MDA). Many of the Branch staff, particularly those engaged on MDA supported projects, are now producing final reports. This activity resulted in fewer field programs during 1990.

The base budget of the Branch for the 1990/91 fiscal year is \$7.05 million, with an additional \$300 700 provided by the MDA. The Geological Survey Branch is committed to a strong program of 1:50 000-scale regional mapping and mineral deposits, coal, surficial geology and industrial mineral studies. This includes 18 field programs in frontier areas or areas which are the focus of interest within the minerals industry.

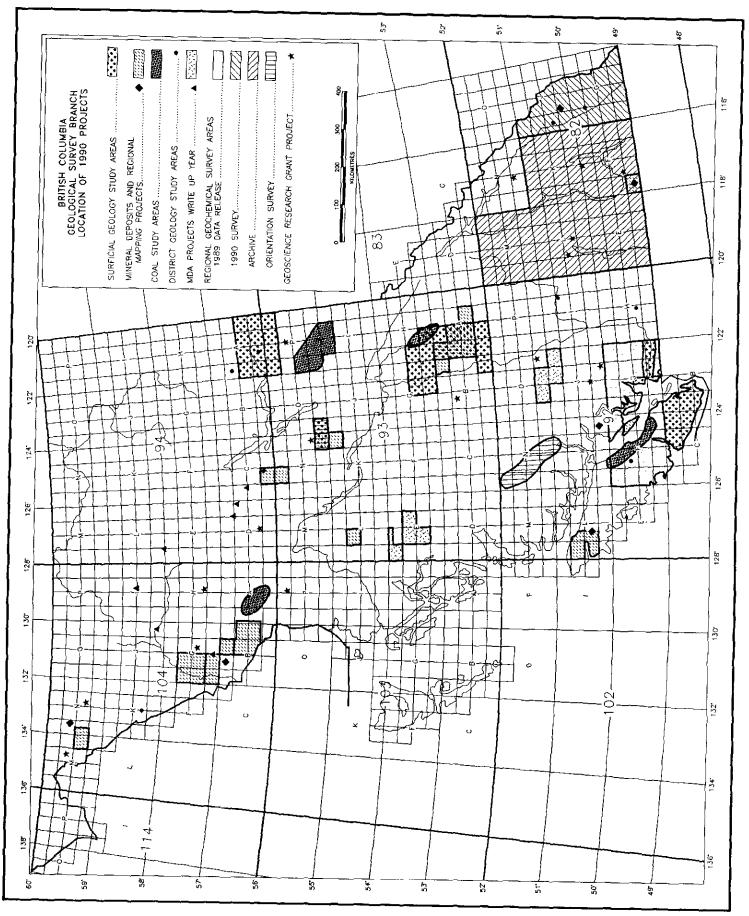
Highlights of the 1990/91 program:

- Six 1:50 000-scale geological mapping programs were supported in areas across the
  province. Continuing programs were in the Iskut-North, Tagish Lake, Stikme River and
  Iskut-Sulphurets areas. New mapping projects were started in the Quatsino area of
  Vancouver Island and in the Mount Milligan area.
- Metallogenic field research continued in the Stewart-Sulphurets-Isku: "Golden Triangle", the Rossland Group of southeastern B.C., and precious metal enriched skarns. New research is supported in the area of the Mount Milligan porphyry Cu-Au deposit and on the potential for listwanite related lode-gold deposits in ultramafics.
- The newly created Surficial Geology unit carried out 3 field programs to improve the provincial database on surficial geology, geological hazards and placer geology. Data for the Peace River, Cariboo and northern Vancouver Island areas are reported herein.
- Reconnaissance geochemical surveys were completed in southeastern British Columbia (82G & J). Archived samples from 82E, F, K, L & M were analyzed for release later in 1991.
- The Coal unit continued studies on coal quality, resources and regional stratigraphy. Prominent projects are mapping on Vancouver Island and the Bowser Basin, as well as coalbed methane potential for the Vancouver Island, Rocky Mountain Foothills and Northeast B.C. deposits.
- The Industrial Minerals unit started a detailed geological evaluation of the Mount Brussilof magnesite deposit in southeastern B.C.
- The Branch continued to enhance computerized access to the provincial geoscience database. Research into Geographic Information Systems and the world-class MINFILE database are at the forefront of this activity.

The British Columbia Geoscience Research Program continued to encourage and support geoscience research. A total of 32 grants, funded by a budget of \$130 000, were made to researchers in 17 institutions across the country. Research topics covered such diverse topics as geologic mapping, isotopic dating, geochemistry, conodont research, Quaternary mapping, mineral deposit modelling and the application of Geographic Information Systems to geoscience data.

This volume of Geological Fieldwork contains forty-six technical manuscripts, down about 25 per cent from last year. However, producing this annual publication against very tight deadlines required a concerted effort from our editorial and publications staff and we acknowledge the efforts of Doreen Fehr and Janet Holland for formatting and page layout, John Newell for editing, and Brian Grant for managing the process. The quality of this publication is also due in part to Queen's Printer, who extended their cooperation and enthusiasm to ensure timely delivery.

W.R. Smyth
Chief Geologist
Geological Survey Branch
Mineral Resources Division



### TABLE OF CONTENTS

		Page		Page
REGIONAL AND DISTRICT MAPPING		3	1-12 <b>G. Zhang and A. Hynes:</b> Structure Group East of the Finlay-Inge McConnell Creek Area, North-6 (94D/8, 9)	nika Fault, entral B.C.
1-1	K.P.E. Andrew and T. Höy: Geology of the Rossland Group in the Erie Lake Area with Emphasis on Stratigraphy and Structure of the Hall Formation, Southeastern British		<ul><li>1-13 J.M. Britton: Stratigraphic Note Iskut-Sulphurets Project Area (10</li><li>1-14 R.A. Donelick and J.R. Dick</li></ul>	04B) 131 kie: Low-
1-2	T. Höy and K.P.E. Andrew: Geology of the Rossland Area, Southeastern British Colum-	9	temperature Thermal History of Plutonic Complex and Intermo Northwest British Columbia (104	ntane Belt, M, N) 139
1-3	A. de Rosen-Spence and A.J. Sinclair: Metchosin Volcanics: A Low-titanium Emergent Seamount at the Base of the Crescent	21	1-15 M.G. Mihalynuk, K.J. Moun McMillan, C.H. Ash and J.L. Highlights of 1990 Fieldwork i Area (104N/12W)	Hammack: n the Atlin
1-4	Terrane (92B)	33 41	1-16 J.L. Jackson, P.J. Patchett and G. Preliminary Nd and Sr Isotopi from the Nisling Assemblage Stikine and Northern Cache Cree Northwestern British Columbia at Yukon (104M, N)	c Analyses , Northern ck Terranes, nd Adjacent
		41		100
1-5	H.R. Schmitt and G.G. Stewart: Preliminary Geology and Mineral Potential of the Cascade Recreation Area (92H/2, 3, 6, 7)	47	MINERAL DEPOSIT STUDIES  2-1 B.N. Church, A.M. Jessop, R. A. Pettipas: Tertiary Outlier Studies Investigations in the Summerl South Okanagan Area, B.C. (82E)	lies: Recent and Basin,
1-7	East of Pemberton, British Columbia, and the Setting of Mineral Showings (92J/2, 7, 10)  J.I. Garver: Kinematic Analysis and Timing of Structures in the Bridge River Complex and Overlying Cretaceous Sedimentary Rocks,	57	2-2 G. Beaudoin and D.F. Sangster:  Production Data as an Exploratio for Ag-Pb-Zn-Au Vein and Ro Deposits, Northern Kokanee Rai eastern British Columbia (82F, K	The Use of n Guideline eplacement nge, South-
1-8	Cinnabar Creek Area, Southwestern British Columbia (92J/15)  D.A. Archibald, P. Schiarizza and J.I. Garver: 40Ar/39Ar Evidence for the Age of	65	2-3 X. Cheng, A.J. Sinclair, M.L. The Y. Zhang: Hydrothermal Alterat ated with the Silver Queen Poveins at Owen Lake, Central B.C.	on Associ- olymetallic
	Igneous and Metamorphic Events in the Bridge River and Shulaps Complexes, Southwestern British Columbia (920/2; 92J/15, 16)	75	2-4 C.T.S. Hood, C.H.B. Leitch and A. Mineralogic Variation Observed a Queen Mine, Owen Lake, Cent Columbia (93L/2)	t the Silver ral British
1-9	N.W.D. Massey and D.M. Melville: Quatsino Sound Project (92L/5, 6, 11, 12)	85	2-5 M.L. Thomson and A.J. Sinc Hydrothermal Development of F	lair: Syn-
1-10	J. Nelson, K. Bellefontaine, K. Green and M. MacLean: Regional Geological Mapping Near the Mount Milligan Copper-Gold Deposit (93K/16, 93N/1)	۷n	the Silver Queen Mine Area, O Central British Columbia (93L/2)	wen Lake,
1-11	P.J. Desjardins, R.L. Arksey and D.G. Mac- Intyre: Geology of the Lamprey Creek Map Sheet (93L/3)	89	2-6 R.C. DeLong, C.I. Godwin, M.N. N.M. Caira and C.M. Rebagliat and Alteration at the Mount Mill Copper Porphyry Deposit, Cent Columbia (93N/1E)	i: Geology igan Gold- ral British

## TABLE OF CONTENTS (Continued)

		Page			Page
2-7	J.R. Clark and A.E. Williams-Jones:  40Ar/39Ar Ages of Epithermal Alteration and Volcanic Rocks in the Toodoggone Au-Ag District, North-central British Columbia	207	4-4	P.M. Bartier and C.P. Keller: Integrating Bedrock Geology with Stream-sediment Geochemistry in a Geographic Information System (GIS): Case Study NTS 92H	315
2-8	J.L. Hammack, G.T. Nixon, W.P.E. Paterson and C. Nuttall: Geology and Noble Metal Geochemistry of the Lunar Creek Alaskan-	207	4-5	J.L. Gravel, S. Sibbick and D. Kerr: Geochemical Research, 1990: Coast Range – Chilcotin Orientation and Mount Milligan Drift Prospecting Studies (920, N, 93N)	323
2.0	type Complex, North-central British Columbia (94E/13, 14)	217	4-6	V.M. Levson and T.R. Giles: Stratigraphy and Geologic Settings of Gold Placers in the Cariboo Mining District (93A, B, G, H)	331
2-9	C.I. Godwin, A.D.R. Pickering, J.E. Gabites and D.J. Alldrick: Interpretation of Galena Lead Isotopes from the Stewart-Iskut Area (1030, P; 104A, B, G)	235	4-7	P.T. Bobrowsky, N. Catto and V. Levson: Reconnaissance Quaternary Geological Investigations in Peace River District, British Columbia (93P, 94A)	345
2-10	I.C.L. Wesbster and G.E. Ray: Skarns in the Iskut River - Scud River Region, Northwest		COAL STUDIES		
2-11	G.E. Ray, V.A. Jaramillo and A.D. Ettlinger: The McLymont Northwest Zone, Northwest	245	5-1	D.A. Grieve and M.E. Holuszko: Trace Elements, Mineral Matter and Phosphorus in British Columbia Coals	361
	British Columbia: A Gold-rich Retrograde Skarn? (104B)	255	5-2	M.E. Holuszko and D.A. Grieve: Washability Characteristics of British Columbia Coals	371
INDUSTRIAL MINERALS			5-3	C.G. Cathyl-Bickford and G.L. Hoffman: Geology and Coal Resources of the Nanaimo	
3-1	L. Morin and J. Lamothe: Testing on Perlite and Vermiculite Samples from British Columbia	265		Group in the Alberni, Ash River, Cowie Creek and Parksville Areas, Vancouver Island (92F/2, 6, 7, 8)	381
3-2	G.J. Simandl and K.D. Hancock: Geology of the Mount Brussilof Magnesite Deposit, Southeastern British Columbia (82J/12, 13)	269	5-4	C. Kenyon: The Suquash Coalfield, Vancouver Island (92L/11)	387
3-3	R.W. Renaut and D. Stead: Recent Magnesite- Hydromagnesite Sedimentation in Playa Basins of the Cariboo Plateau, British		5-5	A. Matheson and M. Sadre: Subsurface Coal Sampling Survey, Bowron River Coal Deposits, Central British Columbia (93H/13)	391
APP	Columbia (92P)  LIED GEOCHEMISTRY AND SURFICIAL	279	5-6	<b>B. Ryan:</b> Density of Coals from the Telkwa Coal Property, Northwestern British Columbia (93L/11)	399
	LOGY		5-7	D.J. Hunter and J.M. Cunningham: Burnt	
4-1	P.F. Matysek, W. Jackaman and S. Feulgen: 1991 Regional Geochemical Survey Release, Southeastern British Columbia. Delivering a New Generation of Geochemical Data (82E, F, G, J, K, L, M)			River Mapping and Compilation Project (93P/5, 6)	407
		291	5-8	H.O. Cookenboo and R.M. Bustin: Coalbearing Facies in the Northern Bowser Basin (104A, H)	415
4-2	J.M. Ryder and K. Fletcher: Exploration Geochemistry - Sediment Supply to Harris Creek (82L/2)	301	5-9	B. Ryan: Geology and Potential Coal and Coalbed Methane Resource of the Tuya River Coal Basin (104J/2,7)	419
4-3	P.T. Bobrowsky and J.J. Clague: Neotectonic Investigations on Western Vancouver Island,		UNIVERSITY RESEARCH		
	British Columbia (92F/4)	307	6-1	University Research in British Columbia	
6				Pritich Columbia Coological Cumon D.	