

BC Regional Geochemical Survey: 2000 Field Programs

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INTRODUCTION

The Exploration Services and Information Section of the British Columbia Geological Survey Branch is responsible for administering the Regional Geochemical Survey (RGS) program and providing complementary research and orientation studies designed to promote the effective use of exploration geochemistry. Results are used by industry to pinpoint exploration opportunities and by government for resource management, land-use planning and environmental assessments. The section's activities during the 2000 field season are summarized in this paper (Figure 1).

Regional Geochemical Survey Program (RGS)

The British Columbia Ministry of Energy, Mines and Petroleum Resources (MEMPR) has been involved in reconnaissance-scale stream sediment and water surveys since 1976. This joint federal-provincial initiative was originally referred to as the Uranium Reconnaissance Program (URP). In 1978 the provincial program was renamed the Regional Geochemical Survey (RGS) and in 1987 the Province began to independently administer surveys conducted in British Columbia. As part of Canada's National Geochemical Reconnaissance (NGR) program, the RGS program continues to maintain sample collection, preparation and analytical standards established by the Geological Survey of Canada.

Archive Release

Since 1975, over 45,000 drainage sediment and water samples have been collected and analyzed by the RGS Program. Starting in 1991, the RGS Archive program has upgraded the database with previously unavailable ana-

lytical information. Sediment samples saved from surveys conducted from 1976 to 1985 have been re-analysed by instrumental neutron activation analysis (INAA) for gold and several other metals not included as part of the original data releases. To date, the RGS Archive Program has compiled and published new data for over 21,000 samples covering 18-1:250 000 NTS map sheets.

In June of this year, new INAA data plus original field and analytical results for 2,727 sediment samples collected from surveys conducted in the late 1970's in the Atlin (NTS 104N), Jennings River (NTS 104O) and McDame (NTS 104P) map sheets were published (Jackaman, 2000). The data clearly highlighted existing mining camps and identified many other precious and base metal anomalies (Figure 2). RGS archive data for the Quesnel (NTS 93B) 1:250 000 survey area are scheduled for release in the summer of 2001 (Jackaman, in preparation).

Dease Lake RGS

In cooperation with the Geological Survey of Canada (GSC), a new reconnaissance-scale stream sediment and water survey was completed in the Dease Lake (NTS 104J) map sheet. Truck and helicopter supported sam-

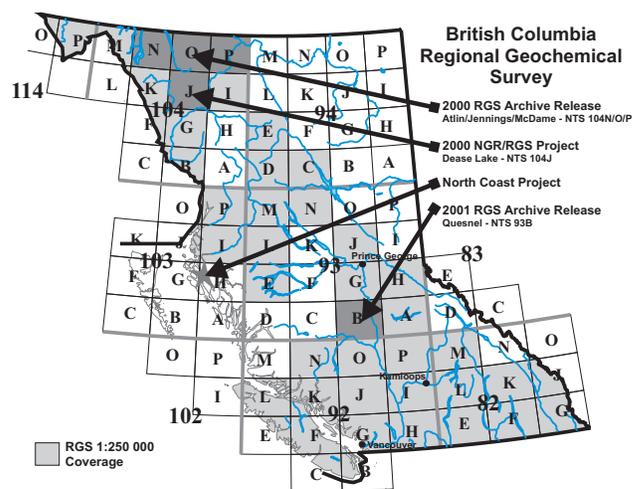


Figure 1. Location map of RGS and related projects.

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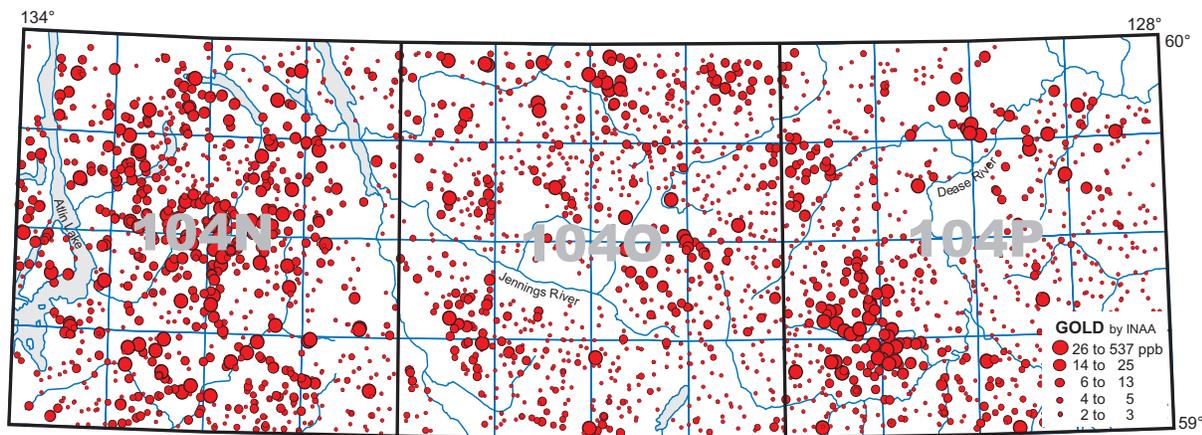


Figure 2. Distribution of gold in NTS 104N/O/P.

pling was conducted during July and August, 2000. A total of 963 stream sediment and water samples were collected from 908 sites at an average density of 1 site every 13 square kilometres.

Recognized for its mineral potential, the central and northern parts of the map sheet are underlain by the oceanic, ophiolitic Cache Creek terrane and are bounded by Mesozoic rocks to the north (Quesnellia Terrane) and south (Stikinia Terrane). The map sheet covers a relatively under-explored frontier area with a strong mineral exploration community based on placer activities, and nearby mines such as Golden Bear (MINFILE 104K 01W). In addition, there are numerous adjacent developed prospects such as Kutcho Creek (MINFILE 104I 60), Gnat Pass (MINFILE 104I 01) and Red Chris (MINFILE 104H 05). The potential for further mineral discoveries includes porphyry Cu-Mo-Au, VMS, Au (vein and intrusion related) and PGE occurrences.

In contrast to previous RGS programs, which routinely used atomic absorption spectroscopy (AAS) as the standard analytical technique for a variety of metals including zinc, copper, lead, nickel, cobalt, silver, manganese and molybdenum, this year's sediment samples are being analyzed by aqua-regia inductively coupled plasma-mass spectroscopy (ICP-MS) and instrumental neutron activation analysis (INAA). Table 1 lists the elements and associated detection limits. Water samples are being analyzed for pH, uranium and fluoride. Trace metal analysis by ICP-MS will also be run on additional 125 millilitre water samples collected from 213 sites. Quality analytical results are ensured by monitoring analytical variation with sample duplicates and control reference standards.

This survey is being funded in part by the Geological Survey of Canada Targeted Geoscience Initiative (TGI) and the B.C. Geological Survey Branch. Results are expected to be published in 2001.

North Coast Drainage Sediment and Water Survey

Drainage sediment and water samples were collected from several locations in the North Coast during the summer field season (Figure 3). In the Ecstall River area (NTS 103H/I), sediment and water samples were collected from 229 sites covering an area approximately 2000 square kilometres. Samples were also collected from 71 sites on Porcher Island, Dundas Island and along the Inside Passage (NTS 103G/H/J). These surveyed areas contain mineral deposit environments favourable for the discovery of massive sulphides along the Ecstall/Scotia belt, gold bearing quartz veins on Porcher Island, and VMS on Dundas Island.

These surveys are designed to provide baseline regional geochemical data that can be used in the evaluation of the mineral potential of the target areas. Funded under

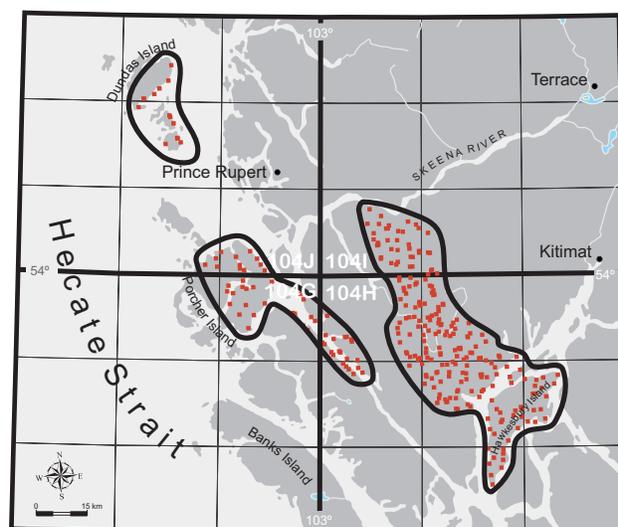


Figure 3. Location map of North Coast surveys.

TABLE 1
RGS ANALYTICAL SUITE OF ELEMENTS

Element		Method	D.L.	Units
Aluminium	Al	ICP	0.01	%
Antimony	Sb	INA/ICP	0.1/0.02	ppm
Arsenic	As	INA/ICP	0.5/0.1	ppm
Barium	Ba	INA/ICP	50/0.5	ppm
Bismuth	Bi	ICP	0.02	ppm
Boron	B	ICP	1	ppm
Bromine	Br	INA	0.5	ppm
Cadmium	Cd	ICP	0.01	ppm
Calcium	Ca	INA/ICP	1.0/0.01	%
Cerium	Ce	INA	3	ppm
Cesium	Cs	INA	1	ppm
Chromium	Cr	INA/ICP	5.0/0.5	ppm
Cobalt	Co	INA/ICP	1.0/0.1	ppm
Copper	Cu	ICP	0.1	ppm
Fluorine	Fe	ICP	10	ppm
Gallium	Ga	ICP	0.2	ppm
Gold	Au	INA/ICP	2/0.2	ppb
Hafnium	Hf	INA	1	ppm
Iron	Fe	INA/ICP	0.02/0.01	%
Lanthanum	La	INA/ICP	0.5/0.5	ppm
Lead	Pb	ICP	0.01	ppm
Lutetium	Lu	INA	0.05	ppm
Magnesium	Mg	ICP	0.01	%
Manganese	Mn	ICP	1	ppm
Mercury	Hg	INA/ICP	10/5	ppm
Molybdenum	Mo	INA/ICP	1.0/0.01	ppm
Neodymium	Nd	INA	5	ppm
Nickel	Ni	INA/ICP	20/0.1	ppm
Phosphorus	P	ICP	0.001	%
Potassium	K	ICP	0.01	%
Rubidium	Rb	INA	15	ppm
Samarium	Sm	INA	0.1	ppm
Scandium	Sc	INA/ICP	0.1/0.1	ppm
Selenium	Se	INA/ICP	3/0.1	ppm
Silver	Ag	INA/ICP	5/2	ppb
Sodium	Na	INA/ICP	0.01/0.001	%
Strontium	Sr	ICP	0.5	ppm
Sulphur	S	ICP	0.02	%
Tantalum	Ta	INA	0.5	ppm
Tellurium	Te	ICP	0.02	ppm
Terbium	Tb	INA	0.5	ppm
Thallium	Tl	ICP	0.02	ppm
Thorium	Th	INA/ICP	0.2/0.1	ppm
Titanium	Ti	ICP	0.001	%
Tungsten	W	INA/ICP	1/0.2	ppm
Uranium	U	INA/ICP	0.5/0.1	ppm
Vanadium	V	ICP	2	ppm
Ytterbium	Yb	INA	0.2	ppm
Zinc	Zn	INA/ICP	50/0.1	ppm

the Provincial government's Corporate Resource Inventory Initiative (CRII), these surveys are part of the Ministry of Energy and Mines' contribution to the North Coast Land Resource Planning process. Although this survey did not cover a complete map sheet the sampling and analyses were carried out to RGS standards and the data will be incorporated into the provincial RGS database as well as surveys of adjacent areas. Results are expected to be published in 2001.

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