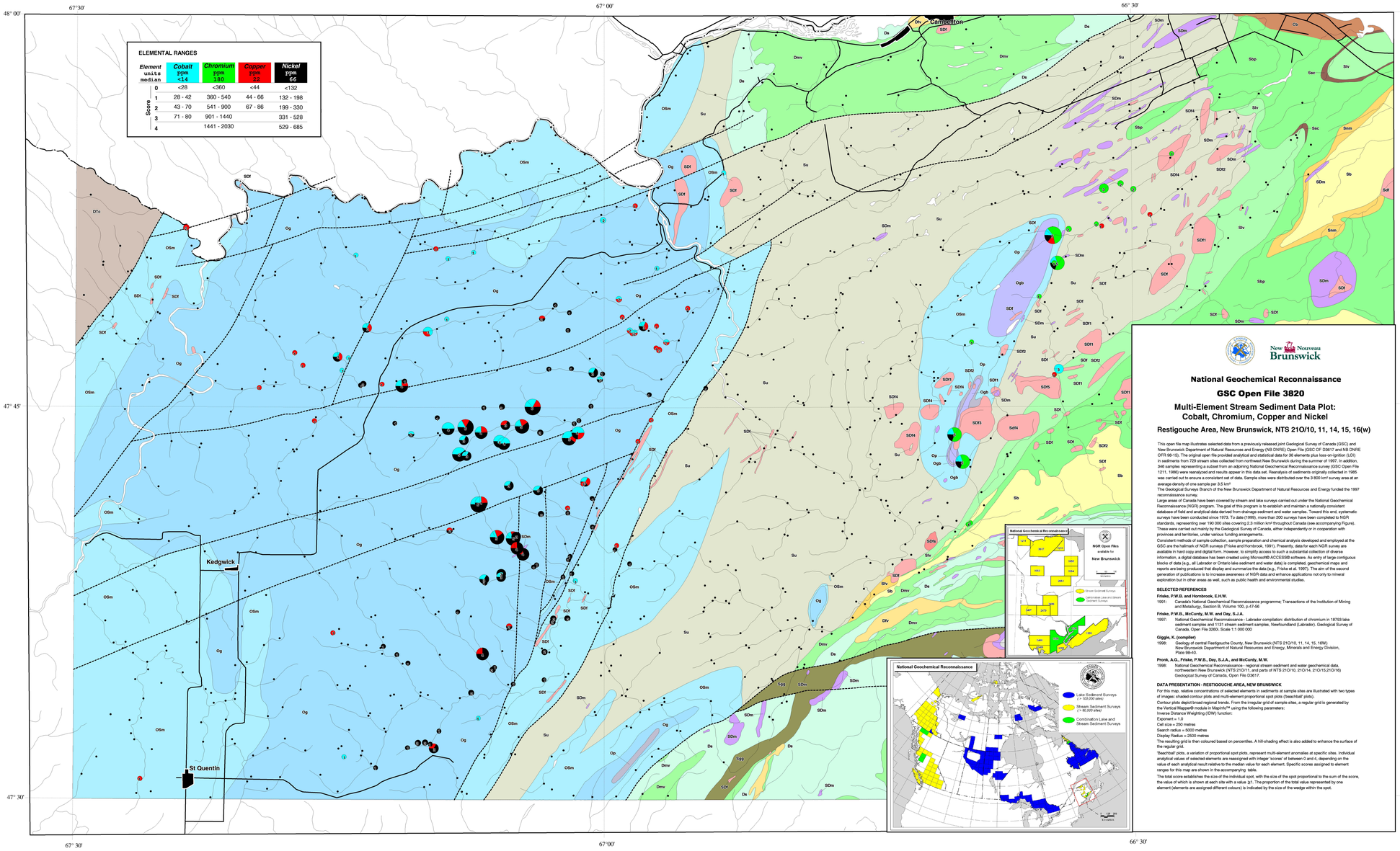
Natural Resources Canada / Ressources naturelle Canada



ELEMENTAL RANGES

Element	Cobalt	Chromium	Copper	Nickel
units	ppm	ppm	ppm	ppm
median	<14	180	22	66
Score 0	<28	<360	<44	<132
Score 1	28 - 42	360 - 540	44 - 66	132 - 198
Score 2	43 - 70	541 - 900	67 - 86	199 - 330
Score 3	71 - 80	901 - 1440		331 - 528
Score 4		1441 - 2030		529 - 685

New Nouveau Brunswick

National Geochemical Reconnaissance

GSC Open File 3820

Multi-Element Stream Sediment Data Plot: Cobalt, Chromium, Copper and Nickel

Restigouche Area, New Brunswick, NTS 21O/10, 11, 14, 15, 16(w)

This open file map illustrates selected data from a previously released joint Geological Survey of Canada (GSC) and New Brunswick Department of Natural Resources and Energy (NB DNRE) Open File (GSC OF D3617 and NB DNRE OFR 98-15). The original open file provided analytical and statistical data for 36 elements plus loss-on-ignition (LOI) in sediments from 729 stream sites collected from northwest New Brunswick during the summer of 1997. In addition, 346 samples representing a subset from an adjoining National Geochemical Reconnaissance survey (GSC Open File 1211, 1986) were reanalyzed and results appear in this data set. Reanalysis of sediments originally collected in 1985 was carried out to ensure a consistent set of data. Sample sites were distributed over the 3 800 km² survey area at an average density of one sample per 3.5 km²

The Geological Surveys Branch of the New Brunswick Department of Natural Resources and Energy funded the 1997 reconnaissance survey.

Large areas of Canada have been covered by stream and lake surveys carried out under the National Geochemical Reconnaissance (NGR) program. The goal of this program is to establish and maintain a nationally consistent database of field and analytical data derived from drainage sediment and water samples. Toward this end, systematic surveys have been conducted since 1973. To date (1999), more than 200 surveys have been completed to NGR standards, representing over 190 000 sites covering 2.3 million km² throughout Canada (see accompanying Figure). These were carried out mainly by the Geological Survey of Canada, either independently or in cooperation with provinces and territories, under various funding arrangements.

Consistent methods of sample collection, sample preparation and chemical analysis developed and employed at the GSC are the hallmark of NGR surveys (Friske and Hornbrook, 1991). Presently, data for each NGR survey are available in hard copy and digital form. However, to simplify access to such a substantial collection of diverse information, a digital database has been created using Microsoft® ACCESS® software. As entry of large contiguous blocks of data (e.g., all Labrador or Ontario lake sediment and water data) is completed, geochemical maps and reports are being produced that display and summarize the data (e.g., Friske et al. 1997). The aim of the second generation of publications is to increase awareness of NGR data and enhance applications not only to mineral exploration but in other areas as well, such as public health and environmental studies.

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Friske, P.W.B., McCurdy, M.W. and Day, S.J.A.
1997: National Geochemical Reconnaissance - Labrador compilation: distribution of chromium in 18793 lake sediment samples and 1131 stream sediment samples, Newfoundland (Labrador), Geological Survey of Canada, Open File 3260, Scale 1:1 000 000

Giggle, K. (compiler)
1998: Geology of central Restigouche County, New Brunswick (NTS 21O/10, 11, 14, 15, 16W); New Brunswick Department of Natural Resources and Energy, Minerals and Energy Division, Plate 98-40.

Pronk, A.G., Friske, P.W.B., Day, S.J.A., and McCurdy, M.W.
1998: National Geochemical Reconnaissance - regional stream sediment and water geochemical data, northwestern New Brunswick (NTS 21O/11, and parts of NTS 21O/10, 21O/14, 21O/15,21O/16) Geological Survey of Canada, Open File D3617.

DATA PRESENTATION - RESTIGOUCHE AREA, NEW BRUNSWICK

For this map, relative concentrations of selected elements in sediments at sample sites are illustrated with two types of images: shaded contour plots and multi-element proportional spot plots ('beachball' plots).

Contour plots depict broad regional trends. From the irregular grid of sample sites, a regular grid is generated by the Vertical Mapper® module in Mapinfo™ using the following parameters:

Inverse Distance Weighting (IDW) function:
Exponent = 1.0
Cell size = 250 metres
Search radius = 5000 metres
Display Radius = 2500 metres

The resulting grid is then coloured based on percentiles. A hill-shading effect is also added to enhance the surface of the regular grid.

'Beachball' plots, a variation of proportional spot plots, represent multi-element anomalies at specific sites. Individual analytical values of selected elements are reassigned with integer 'scores' of between 0 and 4, depending on the value of each analytical result relative to the median value for each element. Specific scores assigned to element ranges for this map are shown in the accompanying table.

The total score establishes the size of the individual spot, with the size of the spot proportional to the sum of the score, the value of which is shown at each site with a value ≥1. The proportion of the total value represented by one element (elements are assigned different colours) is indicated by the size of the wedge within the spot.

CARBONIFEROUS

Cb — BONAVENTURE FORMATION: red siltstone and conglomerate, green shale and conglomerate

DEVONIAN

DCc — CAMPBELLTON FORMATION: Greenish grey, medium-grained sandstone and minor pebble to granule conglomerate

LOWER DEVONIAN

DTc — TEMISCOUATA FORMATION: Dark grey shale and siltstone, minor fine grained sandstone

DALHOUSIE GROUP (north of Rocky Brook - Millstream fault) and TOBIQUE GROUP (south of Rocky Brook - Millstream fault)

Dmv — Massive to porphyritic basalt, locally pillowed, agglomerate and hyaloclastite

Dfv — Red to pink low-banded rhyolite, minor lithic lapilli tuff

Ds — Green, micaceous sandstone and siltstone; locally, minor maroon siltstone and grey polymictic conglomerate with fossiliferous limestone clasts

UPPER SILURIAN AND LOWER DEVONIAN

SDm — Fine- to medium-grained, plagioclase-phyric gabbro and diorite

SDf — Undivided microgranites: (1) Beige microgranite (2) Pink to grey, fine-grained feldspar porphyry and minor quartz-feldspar porphyry (3) White to pink microgranite, locally with dark grey, rounded pseudomorphs (1-3mm) (4) Pink to gray, medium-grained, equigranular hornblende granite to granodiorite; biotite-muscovite granite

SILURIAN

CHALEUR GROUP (not all units shown in stratigraphic succession)

Sgg — GREYS GULCH FORMATION: Red siltstone, sandstone; minor conglomerate

Sbc — BUDWORM CITY FORMATION: Grey, bluish grey, greenish grey, and black siltstone, with interbedded fine-grained sandstone; minor limestone

Sl — LAPLANTE FORMATION: Grey fossiliferous, silty limestone; (Sla) gray siltstone, sandstone and limestone; (Slb) red conglomerate and siltstone

Sb — BENJAMIN FORMATION: Orange to light pink, flow-banded rhyolite; maroon, feldspar crystal tuff and lapilli tuff with autoclastic foliation; minor red siltstone, sandstone, cobble conglomerate and minor mafic volcanic rocks

Snm — NEW MILLS FORMATION: Red, volcanic boulder conglomerate, pyroclastic breccia, rhyolite tuff, tuffaceous sandstone and minor red siltstone

Sbp — BRYANT POINT FORMATION: Dark grey-green to maroon, massive amygdaloidal and porphyric basalt

Sstc — SOUTH CHARLO FORMATION: Volcaniclastic conglomerate, sandstone and red siltstone

Ssf — SIMPSONS FIELD FORMATION: (SSfa) Red and green conglomerate with minor red, green and gray siltstone and sandstone; (SSfb) greenish grey to gray polymictic conglomerate with minor red conglomerate, gray siltstone and sandstone; and (SSfc) gray and black siltstone and sandstone, locally calcareous

Slv — LA VIEILLE FORMATION: Grey fossiliferous limestone

Su — UPSALQUITCH FORMATION: Dark greyish green, micaceous, very thinly bedded sandstone (locally calcareous and bioturbated); siltstone and minor argillaceous limestone (weathers brown and greyish brown where calcareous)

UPPER ORDOVICIAN TO LOWER SILURIAN

MATAPEDIA GROUP

OSm — Grey to bluish gray (buff-coloured on weathered surface), thinly bedded, fine-grained limestone with very thin interbeds of calcareous shale (commonly differentially weathered to form ribbon rock); minor calcareous shale without limestone interbeds

MIDDLE AND UPPER ORDOVICIAN

GROG BROOK GROUP

Og — Dark gray argillite and slate; minor medium gray greywacke, conglomerate, calcareous shale and limestone

Op — POPELOGAN FORMATION: Black and dark grey, graptolitic slate; green and black chert

Ogb — GOULETTE BROOK FORMATION: Amygdaloidal, andesitic, lapilli tuff and ultramafic lapilli tuff (hyaloclastites)

LATE ORDOVICIAN

Om — Gabbro and diabase

FOURNIER GROUP

Os — SCRIMANY FORMATION: basalt, pillow basalt, basaltic tuff, minor trachyte

TETAGOUCHE GROUP

Ots — Dark grey phyllite, graphitic slate, red and green manganiferous slate and chert; and feldspathic wacke

Otmv — Basalt, pillow basalt, basaltic tuff, minor trachyte

Otfv — Quartz and quartz-feldspar porphyry, quartz-sericite schist, quartz-chlorite-sericite schist

CAMBRIAN-LOWER ORDOVICIAN

MIRAMICHI GROUP

COm — Grey phyllite, quartzite and wacke

Fault

Highway

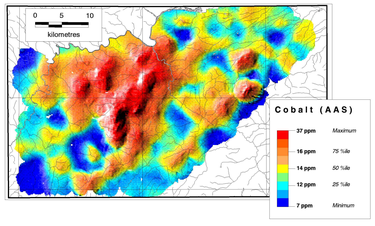
OPEN FILE
DOSSIER PUBLIC
3820
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
OTTAWA
2000-01

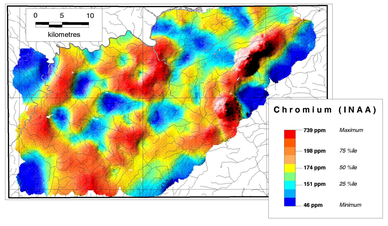
Sheet 2 of 2

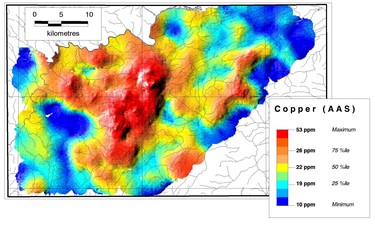
0 5 10
kilometres
Scale 1 : 100,000

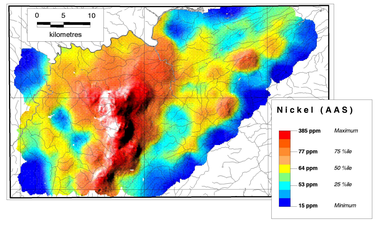
Background geological information modified from New Brunswick Department of Natural Resources and Energy Plate 98-40

Universal Transverse Mercator Projection Zone 19, NAD83









Canada

Published 1999

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Restigouche Area, New Brunswick, NTS 21O/10, 11, 14, 15, 16(w);
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