PUBLICATIONS BRANCH
DEPARTMENT OF ENERGY, MINES AND RESOURCES
No. 1000 CONNAUGHT BUILDING
OTTAWA, CANADA
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DEPARTMENT OF ENERGY, MINES AND RESOURCES
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VAN HORNE
OTTAWA, CANADA

LEGEND

Note: This legend is common to National Geochemical Reconnaissance Map 13-1976, Open File 416; Map 13-1976, Open File 417

HADRYNIAN (UPPER PROTEROZOIC)

22dg	Diabase dykes (DBRH)

HELIKIAN (MIDDLE PROTEROZOIC)

DUSHANT GROUP (10-21)

21	Conglomerate, pebble sandstone, some intercalated sandstone. In part, may be older than 20 or 19 (CGLM)
20	Mainly porphyritic (quartz and/or feldspar, biotite and/or pyroxene) rhyolite; probably mainly extrusive, but in part intrusive; some breccia, tuff, agglomerate; minor sub-porphyritic syenitic rocks (DZPP)
19	Sandstone and pebbly sandstone, grit, arkose; siltstone and minor breccia; probably includes some undifferentiated conglomerate (18 and/or 21) (SDBS)
18	Conglomerate; intercalated gritty sandstone (CGLM)

ARCHEAN (LOWER PROTEROZOIC)

15	Granite, granodiorite and allied rocks: in large part gneissic and impure, with many bands of partly assimilated schist, gneiss, amphibolites; stratiform granite-gneiss; migmatitic gneisses of granitic composition; some pyroxene granulites. In part probably older than 9 and, possibly, 7 (GRNT)
13	Gneiss, schist, amphibolite, and granulite derived mainly from sedimentary and volcanic rocks of Archaean and/or Lower Proterozoic (Aphebian) age; some impure quartzite and greywacke; commonly with some granitic material (GNSS)
2	Intermediate to basic volcanic rocks (greenstones) and derived amphibole schist and gneiss; in part includes much schistose greywacke (Lower Thelon belt); some rhyolite, tuff, agglomerate; minor ultramafic schist and ungneiss (Kaz-Armenian Lowerbrin); undifferentiated basic intrusions. May be younger in part (Kaz-Arm) (BSCG)
8	Diorite and gabbro in granitic and gneissic terrains (DORT)
7	Basic syenites, diorites, gabbros (GBRR)

Geological contact.....

Fault.....

Mineral prospect.....

Geological cartography by the Geological Survey of Canada

Legend and geology for the geochemical map by R.G. Garrett, from map 1216A of G.S.C. Memoir 350 by G.M. Wright

Base-map at the same scale published by the Mapping and Charting Establishment, M.C.E., 1966

Mean magnetic declination 1977, 34°48' East increasing 2.3' annually. Readings vary from 1959.6' in the SE corner to 1959.4' in the NW corner of the map area

Elevations in feet above mean sea-level

Geochemical Symbol and Data Presentation

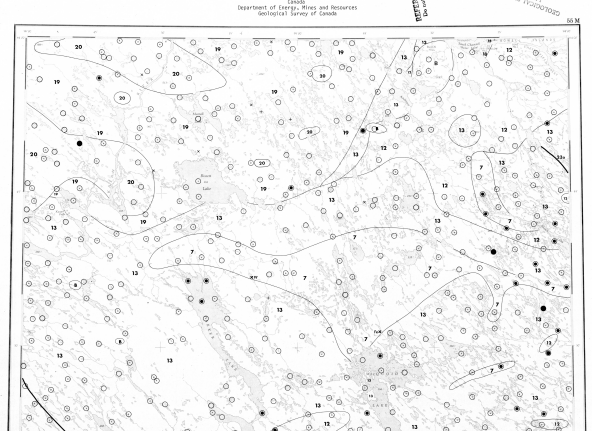
The concentration of an element at a sample site is graphically represented as one of 15 symbols. If a sample was collected but there is no value available a dot is plotted. The symbols are symmetrically arranged so that they first choice is zip to the eighth symbol and then increase in blackness to the fifteenth. The two small crosses at the low end of the scale are used to respectively denote concentrations below the analytical detection limit, or, in the data group containing the detection limit. The data are grouped on a semi-logarithmic scale, with 10 to the power 0 to 3 and 5 subdivisions per decade. The logarithmic distribution has been chosen for the continuing Canada wide series of maps constituting the National Geochemical Reconnaissance.

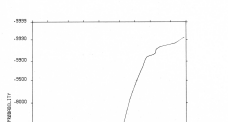
The choice of symbols and the data groups they represent for any specific element is based on the histogram and cumulative frequency plot for the total survey data from one, or more contiguous, open file sheets covered to one field season. The eighth symbol is used for the model group as defined by the histogram and cumulative frequency plot. Data groups are: Mean, Mean ± 1 S.D., Mean ± 2 S.D. (95%) point on the cumulative frequency plot. Some, or all, of the remaining 14 symbols are chosen so as to achieve an appropriate graphical impact. An example of all 15 symbols is given below.

The symbol maps, being based on the total survey data distributions, are unaffected by local, or regional, geochemical variations. Knowledge of regional and surficial geology, and other environmental factors, is required for the new data symbol maps are only intended to assist the rapid inspection of the data for gross regional features. To fulfill the needs of a more specific and thorough interpretation, the raw symbol maps should be modified using the field and analytical data provided in the data listings and any other knowledge available. To assist in the appraisal and modification of the data in terms of the symbol map bedrock geology, the data listings include the lithologic unit from which the lake sediment was dominantly derived from each dropped bedrock unit, or broad lithologic unit, again based on the total survey data, is presented below the histogram. This table can be used along, or in conjunction, with the sample location map and data listings to indicate above threshold samples where they occur on the map. In many instances, the bedrock also illustrate, more clearly than the map, the dependence of lake sediment levels on bedrock type. It may often be also observed that the lake sediment data, when modified by environmental factors, provides data for individual map or lithologic units appears to approximate a normal distribution. The proposed thresholds presented are believed to be useful in interpreting the data from a mineral exploration viewpoint. Locations of samples with concentrations in excess of the threshold for the rock unit they appear to be from are shown on the symbol map. Values in excess of the proposed threshold can be due to a wide range of geological and environmental factors, but one of these could be the presence of abnormal concentrations of the element in a form of interest to the mineral exploration.

To comprehensively study an area, all available geological, environmental geochemical data should be used. The data in the data listings of any type can often be improved by constructing new data subsets and deriving local threshold levels based on the most detailed and up-to-date knowledge available.

The term reliability factor and value that appears below the table is an estimate of the reliability of the geochemical map. On the basis of duplicate sampling 15 of all lakes sampled it can be stated that there is a 95% chance that if any lake is recampled and identical methods of sample preparation and analysis used, the value for the element will be within ± 1 of the reliability factor of the original value obtained. This factor takes into account variability due to both heterogeneity of the centre-lake bottom sediments and sample preparation and analytical causes.





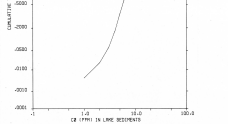


Table of Thresholds by Major Geological Units

Lithology	No. of Samples	Mean	S.D.	C.V.%	Threshold
CGLM	43	6.3	4.1	65	20
DZPP	226	6.1	6.0	97	20
SDBS	110	5.3	2.0	37	20
CGLM	84	7.0	3.3	48	20
GNSS	644	5.7	11.0	194	30
VBCE	46	5.1	1.8	35	30
DORT	4	5.5	1.7	31	30
GBRR	14	7.6	2.5	33	30

Data units are ppm

Reliability Factor = 1.29

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 13-1976
OPEN FILE 417

Resource Geophysics and Geochemistry Division

Geological Survey of Canada, Ottawa

Geochemistry by E.R.W. Hornbrook
Analytical Chemistry by J.J. Lynch
Data monitoring by R.G. Garrett, N.G. Lund and D.J. Ellwood

Contractors

Sample collection by Trigg, Woollett & Associates Ltd.
Sample preparation by Geiger Associates
Chemical analyses by Chemex Labs Ltd.

This map forms one of a series of 28 sheets released under Geological Survey of Canada, Open Files 416-417. The Open Files consists of data for 11 elements each for lake sediments, percent loss on ignition, uranium in lake waters and sample site location

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 13-1976

COBALT IN LAKE SEDIMENTS

URANIUM RECONNAISSANCE PROGRAM

Scale 1:250,000

Kilometres 0 5 10 20 30 40 50 Miles

Universal Transverse Mercator Projection

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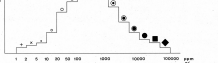

The data are also available in digital form. For further information please contact:

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Ottawa, Ontario K1A 0E8

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 13-1976
OPEN FILE 417
RAVEN LAKE N.W.T., 1976
COBALT