1976B

NOTE: This legend is common to National Geochemical Reconnaissance Map 76-1976, Open File 424, Map 75-1975, Open File 419 and Map 74-1975, Open File 420

Canada
Department of Energy, Mines and Resources
Geological Survey of Canada

Parts of 106 D, E and 116 A, B

QUATERNARY

CENOZOIC

QUATERNARY

- **Qa** Unconsolidated glacial and alluvial deposits

TERTIARY

- **Ta** Sandstone, shale and conglomerates, fig. BEAVERTAIL FORMATION
- **Tb** Sandstone, shale and conglomerate, fig. CYPRESS HILLS FORMATION: pale and sandstone, fig. EOCENE AND PALEOCENE: shale and siltstone
- **Tc** Unconsolidated and consolidated/discrete syenite, commonly porphyritic
- **Td** Unconsolidated gravel, minor diorite

JURASSIC

- **Je** Monzonite porphyry and dacite and breccia

MESOZOIC

- **Mz** MESOZOIC: massive quartzites; minor slates and phyllites

JURASSIC

- **Jl** LOWER EOCENE: Rhyolites, quartzites, slates, phyllites and minor quartz porphyry, fig. CRETACEOUS AND EOCENE

TRIASSIC

- **Tr** DOUGLAS FORMATION: limestones and shales; unnamed clastics and carbonates

TRIASSIC

- **Tr** TRIASSIC FORMATION: grey shale and limestone; fig. SHALE CREEK FORMATION: limestone, shale, carbonates and clastics; undivided formation

JURASSIC TO TRIASSIC

- **JTs** LITTLEDAL FORMATION: shale and limestone; WEST RIDGE FORMATION: shale, siltstone and limestone; Schaffer Range undivided, fig. limestone, shale, siltstone, argillite, quartzite, conglomerate, argillaceous limestone, limestone and shale
- **Js** SIFTA CREEK FORMATION: shale; unnamed conglomerate

TRIASSIC TO CARBONIFEROUS

- **TrC** LOWER, DOUGLAS FORMATION: limestone, LOWARDIA FORMATION: limestone; MT. MCKELLY FORMATION: limestone and shale; unnamed limestone, dolomite and interbedded black shale

DEVONIAN AND SILURIAN

- **D** DEVONIAN AND SILURIAN: shale, limestone, black chert and argillite, fig. ROAD RIVER FORMATION: limestone and dolomite
- **S** Dolomite and limestone; argillaceous limestone and dolomite

CARBONIFEROUS

- **C** Limestone and dolomite; minor red shale; unnamed clastics, fig. Mackie sandstone, conglomerate, shale and local anhydrite and limestone, fig. MT. MCKELLY FORMATION: JAMES RIVER FORMATION: unnamed dolomite and limestone

PRECAMBRIAN UNDIVIDED CLASTICS

- **Pc** Quartzite, conglomerate, quartz-pebble conglomerate, marbles and gneiss (marble), interbedded quartzite, quartzose schists, phyllites, limestone and minor basic intrusives

PRECAMBRIAN

ARCHEAN

- **A** Undivided sedimentary and clastics
- **A** BRITTON GROUP: mudstones, limestones, iron formation and dolomite

HELIKIAN AND OLDER

- **H** HELIKIAN AND OLDER: sandstone and dolomite; FELDSPAR FORMATION: sandstone and dolomite; undivided sedimentary, clastic and gypsum
- **H** Younger dolomite, shale, phyllite, grey dolomite, grey and maroon shale, fig. DOLOMITE FORMATION: PASSAGE FORMATION: SHUTTLE AND STRATHCONA

HELIKIAN AND (?) ARCHEAN

- **H** Undivided sedimentary rocks: quartzite quartzite, dolomite, conglomerate and (?) diffluent limestone

DRIFT-covered areas.....
Geological contacts.....
Faults.....

Geology generalized for geochemical sheet by W.O. Geoffrey from Mack Creek (1965) and Lorsan Creek (1966) by J.A. Green (in S.S. Penn, 1964, 1970); and Wood River (1967) and Hart River (1968) by R.G. Morris (D.S.S. Open File 275, 1975)

Geological cartography by the Geological Survey of Canada

Base-map assembled by the Geological Survey of Canada from maps published at the same scale by the Surveys and Mapping Branch in 1964, 1973

Mean magnetic declination 150°E, 34°02.7' East, decreasing 2.9' annually. Readings vary from 34°05.8' in the SE corner to 33°58.4' in the NW corner of the map-area

Elevations in feet above mean sea-level

GEOCHEMICAL SYMBOLS AND DATA PRESENTATION

The absolute background and anomalous concentrations, and the contrast between them will vary regionally depending on factors such as the physiography, geology, the nature of the drainage and the sampling and analytical procedures.

Physiographical regimes within the survey area include the Anvenzie, Ogilvie and Richardson Mountains, and the Eagle Plains and Old Crow Flats basin. Most of the sediments in the mountains are immature and reflect the nature of the bedrock. Chemical breakdown of the underlying rocks and has been transported as glaciation during the heavy spring run-off. Stream sediments range in size from fine silt to boulders with little sorting and a low content of organic matter. Sediments transported into the Eagle Plains and Old Crow Flats basin are commonly discontinuous, fine at low velocities, and deposit organic-rich sediment. Under these conditions, organic matter may be expected to have a high content of U, Mo, Ag, Cu, Zn, Ni, Co, Cd, Pb, Sb, Bi, Au, Hg, Ba, Sr, Ca, Mn, Fe, Ti, V, Cr, Sc, Y, Nb, etc.) and may therefore produce spurious anomalies. It is suggested that field observations, such as sediment composition, present in the data listing be considered when examining the metal content of any specific area.

The geology of the survey area is represented by sedimentary, volcanic and intrusive rocks ranging in age from Precambrian to Cretaceous and Tertiary, with almost every period represented. To date, it has been reported by Lecuyer that ore bodies associated with the Proterozoic sedimentary and volcanic rocks of the Wernecke Mountains, Ogilvie Mountains and Richardson Mountains have a high base metal potential in the survey area include the following: the Mesozoic stratiform shale and batholithic; the Paleozoic shales as a source of low grade and high tonnage in the Richardson Mountains; the Devonian shales and limestones in the Ogilvie Mountains; barite and fluorspar such as faults and unconformities and gypsum as a favourable traps for deposition of U.

The nature of the detrital derivation of stream sediments from mountainous terrain, the geochemistry is strongly influenced by the chemistry of the underlying rocks. For example shales, or their metamorphic equivalents, which are common in Proterozoic, Paleozoic and Mesozoic rocks, are characteristically enriched in many of the trace elements determined which is reflected in the geochemistry of the stream sediments. Therefore, it is suggested that each stream system be evaluated in terms of the local factors affecting the geochemistry of the unaltered environment.

The element associations expected for particular types of U and base metal mineralization should be used as a guide in evaluating the significance of the anomalous sediments. For example, Ni, Cu, Co and Fe a lesser extent, Mo, Y, and W are associated with the Proterozoic U occurrences whereas Mo, F and to a lesser extent Th, Nb, Y and Be are associated with the Cretaceous and Tertiary intrusives and their contacts. Furthermore, element associations in stream sediments and waters will be useful in identifying regional geochemical trends that may be, at least in part, controlled by bedrock lithology. Local anomalies, however, may reflect a mineral deposit and must be evaluated for possible mineralization on the basis of not only absolute abundance concentrations but also element interrelations.

The distribution of anomalous sediments site is graphically represented as can of 14 symbols, if a sample was collected but there is no data available a dot is plotted. The symbols are arranged so that they first increase in size to the eighth symbol and then decrease in size to the fourteenth. The first symbol is used for 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, i.e. 1,2,5,10,20,50,100 etc. Five decades can be spanned and this arbitrary division has been chosen for the continuing decades can be spanned and this arbitrary division has been chosen for the continuing decades can be spanned and this arbitrary division has been chosen for the continuing

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 area. The eighth symbol is used for the modal group as defined by the histogram. The eighth symbol is used for the modal group as defined by the histogram, this group usually includes the median of the data as defined by the 0.5 (50%) point on the cumulative frequency plot. The upper limit of the remaining 14 symbols are determined by arithmetic or geometric graphical means.

The raw data symbol maps are only intended to assist the rapid inspection of the data for areas of anomalous metal values. They are not intended to replace more thorough interpretative, the field and analytical data provided in the data listings should be consulted. To assist in the appraisal of the data in terms of the symbol map contours, a table of summary statistics for the drainage samples dominantly derived from within each bedrock unit, or broad lithologic unit, is presented. The data listings should be examined carefully for any sample with a value greater than the mean. The dependence of mean geochemical levels on bedrock type. It may also be observed that whilst the total data appears to approximate a log-normal distribution, the data for the individual rock units rarely approximate a log-normal distribution except where the concentration of an element at or below the detection limit for a large number of samples (e.g. U and Y in watery Ag, Mo and Cu). Where the data for a rock unit approximates a log-normal curve, the mean is skewed and the mean will not represent the total population. Therefore, caution must be exercised when using the table of summary statistics to establish background and threshold values for each rock unit in the survey area.

To comprehensively study an area, all available geological, environmental and recorded data should be utilized. The data separation by bedrock 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.

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 75-1976

URANIUM IN STREAM SEDIMENTS

URANIUM RECONNAISSANCE PROGRAM

Scale 1:250,000

Kilometres 0 5 10 15 20 25 Kilometres
Miles 0 5 10 15 Miles

Universal Transverse Mercator Projection
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CAN. SER. NAT. RESOURCES SYSTEM

Table of Summary Statistics For Sample Media Indicated by the Different Lithologies

Lithology	No. of Samples	Geometric Mean	Mean	Arithmetic S.D.	C.V.%
Dolomite	50	1.3	1.9	0.9	50
Limestone	251	1.3	1.7	0.9	53
Argillite	488	3.2	5.9	10.1	169
Siltstone	1,132	2.2	3.4	7.1	208
Mudstone	8	2.7	2.9	0.9	31
Siltstone	28	3.7	4.8	3.4	70
Sandstone	71	2.1	2.3	0.7	30
Quartzite	112	1.1	1.2	0.3	165
Conglomerate	58	2.0	3.3	5.8	175
Basalt	6	2.4	2.5	0.6	24
Gneiss	15	1.4	1.5	1.0	65
Diorite	6	2.4	4.5	4.3	96
Undivided Sedimentary Rock	46	4.4	7.0	8.6	124

Data units are in ppm

NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 75-1976
OPEN FILE 419

Resource Geophysics and Geochemistry Division

Geological Survey of Canada, Ottawa

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This map forms one of a series of 45 sheets released under Geological Survey of Canada, Open Files 419, 420, 421. The Open Files consists of data for 12 elements each for stream sediments, percent loss on ignition, 2 elements for stream waters and sample site location

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

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NATIONAL GEOCHEMICAL RECONNAISSANCE MAP 76-1976
OPEN FILE 424
NORTHERN YUKON TERRITORY, 1976
URANIUM