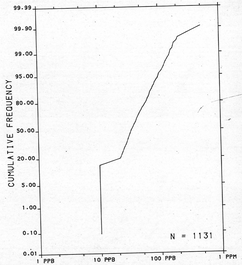
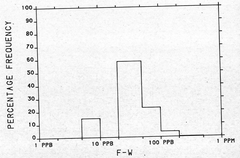
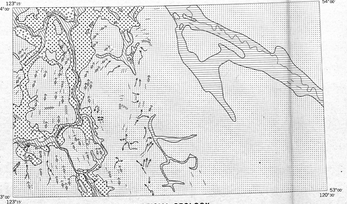






SURFICIAL GEOLOGY

Kilometres 0 20 40 60

Scale 1:1 000 000

BRITISH COLUMBIA SURFICIAL DEPOSITS

PROGLACIAL DEPOSITS

LACUSTRINE DEPOSITS: Varved silt, clay, and sand, locally drumlinized and fluted through minor ice re-advance, fringed by beach deposits. Deposits up to 120 m thick along Nechako, >200 m thick along Blackwater.

Meltwater or outwash channel deposits bounded by cutbanks or terraces

UNDIVIDED GLACIOLACUSTRINE AND GLACIOFLUVIAL DEPOSITS: Sand, silt and clay with local accumulations up to 70 m thick along valley bottoms

GLACIAL DEPOSITS

Undivided glacial till and ground moraine. Areas of low relief include abundant drumlins, rock drumlins, fluting, and esker complexes. Bedrock exposures predominate above 1700 m elevation

Outwash channel cutbank or terrace

Small meltwater or abandoned stream channel indicating direction of flow

Fluting or glacial striation

Drumlin, direction of flow known

Eskers and esker complexes

Kettled and pitted terrain

Note: Glacial deposits and features within NTS 93H are unmapped

Sources of information:

Geological Survey of Canada

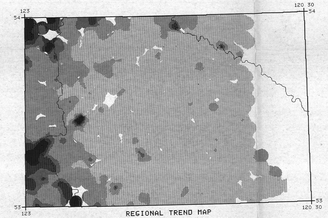
1938: Geology of Willow River Sheet
Map 335 A, West Half
Map 336 A, East Half

Tipper, H.W.

1971: Glacial Geomorphology and Pleistocene History of Central British Columbia;
Geological Survey of Canada,
Bulletin 196. 89p. (esp. Map 1288A, scale 1:250 000)

Tipper, H.W., Campbell, R.B., Taylor, G.C. and Stott, D.F.

1979: Parsnip River,
British Columbia;
Geological Survey of Canada,
Map 1424A, scale 1:1 000 000



Provincial Open File
BC RGS-12-1984 (93G E/2, 93H W/2)

LEGEND

(This legend to be used west of 122°00' W)

Note: This legend is common for Regional Geochemical 72-1984 Open File 1107

CENOZOIC

QUATERNARY
PLEISTOCENE AND RECENT
1 (TILL) 4H1 TILL; GRAVEL, SAND, SILT, ALLUVIUM

TERTIARY
MIOCENE AND PLIOCENE
5b (BSLT 42) OLIVINE BASALT FLOWS, BRECCIA, AND TUFF
15 (SNDS 42) SANDSTONE, SHALE, CONGLOMERATE, DIATOMITE, LIGNITE
OLIGOCENE AND MIOCENE
14 (ANDS 42) *ENDAKO GROUP*: ANDESITE, BASALT, DACITE
PALEOCENE, EOCENE, OLIGOCENE
13 (CGLM 42) CONGLOMERATE, SANDSTONE, SHALE, TUFF, BRECCIA

MESOZOIC - CENOZOIC
UPPER CRETACEOUS AND LOWER TERTIARY
12 (RYLT 41) *OOTSA LAKE GROUP*: RHYOLITE, DACITE, TRACHYTE, SANDSTONE, SHALE, CONGLOMERATE

CRETACEOUS
11 (ANDS 36) ANDESITE, TUFF, BRECCIA, ARGILLITE, ARKOSE, CONGLOMERATE
LOWER CRETACEOUS
10 (CGLM 36) *SKEENA GROUP*: CONGLOMERATE, GREYWACKE, SHALE, COAL, VOLCANIC BRECCIA

JURASSIC
MIDDLE JURASSIC
9 (ANDS 34) *HAZELTON GROUP (PART)* UNDIVIDED: BASALT, ANDESITE, TUFF, BRECCIA, GREYWACKE, MUDSTONE, CONGLOMERATE
LOWER AND MIDDLE JURASSIC
8 (SHLE 34) SHALE, GREYWACKE, CONGLOMERATE
UPPER TRIASSIC AND LOWER JURASSIC
7 (ANDS 33) *TAKLA GROUP*: ANDESITE, BASALT, TUFF, BRECCIA, CONGLOMERATE, GREYWACKE, SHALE, LIMESTONE

TRIASSIC
UPPER TRIASSIC
6 (LIMN 32) LIMESTONE
5 (PLLT 32) BLACK PHYLLITE, SILTSTONE, LIMESTONE, QUARTZITE

PALEOZOIC
PENNSYLVANIAN AND PERMIAN
4 (LIMN 30) *CACHE CREEK GROUP*: RIBBON CHERT, BLACK ARGILLITE, LIMESTONE, SERPENTINITE
MISSISSIPPIAN AND/OR YOUNGER
3 (BSLT 31) *SLIDE MOUNTAIN GROUP*: BASALT, BRECCIA, TUFF, CHERT, ARGILLITE, SANDSTONE, LIMESTONE, CONGLOMERATE
CAMBRIAN
LOWER CAMBRIAN
2 (LIMN 12) *MURAL FORMATION*: LIMESTONE (INCLUDES *MAXTO FORMATION* SILTSTONE, SANDSTONE)

PROTEROZOIC
PROTEROZOIC
1 (GNDS 34) *KAZA GROUP*: SANDSTONE, CONGLOMERATE, GRIT, PHYLLITE, SCHIST, AMPHIBOLITE, MARBLE, GNEISS

PLUTONIC ROCKS

TERTIARY
21 (GRDR 42) GRANODIORITE, QUARTZ DIORITE, QUARTZ MONZONITE
LOWER CRETACEOUS
20 (GTNC 36) *RAVEN INTRUSIONS*: QUARTZ MONZONITE, SYENITE, MONZONITE, GRANODIORITE, DIORITE
UPPER TRIASSIC
19 (GRDR 32) TAKOMKANE BATHOLITH AND BODIES OF SIMILAR AGE AND LITHOLOGY: GRANODIORITE, QUARTZ MONZONITE
PERMIAN AND/OR TRIASSIC
18 (GBPR 31) TRIBELLIAN INTRUSIONS AND SIMILAR BODIES: PERIDOTITE, DUNITE, PYROXENITE, SERPENTINITE

SYMBOLS

GEOLOGICAL BOUNDARY: MAPPED, ASSUMED
FAULT: MAPPED, ASSUMED
THRUST FAULT (TEETH ON HANGINGWALL): MAPPED, ASSUMED
ANTICLINAL AXIS
SYNCLINAL AXIS
STREAM SAMPLE SITE

GEOLOGY AND MINERAL DEPOSITS

Generalized geology after Geological Survey of Canada Map 49-1963, Prince George, British Columbia, 1 inch to 4 miles; H.W. Tipper, 1958 and Geological Survey of Canada Map 1424A, Parsnip River, British Columbia, 1:1 000 000; H.W. Tipper, R.B. Campbell, G.C. Taylor, and D. F. Stott, 1979.
Lead isotope data from Godwin and Sinclair, 1982, used to determine dominant lead isotope type for grouping of geochemical data.

The four-letter mnemonic name indicates rock type and the two-digit number indicates age.

For location of the following specific information for this area refer to British Columbia Ministry of Energy, Mines and Petroleum Resources publications: Coal (93G (E/2) and 93H (W/2)); Industrial Minerals (PRINCE GEORGE); Assessment Reports, refer to Assessment Report Index Map (A/R) 93G (PRINCE GEORGE); Bedrock Geology Mapping Reports, refer to *Index to Bedrock Geological Mapping*, 1982; Mineral and Placer Claim Maps, contact Ministry of Energy, Mines and Petroleum Resources, Titles Branch, for current editions.

Geological Survey of Canada

Resource Geophysics and Geochemistry Division

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

CONTRACTORS

Sample collection by McElhanney Surveying and Engineering Ltd., VANCOUVER
Sample preparation by Golder Associates, Ottawa

Sediment chemical analysis by Barringer Magenta Ltd., Rexdale, Ontario
Water chemical analyses by Barringer Magenta Laboratories (Alberta) Ltd., Calgary

Copies of map material and listings of field observations and analytical data, from which the material was prepared, may be available at users expense by application to:

K.G. Campbell Corporation
880 Wellington St.
Bay 238
Ottawa, Ontario
K1R 6K7

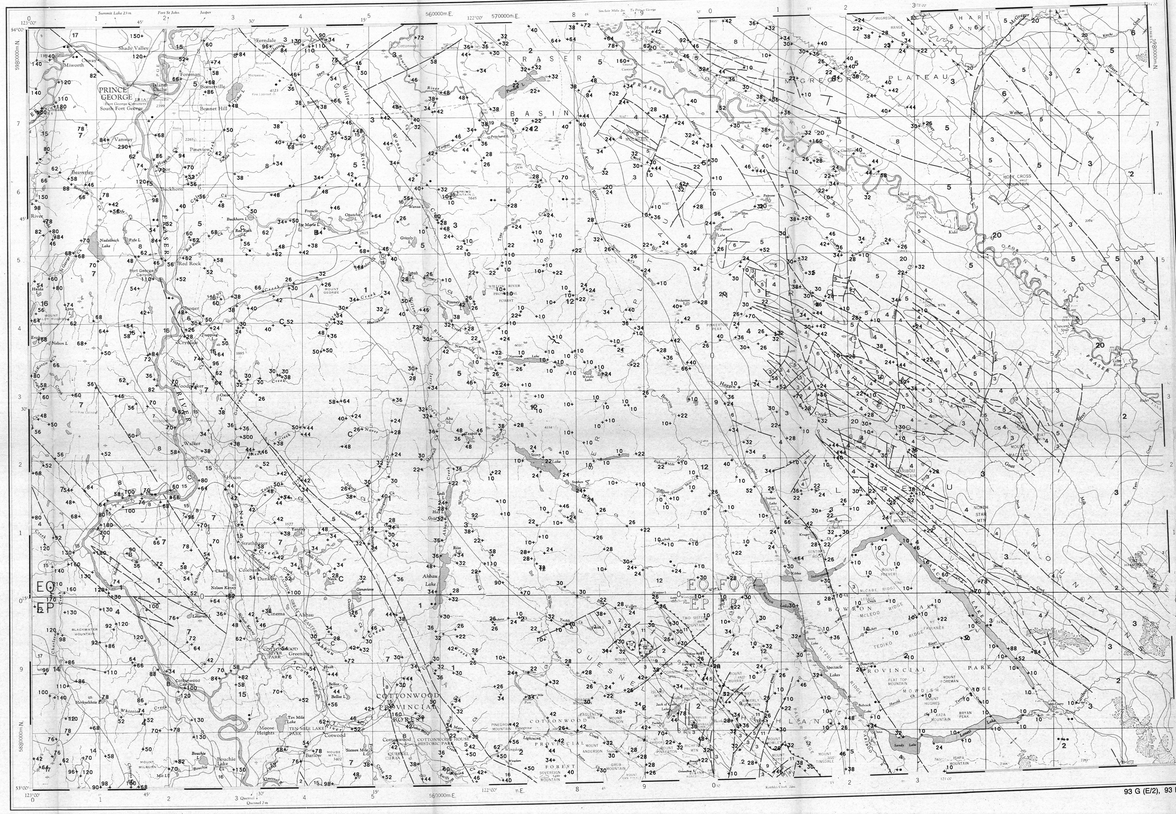
The data are also available in digital form.
For further information please contact:

The Director
Computer Science Centre
Department of Energy, Mines and Resources
Ottawa, Ontario
K1A 0E4

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

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

93 G (E/2), 93 H (W/2)



FLUORINE in water (ppb)
GSC OPEN FILE 1107
REGIONAL GEOCHEMICAL RECONNAISSANCE MAP 72-1984
JOINT CANADA/BRITISH COLUMBIA PROGRAM
STREAM SEDIMENT AND WATER GEOCHEMICAL SURVEY
EAST-CENTRAL BRITISH COLUMBIA

Scale 1:250 000

Kilometres 5 0 5 10 15 20 Kilometres

Universal Transverse Mercator Projection
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Elevation in feet above mean sea level

Mean magnetic declination 1985, 27°34' West, decreasing 9.9' annually. Readings vary from 28°41' in the SW corner to 28°27' in the NE corner of the map area

Base map assembled by the Geological Cartography Unit from maps published at the same scale by the Surveys and Mapping Branch in 1969, 1970

FLUORINE in water (ppb)
GSC OPEN FILE 1107
EAST-CENTRAL BRITISH COLUMBIA

LEGEND

(This legend to be used east of 122°00' only.)

Note: This legend is common for Regional Geochemical 72-1984 Open File 1107

QUATERNARY
PLEISTOCENE AND RECENT
1 (TILL) 4H1 TILL; GRAVEL, SAND, SILT, ALLUVIUM

CRETACEOUS OR TERTIARY
UPPER CRETACEOUS OR PALEOCENE
19 (CGLM 41) *BOWRON RIVER* COAL BEDS: CONGLOMERATE, BRECCIA, SANDSTONE, SHALE, COAL

UPPER JURASSIC AND LOWER CRETACEOUS
24 (SNDS 39) *MIKASEEN FORMATION*: SANDSTONE, SILTY SHALE, SILTSTONE

JURASSIC
LOWER TO UPPER JURASSIC
17 (SHLE 34) *FERNIE GROUP*: SHALE, SILTY SHALE, SILTSTONE

TRIASSIC
UPPER TRIASSIC
16 (PLLT 32) PHYLLITE, ARGILLITE, MINOR LIMESTONE, QUARTZITE
MIDDLE AND UPPER TRIASSIC
15 (LIMN 32) *SPRAY RIVER GROUP, MATTAGOMISE FORMATION*: LIMESTONE AND DOLOSTONE
LOWER AND MIDDLE TRIASSIC
14 (RLSN 32) *SULPHUR MOUNTAIN FORMATION*: SILTSTONE AND SILTY LIMESTONE

MISSISSIPPIAN AND PERMIAN
13 (CGLM 30) *CACHE CREEK GROUP, ISKBEL GROUP, BRAHY FORMATION*: LIMESTONE, SANDSTONE, LIMY SHALE; DOLOSTONE; CHERT

MISSISSIPPIAN
LOWER MISSISSIPPIAN AND/OR YOUNGER
12 (BSLT 31) *SLIDE MOUNTAIN GROUP, ANTLER FORMATION*: PILLOW BASALT; BRECCIA, TUFF, MINOR DIORITE AND GABBRO; CHERT, ARGILLITE, LITHIC SANDSTONE
LOWER MISSISSIPPIAN AND/OR OLDER
11 (CGLM 21) *GUNTY FORMATION, GREENBERRY FORMATION*: CONGLOMERATE, ARGILLITE, LITHIC SANDSTONE, CHINGACASE, LIMESTONE

DEVONIAN
UPPER AND MIDDLE DEVONIAN
10 (LIMN 18) *PALLISER, SOUTHESK, ALEXO, PEKISKO, MOUNT HAWK, FLUME FORMATIONS*: LIMESTONE, SHALE; SANDSTONE, SILTSTONE
LOWER DEVONIAN AND YOUNGER
9 (BSLT 18) *KLUSKI, STUART FORMATIONS*: BASALT, CHERT, CHERT BRECCIA; DOLOMITE BRECCIA, UPPER UNIT CHERTY ARGILLITE, PHYLLITE, SANDY LIMESTONE

SILURIAN
LOWER SILURIAN
8 (LIMN 17) *ROAD FORMATION* ALL OR IN PART: DOLOMITE, LIMESTONE, QUARTZITE, SILTSTONE; *ROSEBERRY FORMATION*: FLOW AND SILLS

ORDOVICIAN
LOWER AND MIDDLE ORDOVICIAN
7 (LIMN 16) *MONUMAN, CHUCHINKA FORMATIONS*: DOLOMITE, LIMESTONE, SANDSTONE, SHALE; QUARTZITE

CAMBRIAN
6 (SHLE 12) *LYNX, DOME CREEK, ARCTOMYS, WATERFLOWS, HOTA-ADOLPHUS, TATEI-CHETANG, TITKANA FORMATIONS*: SHALE, SILTY LIMESTONE; DOLOMITE, SANDSTONE, SILTSTONE; ARGILLITE, PHYLLITE
LOWER CAMBRIAN AND HADRYNIAN
5 (QRTZ 12) *MOUNTAIN, MURAL, McNAUGHTON, YANKS PEAK FORMATIONS*: QUARTZITE, LIMESTONE, SHALE, SILTSTONE, PHYLLITE, DOLOMITE; CONGLOMERATE
HADRYNIAN
4 (SHLE 04) *YANKEE BELLE, CUNNINGHAM FORMATIONS*: SHALE, LIMESTONE, SILTSTONE, DOLOMITE, PHYLLITE
3 (PLLT 04) *MEETZ GROUP, ISAAC FORMATION*: PHYLLITE, ARGILLITE, SCHIST, SANDSTONE, LIMESTONE, CONGLOMERATE
2 (PCA, GN) *KAZA GROUP, ONDINDOE FORMATION; MIDDLE MEETZ GROUP*, FELDSPATHIC SANDSTONE, GRANULE CONGLOMERATE, SILTSTONE, ARGILLITE, PHYLLITE, SCHIST; LIMESTONE MARBLE
1 (ARGL 04) *LOWER MEETZ GROUP*: ARGILLITE, PHYLLITE, SANDSTONE, LIMESTONE

INTRUSIVE ROCKS

MISSISSIPPIAN OR YOUNGER
A (SRPN 21) SERPENTINITE

SYMBOLS

GEOLOGICAL BOUNDARY: MAPPED, ASSUMED
FAULT (DOT ON DOWNTHROWN SIDE): MAPPED, ASSUMED
THRUST FAULT (TEETH ON HANGINGWALL): MAPPED, ASSUMED
ANTICLINAL AXIS
SYNCLINAL AXIS
STREAM SAMPLE SITE

GEOLOGY AND MINERAL DEPOSITS

Generalized geology after Geological Survey of Canada, Map 1266A to accompany Paper 72-29, Geology of McBride Map Area, British Columbia, by R.G. Campbell, G. E. Mountjoy and A. Young; Geological Survey of Canada Map 1424A, Parsnip River, 1:1 000 000, compilation by H. W. Tipper; Survey of the Cariboo River Area, by A. Sutherland Brown, 1963; Figure 2, Geological Map of the Cariboo River Area and accompanying British Columbia Ministry of Energy, Mines and Petroleum Resources publication Survey of the Cariboo River Area, by A. Sutherland Brown, 1963; and Geological Survey of Canada Open File 1980, Geology of Quesnel Lake Area, by J.A. Roddick and A. Sutherland Brown, 1981; used to determine dominant lead isotope type for grouping of geochemical data.

The four-letter mnemonic name indicates rock type and the two-digit number indicates age.

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This map forms one of a series of maps released by the Geological Survey of Canada, Open File 1107. The Open File consists of maps of various geochemical variables: 18 for stream sediment, 3 for stream water and 1 sample site location

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FLUORINE in water (ppb)
GSC OPEN FILE 1107
EAST-CENTRAL BRITISH COLUMBIA