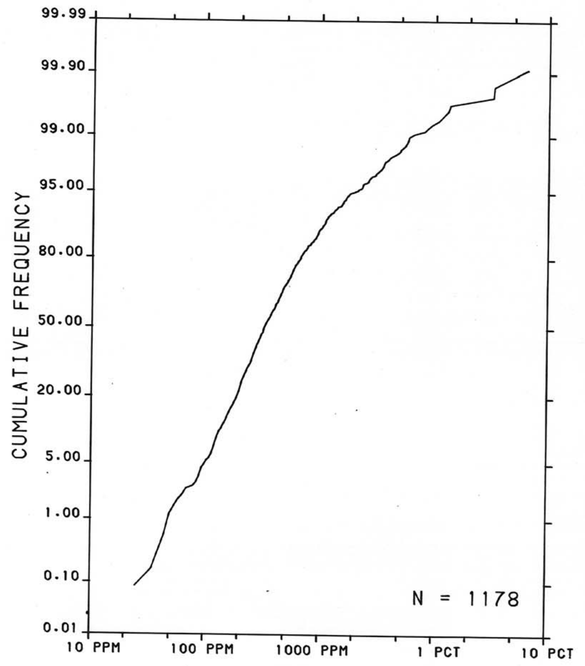
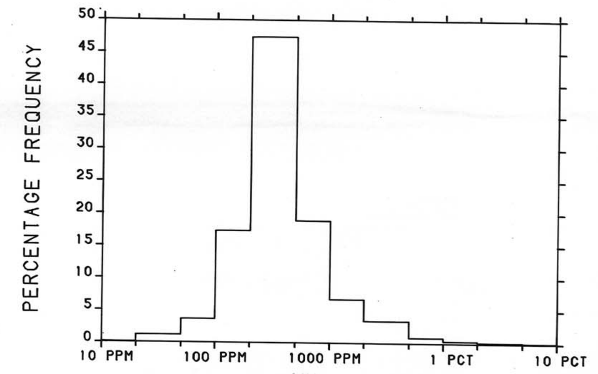
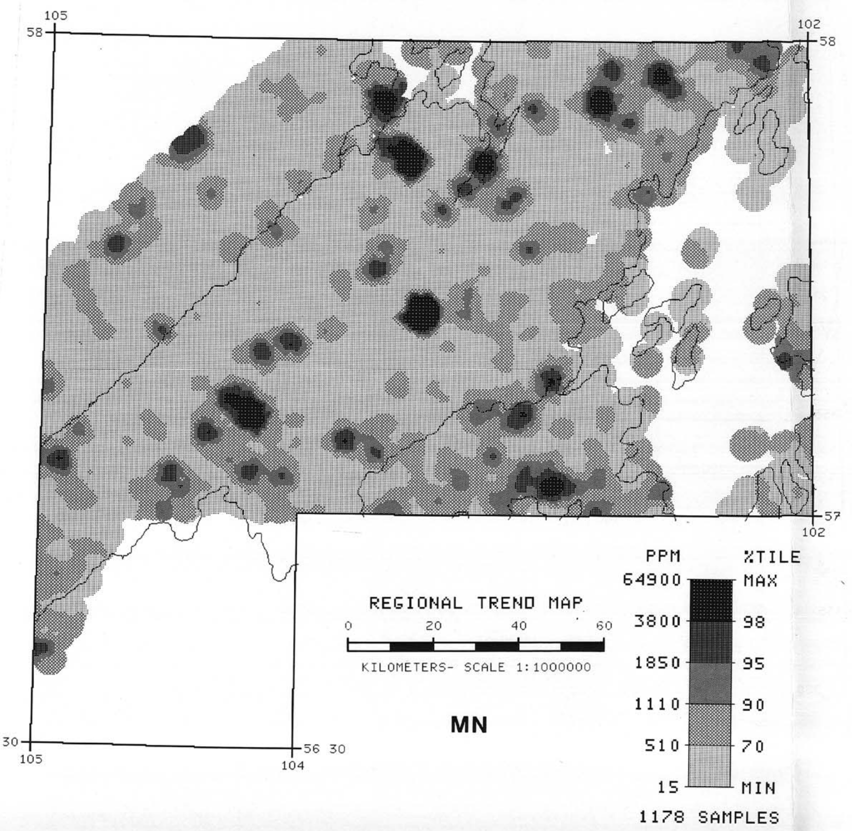
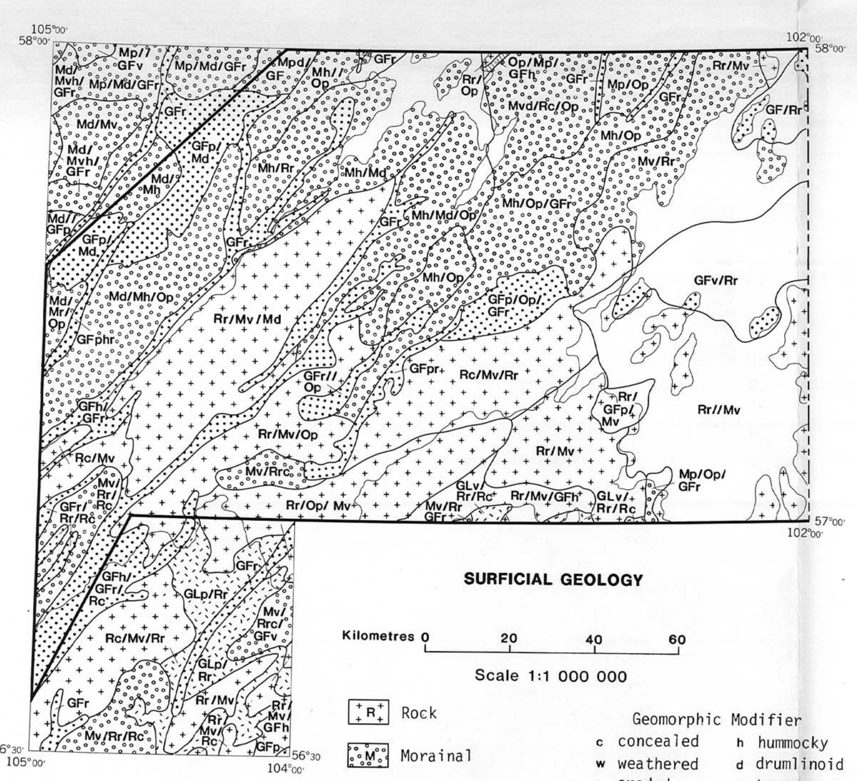




MN
HISTOGRAM





Complexes: where two or more classes of terrain are interspersed in a mosaic or repeating pattern the proportion of each component in the combination is given in a three-position designation set off by slashes denoting arbitrary percentage limits. For example, "Mv/O/R" means that at least 60% of the area is underlain by thin till, with up to 40% boggy areas, and less than 15% scattered rock outcrops. "Rc/R" indicates more than 60% bedrock concealed by vegetation and less than 15% outcrop.

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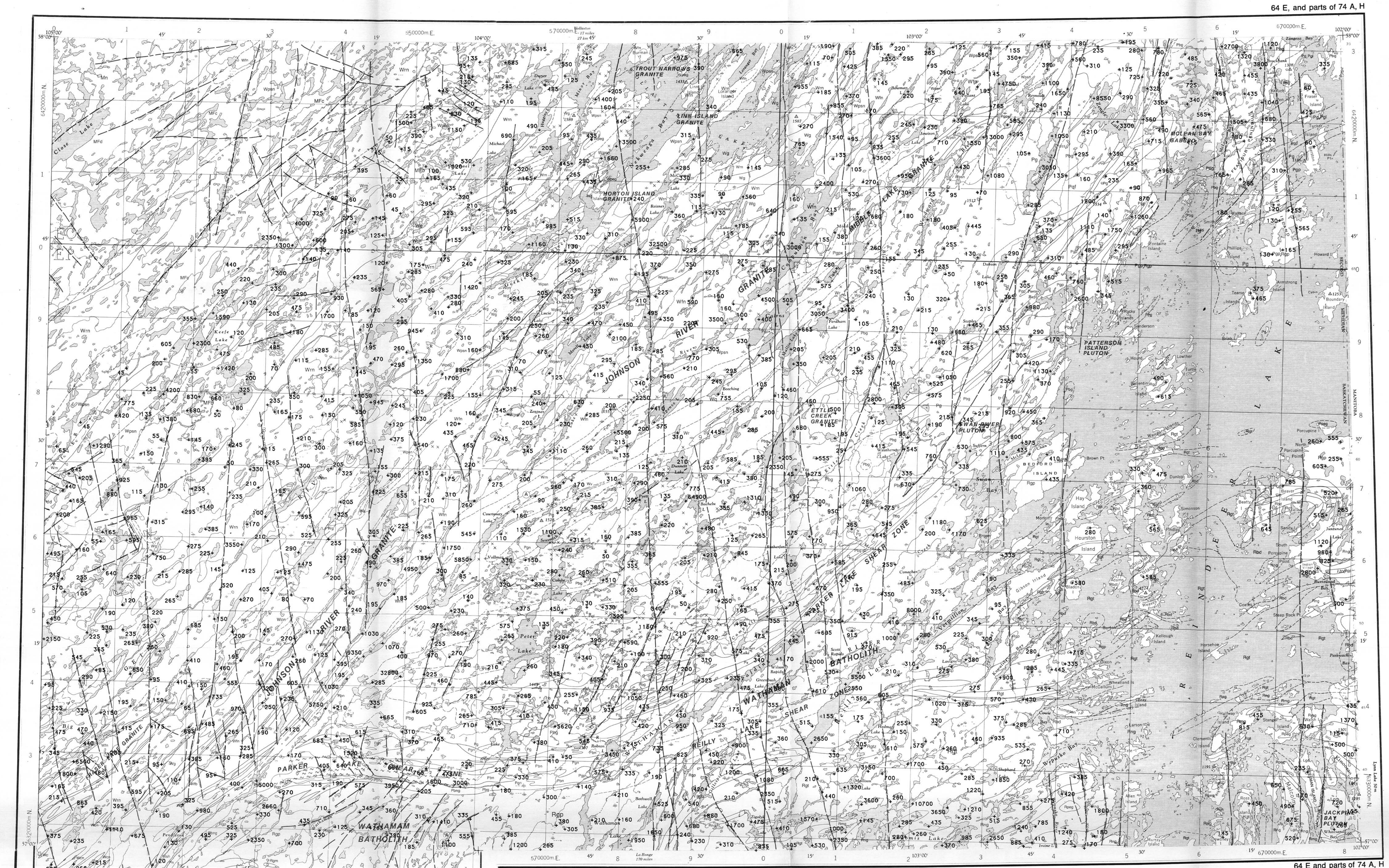
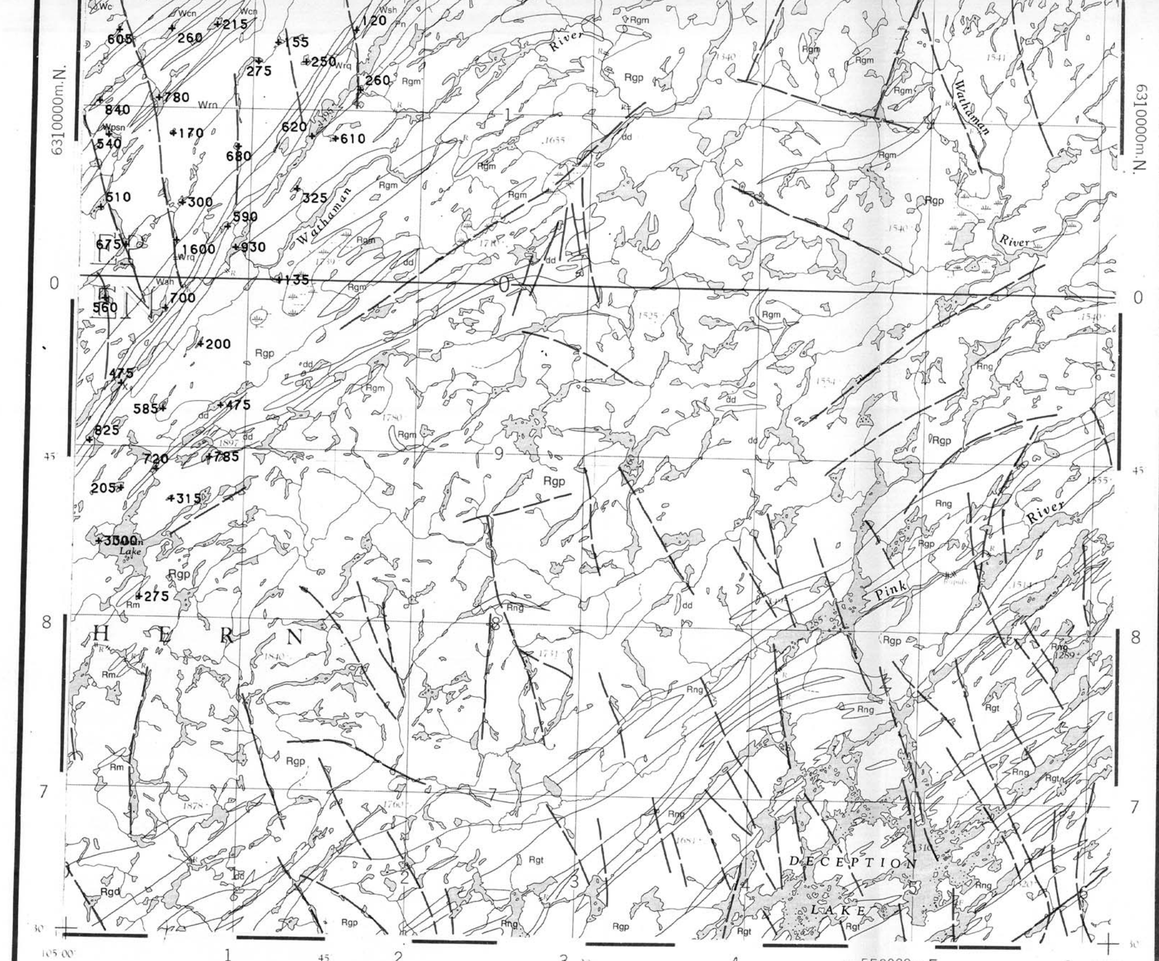
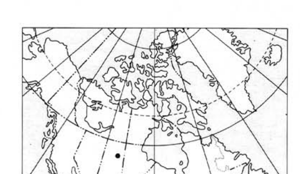
64 E, and parts of 74 A, H

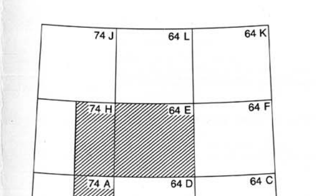


64 E and parts of 74 A, H





INDEX MAP



NATIONAL TOPOGRAPHIC SYSTEM REFERENCE

MANGANESE (ppm)

GSC OPEN FILE 1106

REGIONAL GEOCHEMICAL RECONNAISSANCE MAP 71-1984

CANADA - SASKATCHEWAN
MINERAL DEVELOPMENT AGREEMENT (1984-89)

LAKE SEDIMENT AND WATER GEOCHEMICAL SURVEY

NORTHEASTERN SASKATCHEWAN, 1984

Scale 1:250 000

Kilometres 5 0 5 10 15 20 Kilometres

Universal Transverse Mercator Projection

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Mean magnetic declination 1985, 15°06' East, decreasing 23.1' annually. Readings vary from 13°05' in the SE corner to 17°06' in the NW corner of the map area

Geological Survey of Canada
Resource Geophysics and Geochemistry Division
and
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

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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:

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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

MANGANESE (ppm)

GSC OPEN FILE 1106

NORTHEASTERN SASKATCHEWAN, 1984

LEGEND

Note: This legend is common for Regional Geochemical Reconnaissance Map 71-1984, Open File 1106

NEOHELIKIAN/HADRYNIAN

dd — **Diabase-gabbro:** fine to coarse grained, massive to weakly foliated ± olivine ± biotite ± hypersthene

PALEOHELIKIAN

ATHABASCA GROUP

MF — **Manitou Falls Formation:** sandstone and conglomerate

MFc: fluvial sandstone member, locally pebbly
MFb: conglomerate member

LATE APHEBIAN (HUDSONIAN[1])

X — **Cataclasite:** mylonite and sheared rocks of the Needle Falls Shear Zone; derived from rocks of the Wollaston and Peter Lake Domains

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN[1])

Wpeg* — **Granitic pegmatite:** variable grain size, generally massive, ± biotite ± muscovite ± garnet; contacts with migmatitic supracrustal gneisses commonly gradational

Wg — **Granite and alaskite:** fine to coarse grained, massive to weakly foliated, ± biotite ± hornblende ± magnetite ± microcline megacrysts; contacts with migmatitic supracrustal gneisses commonly gradational

Wgdb — **Biotite granodiorite-tonalite:** medium to coarse grained, massive to foliated, grey to buff; local xenoliths and rafts of amphibolite, mica schist and psammitic gneiss

EARLY TO MIDDLE APHEBIAN

Wollaston Group

Wsh — **Quartz-muscovite schist:** pelitic to psammopelitic, fine to medium grained, ± biotite; locally intensely sheared

Wcn — **Calc-silicate gneiss, marble and amphibolite:** medium grained to pegmatitic, variable composition and texture, + diopside ± albite ± hornblende ± biotite ± actinolite/tremolite ± calcite ± scapolite ± grossularite; occurring as conformable bands and lenses in supracrustal sequence

Wrn — **Meta-arkosic gneiss:** fine to medium grained, massive to foliated to gneissic, locally layered, ± biotite ± hornblende ± diopside ± muscovite ± sillimanite ± garnet ± cordierite ± magnetite ± pyrite; locally interlayered with metaquartzite, pelite and calc-silicate rock; commonly anatectic with more than 50 percent leucogranitic neosome

Wrq: impure metaquartzite

Wpsn — **Pelitic to psammopelitic gneiss:** fine to medium grained, foliated to gneissic, + biotite + quartz ± feldspar ± graphite ± sillimanite ± muscovite ± cordierite ± garnet ± pyrite/pyrrhotite; interlayered metaquartzite, meta-arkose, calc-silicate rock and marble with psammitic types locally abundant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome

Wpf: graphite-bearing pelitic gneiss

Ws — **Mixed metasediment:** variable unit both along and across strike, generally fine grained and foliated; interlayered laminated slate, meta-argillite, metaquartzite, metachert, meta-arkose, calc-silicate rock, marble and rare banded iron formation

Wq — **Metaquartzite:** fine grained, massive to foliated, locally layered, ± muscovite ± biotite ± garnet ± feldspar ± hornblende ± sulphide; local conglomerate and interlayered graphitic meta-argillite ± andalusite ± garnet ± sulphide

PROBABLY EARLY APHEBIAN (LATE ARCHEAN?)

Wr — **Meta-arkose:** fine to medium grained, massive to foliated, locally layered and cross stratified, ± muscovite ± magnetite ± lithic fragments; local conglomerate with granite, granite gneiss, metavolcanic and metasedimentary clasts; local interbedded pelitic schist ± andalusite ± staurolite ± garnet

Wv — **Amphibolite:** fine grained, massive to poorly foliated, locally pillowed; local intercalated pelitic gneiss

(Ws, Wq, Wr, Wv: COURTENAY-CAIRNS LAKE BELT)

UNCONFORMITY

ARCHEAN, DEFORMED AND METAMORPHOSED WITH APHEBIAN SUPRACRUSTAL ROCKS DURING THE HUDSONIAN OROGENY

Wfn — **Felsic granitoid gneiss:** fine to coarse grained, foliated to gneissic, generally homogenous rocks of syenogranitic to granodioritic composition ± biotite ± amphibole ± sillimanite, with rare hyperthene (of granulite facies metamorphic origin); local inclusions of amphibolite and/or pelitic schist; locally partially anatectic with leucogranite neosome

Wfb: biotite-hornblende bearing

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

Rgp — **Megacrystic granitoid:** medium to coarse grained, massive to foliated, with local igneous flow banding; microcline megacrysts ± biotite ± hornblende quartz monzonite, monzogranite and granodiorite; local pelite, amphibolite and/or metadiorite xenoliths; locally abundant pegmatite, aplite and non-megacrystic granitoid toward margins

Rgpx: sheared variants, with strongly foliated groundmass and flasered microcline megacrysts, locally submylonitic

Rgm — **Monzogranite-granodiorite:** containing abundant xenoliths and rafts of amphibolite and amphibole gneiss derived from unit Pn

(Rgp, Rgm: WATHAMAN BATHOLITH (c.1880 Ma))

Rbd — **Quartz monzodiorite, diorite and gabbro:** fine to coarse grained, massive to foliated, + hornblende + plagioclase ± potassium feldspar ± quartz ± biotite; local paragneiss inclusions; contact zones commonly injected with granitic material

Rpeg — **Granitic pegmatite:** massive to foliated, ± biotite ± muscovite ± hornblende ± garnet

Rgt — **Tonalite, granodiorite and trondhjemite:** compositionally variable, generally potassium feldspar-poor, fine to coarse grained, locally pegmatitic, massive to foliated, + biotite ± muscovite ± garnet ± hornblende, local amphibolite and/or pelite inclusions

Rgtz: metasomatized leucotonalite, pink, massive, porphyroblastic, with introduced potassium feldspar and quartz in aureole of Wathaman Batholith

Rmg — **Amphibolite and derived migmatite:** *paleosome* fine to medium grained, foliated, locally layered, + hornblende + feldspar ± biotite ± muscovite ± garnet ± quartz; local pelitic to psammitic gneiss and calc-silicate gneiss; *neosome* tonalitic, granodioritic or trondhjemitic (50 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende

Rng — **Pelitic to psammitic gneiss and derived migmatite:** *paleosome* fine to medium grained, well foliated to gneissic, locally layered, + biotite + quartz + feldspar ± muscovite ± garnet ± sillimanite ± graphite; *neosome* tonalitic, granodioritic or trondhjemitic (50 to 90 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, + biotite ± muscovite ± garnet ± hornblende

(Rgt, Rmg, Rng: ROTTENSTONE MIGMATITE COMPLEX)

PETER LAKE DOMAIN

APHEBIAN AND ARCHEAN ROCKS, STRONGLY REWORKED PROBABLY LATE IN THE HUDSONIAN

Px — **Mylonite:** fine grained to aphanitic, streaky to finely laminated; interlayered mafic and felsic gneiss

Pgn — **Felsic gneiss:** medium grained, strongly foliated to gneissic, locally submylonitic granitoid rock ± biotite ± hornblende ± flasered microcline megacrysts

Pn — **Hornblende-biotite gneiss:** tonalitic to gabbroic composition, medium to coarse grained, with minor metagabbro and amphibolite

Pbn — **Mafic gneiss:** fine to medium grained, foliated to gneissic, locally submylonitic, + hornblende + plagioclase ± biotite ± quartz ± potassium feldspar; local pods of weakly foliated to massive mafic rock

Pbng: area cut by numerous granitic dykes and sills likely derived from the Wathaman Batholith

(Pgn, Pn, Pbn: PARKER LAKE GNEISSES)

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

Pg — **Felsic granitoid:** generally medium to coarse grained, locally megacrystic, multiply intrusive, granodioritic to syenitic to alaskitic and aplitic; local relict igneous textures, generally only weakly foliated except in discrete shear zones; ± biotite ± amphibole; local amphibolite and/or pelite inclusions

Pgl: late granodioritic to alaskitic and aplitic intrusive sheets

Pgp — **Megacrystic granitoid** (indistinguishable in places from unit Rgp)

Pgpx: sheared variants

PROBABLY MAINLY ARCHEAN

Pbg — **Mafic plutonic rocks:** fine to coarse grained, massive to weakly foliated, metatonalite to metadiorite to metagabbro; local relict ophitic to subophitic texture; ± hornblende ± plagioclase ± biotite ± actinolite/tremolite, with local metasedimentary xenoliths;

includes amphibolitic rocks of possible metavolcanic origin

Pba: layered metagabbro, minor anorthosite, ultramafic rock and granodiorite
Pbp: megacrystic diorite, massive with potassium feldspar megacrysts

(Pg, Pgp, Pbg: PETER LAKE COMPLEX)

Pqf — **Quartzofeldspathic gneiss:** fine to medium grained, equigranular, generally well foliated to gneissic, locally compositionally banded, granitic to granodioritic + biotite ± hornblende; local biotite-hornblende gneiss lenses

'Campbell River Group'

Psl — **Slate, phyllite and biotite schist:** very fine to fine grained, well foliated, locally layered, + biotite + muscovite + pyrite/pyrrhotite ± carbonaceous material; local hornblende-biotite schist, psammite, amphibolite and metagabbro

LA RONGE DOMAIN

PROBABLY 'HUDSONIAN s.s.' (c.1740 Ma)

Lgd — **Granodiorite and quartz monzonite:** medium grained, well foliated to gneissic, biotite ± hornblende; abundant xenoliths of paragneiss and unit Lgm

Lgm — **Quartz monzodiorite:** fine to coarse grained, foliated to gneissic; + hornblende ± biotite; abundant xenoliths of paragneiss and amphibolite; neosomes of granodioritic to quartz monzonitic material in migmatitic contact zone

SYMBOLS

Single bedrock exposure; approximate area of abundant bedrock exposure

Geological contact: defined to approximate; inferred

Structural lineament, possible to probable fault, as interpreted from geological, geophysical and/or airphoto evidence

Major fold axial trace: antiform; synform

Trend and approximate dip of dominant foliation surface: dip shallow (0-29°); moderate (30-59°); steep (60-84°); subvertical (85-90°)

Mineral prospect:
1. George Lake, Zn-Pb (Karup-Møller and Brummer, 1970; Coombe, 1977)

Sample location (geochronology):
1. 1575±55 Ma, K-Ar muscovite (Wanless et al., 1970)
2. 1765±30 Ma, Rb-Sr whole rock isochron (Bell and Macdonald, 1982); map location is approximate centre of collecting area

* No analytical result

* A mnemonic name recorded as rock types as part of field observations

This legend was modified and the geology derived for these geochemical maps from Compilation Bedrock Geology Series 228A, 229A and 232A, Saskatchewan Energy and Mines, Saskatchewan Geological Survey

This map forms one of a series of maps released by the Geological Survey of Canada, Open File 1106. The Open File consists of maps of various geochemical variables: 16 for lake sediment, 3 for lake water and 1 sample site location

MANGANESE (ppm)
GSC OPEN FILE 1106
NORTHEASTERN SASKATCHEWAN, 1984

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