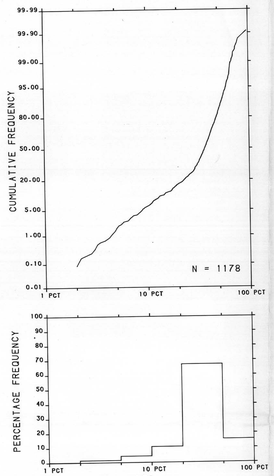
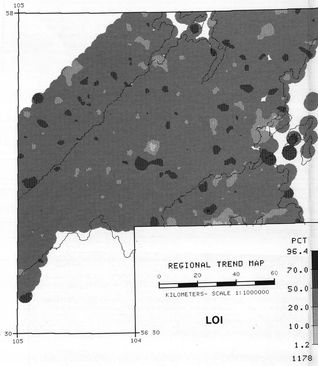
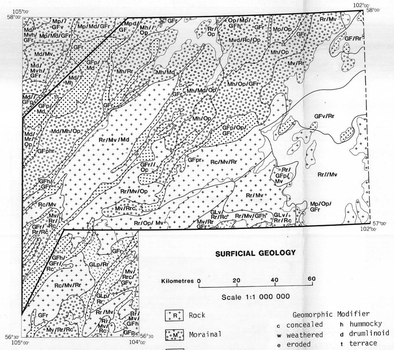
Canada
Department of Energy, Mines and Resources
Geological Survey of Canada

Province of Saskatchewan
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

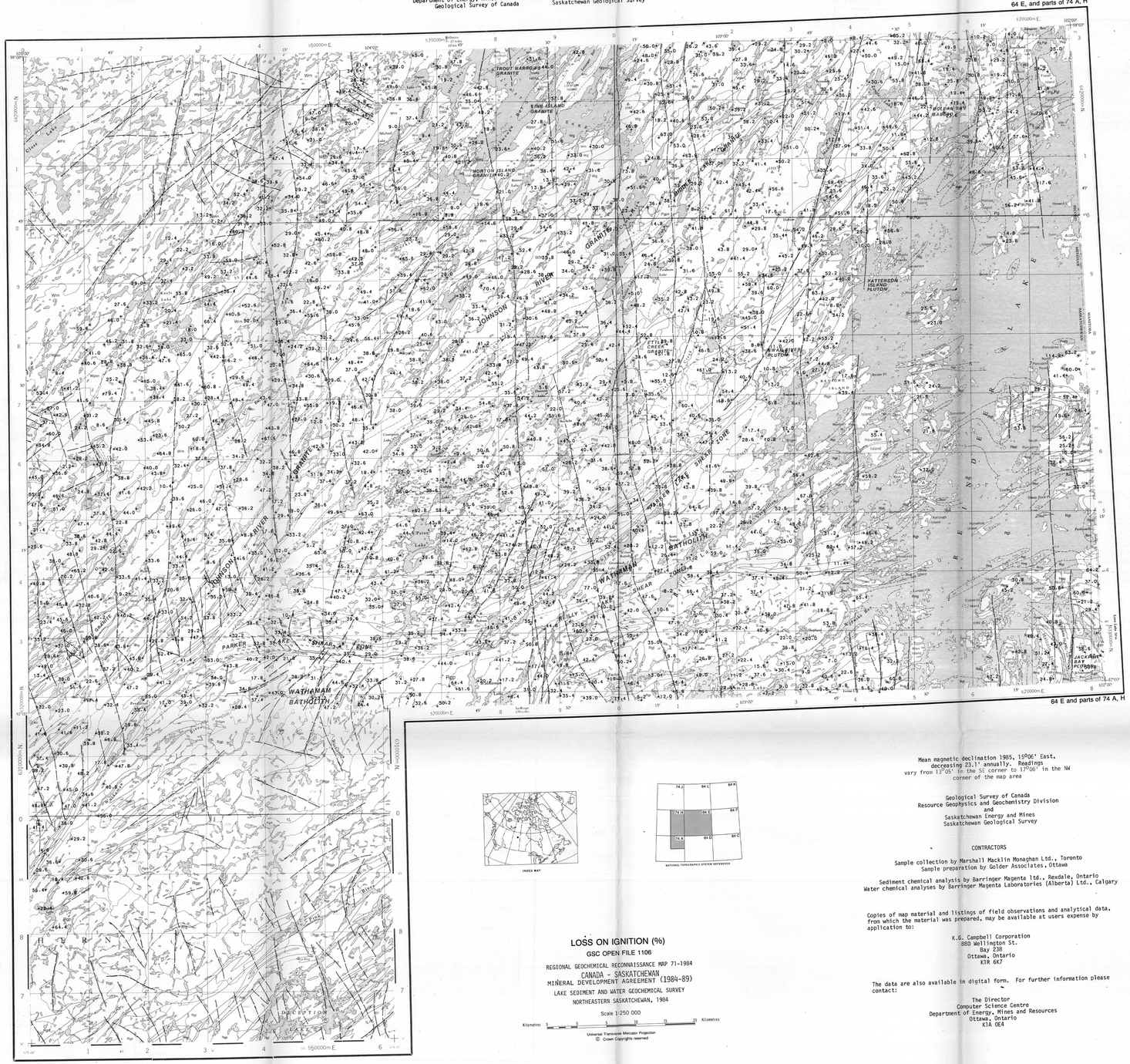






Complexes: where two or more classes of terrain are interspersed in a mosaic or repeating pattern the proportion of each component in the combination is given in a three-position designation set off by slashes denoting arbitrary percentage limits. For example, "Mv/O/R" means that at least 60% of the 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.

64 E, and parts of 74 A, H



LOSS ON IGNITION (%)
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, 19°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

CONTRACTORS

Sample collection by Marshall Macklin Monaghan Ltd., Toronto
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

LOSS ON IGNITION (%)
GSC OPEN FILE 1106
NORTHEASTERN SASKATCHEWAN, 1984

LEGEND

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

NECHEKIKIAN/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
MFg: conglomerate member

LATE APHEBIAN (HUDSONIAN?)

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?)

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

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

Wrgdb — **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

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

Wcm — **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

Wrm — **Meta-arkosic gneiss**: fine to medium grained, massive to weakly foliated, 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

Wrg unpure metaarkosite

Wpem — **Pelitic to psammopelitic gneiss**: fine to medium grained, graphitic ± sillimanite ± biotite ± quartz ± feldspar ± pyrite/pyrrhotite; interlayered metaquartzite, meta-arkose, calc-silicate rock and marble; commonly migmatitic; locally abundant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome

Wgf graphite-bearing pelitic gneiss

Wvs — **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

Wmq — **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 ± biotite ± magnetite ± litho 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

UNCONFORMITY

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

Wth — **Felsic granitoid gneiss**: fine to coarse grained, foliated to gneissic; ± muscovite ± biotite ± hornblende ± garnet; granodiorite-tonalite composition ± biotite ± amphibole ± muscovite, with rare hypersthene (at granulite facies metamorphic origin); local inclusions of amphibolite and/or pelitic schist; locally partially anatectic with leucogranite neosome

Wth biotite-hornblende bearing

ROTTENSTONE DOMAIN

APHEBIAN (HUDSONIAN) WITH POSSIBLE ARCHEAN ELEMENTS

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

Rgsx: sheared variant, with strongly foliated granoblastic and foliated microcline megacrysts, locally automylonitic

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

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

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

Rgd — **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 pelitic inclusions

Rgtr: metamorphosed trascotonalite, pink, massive, leucocratic, with intruded 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 psammopelitic gneiss; commonly migmatitic; neosome tonalitic, granodiritic or trondhjemitic (30 to 50 percent of unit), massive to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende

Rmg — **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; commonly migmatitic; neosome tonalitic, granodiritic or trondhjemitic (30 to 50 percent of unit), medium to coarse grained to pegmatitic, massive to foliated, ± biotite ± muscovite ± garnet ± hornblende

MATHAMAN BATHOLITH c. 1880 Ma — ROTTENSTONE MIGMATITE COMPLEX

PETER LAKE DOMAIN

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

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

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

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

Pbn — **Mafic gneiss**: fine to medium grained, foliated to gneissic, ± biotite ± hornblende ± pyroxene ± 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

PARKER LAKE GNEISSES

COURTENAY-CARING LAKE BELT

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

Pg — **Felsic granitoid**: generally medium to coarse grained, locally megacrystic; multiple phases (unmapped); ± biotite ± muscovite and hornblende; rock ranges gneiss textures, generally very weakly foliated except in discrete shear zones; ± amphibolite ± amphibole; local amphibolite and/or pelitic inclusions

Pgc: late granodiorite; to aplasitic and aplitic intrusive sheets

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

Pgpx - sheared variants

PROBABLY MAINLY ARCHEAN

Pbg — **Mafic plutonic rocks**: fine to coarse grained, massive to weakly foliated; metabasalt 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

Pbk: layered metagabbro, minor anorthosite, ultramafic rock and granodiorite

Pbp: megacrystic diorite, massive with potassium feldspar megacrysts

PETER LAKE COMPLEX

Pql — **Quartzofeldspathic gneiss**: fine to medium grained equigranular, generally well foliated to gneissic, locally weakly to moderately sheared; granitic to granodioritic ± biotite ± hornblende; local biotite-hornblende-gneiss lenses

Campbell River Group

Pcl — **Slate, phyllite and biotite schist**: very fine to fine grained, well foliated, locally layered, ± biotite ± muscovite ± pyrite/pyrrhotite ± carbonaceous material; local hornblende-biotite schist, psammitic 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 ± migmatitic paragneiss 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; an interpreted from geological, geophysical and/or airphoto evidence

Major fold axial trace: anticlinal; synclinal

Trend and approximate dip of dominant foliation surface: dip shallow (0-30°), moderate (30-50°), steep (50-84°), subvertical (85-90°)

Mineral prospect
1. George Lake Zn-Pb (Karup-Møller and Brummer, 1973 Coverdale, 1977)

Sample location (geochronology)
1. 1575±10 Ma K-Ar muscovite (Wanless et al., 1973)
2. 1765±30 Ma Rb-Sr whole rock isochron (Bell and Macdonald, 1983); 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

LOSS ON IGNITION (%)
GSC OPEN FILE 1106
NORTHEASTERN SASKATCHEWAN, 1984

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