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

Province of Saskatchewan
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

MOLYBDENUM (ppm)

GSC OPEN FILE 1106

NORTHEASTERN SASKATCHEWAN, 1984

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, "Rv/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.

MOLYBDENUM (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
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and
Saskatchewan Energy and Mines
Saskatchewan Geological Survey

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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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LEGEND

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

WOLLASTON DOMAIN

LATE APHEBIAN (HUDSONIAN)

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

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

Wgdb **Biotite granodiorite-granite**: 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

Wcs **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

Wms **Meta-arkosic gneiss**: fine to medium grained, massive to foliated to gneissic, locally layered; ± biotite ± hornblende ± diopside ± muscovite ± sillimanite ± garnet ± graphite; commonly pink to red, commonly associated with metapsammitic pelitic and calc-silicate rock; commonly anatectic with more than 50 percent leucogranitic neosome

Wmp **Mica impure metaquartzite**

Wpsh **Pelitic to psammopelitic gneiss**: fine to medium grained, foliated to gneissic, ± biotite ± quartz ± feldspar ± graphite ± sillimanite ± muscovite ± cordierite ± garnet ± hornblende; commonly interlayered with calc-silicate gneiss, calc-silicate rock and marble with psammitic types locally abundant; commonly anatectic with more than 50 percent leucogranitic to tonalitic neosome

Wgr graphite-bearing pelitic gneiss

Ws **Mixed metasediment**: variable unit both along and across strike, generally fine grained and foliated, interlayered metapsammite, meta-argillite, metaquartzite, metapelite, 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 ± biotite ± garnet; commonly interlayered and conformable with graphic granite gneiss, metavolcanic and metasedimentary clasts; local interbedded pelitic schist ± andalusite ± staurolite ± garnet

Ww **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

Wfm **Felsic granitoid gneiss**: fine to coarse grained, foliated to gneissic, generally homogeneous rocks of syntectonic to granodioritic composition; ± biotite ± amphibole ± sillimanite, with rare hypersthene (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 ± muscovite; commonly associated with gneissic hornblende-quartz monzonite and/or granodiorite xenoliths; locally abundant pegmatite, aplite and non-megacrystic granitoid toward margins

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

Rgm **Metagranite-granodiorite**: containing abundant xenoliths and rafts of amphibolite and amphibole-gneiss derived from unit Rh

Rbd **Quartz monzodiorite, diorite and gabbro**: fine to coarse grained, generally 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 pelitic inclusions

Rgtc 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

Rngc metasedimentary calc-silicate rock, commonly anatectic with more than 50 percent leucogranitic neosome

PETER LAKE DOMAIN

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

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

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

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

Rbn **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

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

HUDSONIAN WITH POSSIBLE ARCHEAN ELEMENTS

Rgg **Felsic granitoid**: generally medium to coarse grained, locally pegmatitic, foliated to gneissic, commonly migmatitic; ± biotite; alaskitic and aplitic; local relict igneous textures, generally only weakly foliated except in discrete shear zones; ± biotite ± amphibole; local amphibolite and/or pelitic inclusions

Rgi late granodioritic to alaskitic and aplitic intrusive sheets

Rgp **Megacrystic granitoid** (indistinguishable in places from unit Rgg)

Rgpx sheared variants

PROBABLY MAINLY ARCHEAN

Rbg **Mafic plutonic rocks**: fine to coarse grained, massive to weakly foliated, metamorphic to metadiorite to metagabbro; local relict ophitic to subophitic texture; ± hornblende ± biotite ± quartz ± feldspar; actinolite-hornfelsed, with local mylonitic-blastomylonitic xenoliths

includes amphibolitic rocks of possible metavolcanic origin

Rbs layered metagabbro, minor anorthosite, ultramafic rock and granodiorite

Rbp porphyritic diorite; massive with potassium feldspar megacrysts

Rgd **Quartzmonzodioritic 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'

Rsl **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

WATHAMAN BATHOLITH c. 1880 Ma

ROTTENSTONE MIGMATITE COMPLEX

PARKER LAKE GNEISSES

COURTENAY-LARING LAKE BELT

PETER LAKE COMPLEX

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: dg shallow (0-29°); moderate (30-59°); steep (60-84°); subvertical (85-90°)
- Mineral prospect
  1. George Lake Zn-Pb (Kerr-Addison Archer, Lindsay and Brummer, 1970; Coombe, 1977)
- Sample location (geochronology)
  1. 1125±30 Ma, K-Ar muscovite (Wanless et al., 1970)
  2. 1786±30 Ma, Rb-Sr whole rock isochron (Bell and Macdonald, 1980); 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

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