



MERCREDI LAKE LEGEND

- PRECAMBRIAN****
- REGIONAL SHEAR ZONES**
- Zones of regional shearing and recrystallization have principally affected granite gneisses and metasedimentary rocks to produce ultramylonite, mylonite, cataclastic, blastomylonite, and shear gneiss; megacrystic structure is typically streaky; may contain rounded or augen rock clasts or feldspar porphyroclasts (P).
- RECRYSTALLIZED MYLONITIC ROCK:** light grayish-green overall, with dark specks of hornblende porphyroclasts up to 3 mm long, and locally feldspar porphyroclasts from 10 to 15 mm long; in a sheared, foliated, fine-grained matrix, some indistinct banding. Locally mixed with and gradational to parent material Gray Hornblende Granite.
 - RECRYSTALLIZED MYLONITIC ROCK:** dark colored, with white to gray anhedral feldspar porphyroclasts and anhedral feldspar porphyroclasts 10 to 50 mm long; foliated, locally gneissic; aphanitic matrix, locally medium-grained; minor apatite and pegmatite. Parent material largely Slave Granitoids and Arch Lake Granitoids.
 - RECRYSTALLIZED MYLONITIC ROCK:** green to black; granoblastic (siliceous) to schistose, with biotite, chlorite, sericite, feldspar and minor quartz porphyroclasts in a massive to foliated, finely banded, aphanitic matrix. Parent material largely metasedimentary rock.
 - RECRYSTALLIZED MYLONITIC ROCK:** mostly light colored, with white to pink feldspar porphyroclasts 5 to 20 mm long making up 2 to 5 percent of the rock, in a foliated, finely banded, aphanitic matrix. Parent material largely granite gneiss.
- GRANITOID ROCKS**
- ARCH LAKE GRANITOID**
- ARCH LAKE GRANITE PHASE:** typically reddish overall; 20 to 40 percent red, subhedral, elongate to tabular feldspar megacrysts, from 15 to 30 mm long, aligned subparallel in a medium-grained (locally coarse-grained) usually well-foliated matrix of feldspar, blue quartz and biotite. Locally reduced amounts of feldspar megacrysts. Mafic mineral content 6 to 14 percent. Commonly mildly mylonitic, with crushed matrix and augen megacrysts.
 - ARCH LAKE TRANSITIONAL GRANITE PHASE:** transitional to Slave Granitoids; typically reddish overall; up to 10 percent white to pink subhedral, elongate to tabular feldspar megacrysts, from 15 to 15 mm long, aligned subparallel in a medium-grained (locally coarse-grained) usually well-foliated matrix of feldspar, blue quartz, and biotite. Quartz content locally reduced from 25 to 10 percent. Commonly mildly mylonitic.
- LA BUTTE GRANDIODORITE**
- Generally light gray to brownish gray to mauve (bluish quartz combined with pink-gray feldspar), of uniform color and texture; in hand specimen specks and aggregates of dark mafic minerals in a lighter gray background. Medium grained but ranging to fine- and coarse-grained, with 8 to 20 mm long feldspar megacrysts from rare to 5 percent abundance in a quartz, feldspar, biotite matrix. Typically massive to uncommonly poorly foliated or locally gneissic. Rock types range from granite to granodiorite, quartz diorite, and quartz monzonite, with a mean composition of granodiorite.
- SLAVE GRANITOID**
- SLAVE GRANITE PHASE:** typically whitish gray (locally white to greenish gray to pink feldspar matrix set on a darker background); medium- to coarse-grained (locally fine-grained); up to 5 percent white feldspar megacrysts, 7 to 15 mm long, in a matrix of white feldspars, quartz and biotite 1-1 to 5 percent; massive to uncommonly poorly foliated (increase in biotite content tends to better define foliation); typically gneissic, in knots 5-5 mm across with a biotite envelope; may be locally gneissic; includes minor small-scale mafic lenses of metasedimentary appearance; minor gray white, fine- to medium-grained felsic dykes and quartz veins.
 - MAFIC SLAVE GRANITE PHASE:** similar to Slave Granite but with a notably higher biotite content (up to 10 percent); distinctly foliated.
 - MEGACRYSTIC COMPONENT:** up to 15 percent white feldspar megacrysts 15 to 50 mm long, either randomly oriented or aligned with the foliation of map units 101 and 102 (P).
 - RED SLAVE GRANITE PHASE:** similar to Slave Granite Phase but with a distinct pinkish red color.
 - SLAVE RAISIN GRANITE PHASE:** mottled pink to red in a dark background on both weathered and fresh surfaces. White to pink to red abundant 2 to 6 mm typically rounded to subrounded augen feldspars are set in a characteristically sheared foliated matrix of chlorite, leucocratic quartz, biotite, sericite and minor epidote. Local variations include poor foliation, exclusion of chlorite in favour of biotite and imperfect gneissic banding. Composition is granitic ranging to quartz diorite.
- CHARLES LAKE GRANITOID**
- FOLIATED HORNBLÉNDE GRANITE:** typically pink on weathered surfaces and pink to gray on fresh surfaces. The medium- to coarse-grained, equigranular texture is made up of pink feldspar, quartz, streaky patches of hornblende aggregates and minor biotite. The typically well-foliated texture is locally poorly developed. Composition is granitic.
 - LEUCOCRATIC GRANITE:** light gray to pink to red on both fresh and weathered surfaces. The medium- to coarse-grained equigranular texture is composed of pink to red anhedral feldspar, quartz and up to about 3 percent mafic minerals. Massive texture is locally foliated. Minor microcline and pegmatite accompany the dominant granite composition.
 - GREY HORNBLÉNDE GRANITE:** buff to gray, with dark specks of hornblende and locally feldspar porphyroclasts from 5 to 12 mm in size within a quartz-feldspar matrix; texture is fine- to medium-grained, massive to slightly foliated. Locally mylonitic.
 - GRANITE F:** mottled, with large white to pink and gray feldspar megacrysts in a gray matrix; subhedral feldspar megacrysts from 25 to 100 mm long are enclosed in a coarse-grained, massive to poorly foliated matrix of feldspar, quartz and biotite. Minor local bodies of gneiss and pegmatite are included. The predominant rock type is granodiorite.
- METASEDIMENTARY ROCKS**
- METASEDIMENTARY ROCKS:** the high-grade metasedimentary rock types included in this map unit are lithologically and structurally gradational, and in part interbedded on outcrop scale. Typically impure quartzites, dark greenish (bluish) gray (fresh surfaces); fine-grained; layered, with ferruginous and garnetiferous zones, locally scattered pyrite, gossans, and may to bluish gray quartz pods and veins. Minor amphiboles may be present. Common local lithologic gradations are: (1) fine- to medium-grained, metamorphic quartz-feldspathic (granitic) and minor pegmatitic phase ranging from individual white feldspar porphyroclasts 5 to 15 mm long, to relatively distinct aggregates and masses; commonly foliated to locally gneissic (1-1); (2) fine-grained, retrograde phyllite and schist (biotite, chlorite, sericite, and uncommonly hornblende), and phyllonites.
- AMPHIBOLITE**
- AMPHIBOLITE:** Dark brownish green (fresh surface) to grayish green; typically medium grained; biotite may be common; composition ranges from essentially amphibole pure or amphibole rich to a feldspathic biotite amphibolite; commonly foliated but may be banded where feldspar rich; minor pyrite common.
- GRANITE GNEISS**
- HORNBLÉNDE GRANITE GNEISS:** typically pink to reddish with dark green bands; quartz-feldspar bands interbedded with mafic-rich bands (hornblende, with biotite; generally chloritic) on hand specimen scale; fine- to medium-grained, typically equigranular, uncommonly megacrystic; typically well banded, uncommonly poorly banded and rarely foliated. Composition is predominantly granitic, with minor granodiorite, and quartz diorite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, and bands of metasedimentary rocks, pegmatite, or amphibolite. Minor hornblende granite gneiss.
 - BIOTITE GRANITE GNEISS:** typically pink to reddish; quartz-feldspar bands interbedded with mafic-rich bands (biotite, possibly with subordinate hornblende; generally chloritic) on hand specimen scale; fine- to medium-grained, generally equigranular, rarely megacrystic; commonly well banded but may be locally poorly banded to foliated, and leucocratic areas may be nearly massive. Composition is predominantly granitic, with minor granodiorite, quartz diorite, and quartz monzonite. Large areas are migmatitic, particularly where intimately associated with minor lenses, pods, and bands of metasedimentary rocks, pegmatite, or amphibolite. Minor hornblende granite gneiss.

- **NOTE: Rock groups are arranged in approximate chronological sequence. Nomenclature follows Strickson (1967). Classification and nomenclature of gneissic rocks; Neues Jahrbuch für Mineralogie, Abhandlungen, 107, No. 2, p. 144-240.
- Geological boundary (defined, approximate) - - - - -
- Foliation trend* - - - - -
- Lineation (combined with foliation) - - - - -
- Extreme contortion (structural trend shown) - - - - -
- Tight folds (structural trend shown) - - - - -
- Local gneissosity in generally massive to foliated rock - - - - -
- Joint (dip known, vertical, unknown) - - - - -
- Fault (defined: dip known, fault assumed) - - - - -
- Shear (dip known) - - - - -
- Breccia - - - - -
- Mylonite (local) - - - - -
- Rock alteration - - - - -
- Basic dyke - - - - -
- Quartz vein - - - - -
- Crystalline standard sample 513
- Metasedimentary rock band standard sample 510
- Yellow mineral stain Y
- Radioactivity R
- Chlorite C
- Epidote E
- Garnet G
- Hornblende H
- Magnetite M
- Isotopic age (million years): biotite (b); K-Ar (K); University of Alberta Δ b, 1740
- Glacial stria (direction of ice movement shown) - - - - -
- Crevasse filling* (ridge shown) - - - - -
- Dune* - - - - -
- Eska* (direction known, unknown) - - - - -
- Drumlin - - - - -
- Kettle - - - - -
- Raised beach* (downslope indicated) - - - - -
- Wind-cut groove (wind direction shown) - - - - -
- Sand-covered area* - - - - -
- Sand and boulder-covered area - - - - -
- Small outcrop (map unit shown) - - - - -
- Muskeg - - - - -
- Drainage (permanent, intermittent) - - - - -
- Township boundary - - - - -
- Trail - - - - -
- *Aerial photographic interpretation

Approximate magnetic declination 25°50' East in 1984 decreasing approximately 4.3' annually for the Mercredi Lake map area.

SCALE 1:31,680

Miles 1 0 1 Miles
Kilometres 1 0 1 Kilometres



Geology of Mercredi Lake District, Alberta

Sheet No. 35

John D. Godfrey, and C. Willem Langenberg 1974, 1975.
John D. Godfrey and Roy Y. Watanabe 1960, 1961, Charles Lake Region.
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Any revisions or additional geological information would be welcomed by the Alberta Research Council.

ALBERTA RESEARCH COUNCIL
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