

MOUNT SAWYER

Areas of the map symbolized as 'unconsolidated sand and gravel deposits' display underlying rock type(s) to portray the interpreted continuity of units, based on structural, aeromagnetic and topographic signatures. Rock types other than those shown may be present in these areas.

All data stations collected by the authors are added using GPS-based coordinates. This map also incorporates pre-GPS field data collected by Stevenson (1987), Ryan et al. (1981) and Ryan (1982). The accuracy of field data stations that were re-plotted from maps or field notes of these sources is dependent on the original plotting accuracy. Mineral occurrences shown on this map are from the Newfoundland and Labrador Geological Survey's Mineral Occurrence Database System (MODS) (<https://gis.ges.gov.nl.ca/mods.html>), with from unpublished assessment reports; the locations of most of these are dependent on initial plotting accuracy. MODS occurrences that were revisited by the authors and new mineral indicators were located using GPS-based geospatial coordinates.

The map is augmented by follow-up examination of stained rock slabs, petrographic thin sections and whole rock geochemical analyses. In many areas, geological boundaries are poorly constrained, approximated and extrapolated on the basis of outcrop distribution, topographic trends, structural observations and aeromagnetic data. Individual sections typically consist of several different rock types. The unit polygons depicted on this map are interpreted to be the correct rock type present. All rock types identified from an outcrop setting may be determined by consulting the 'first designator' string for that locality given in the digital database. Discrepancies in rock names applied to field outcrops versus those interpreted from stained slabs or thin sections have not been recorded in the digital database. Differences may be due to more refined identifications or the sample and/or thin section may not be representative of the source material.

Field work in 2009 and 2010 by T. van Nootrand and D. Lowe

Recommended citation
van Nootrand, T.
2023. Geology of the Mount Sawyer map area (NTS 13F/14), central Labrador. Scale 1:50 000. Geological Survey, Department of Industry, Energy and Technology, Government of Newfoundland and Labrador. Map 2023-15. Open File # 013F14/0102.

Geology compiled by T. van Nootrand
Geological cartography by S. McKenna, K. Morgan and T. Sears
The digital topographic database map NTS 13F/14 used here is available from the Survey General Branch, Natural Resources, Canada. Magnetic declination at centre of the map is 10°40' West (March 31, 2022). Universal Transverse Mercator (UTM) grid Zone 20, North American Datum (NAD) 27. Elevations are in metres above sea level. Contour interval is 20 m.

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Preliminary versions of parts of this map published in Current Research articles have evolved so there may be differences between the current and preliminary versions of the map, unit designations and legends (see van Nootrand and Lowe, 2015).

Map 2023-15 is two of twenty (20) maps on the geology of the Seal Lake Group, including adjacent rocks of older tectonic provinces in central Labrador.

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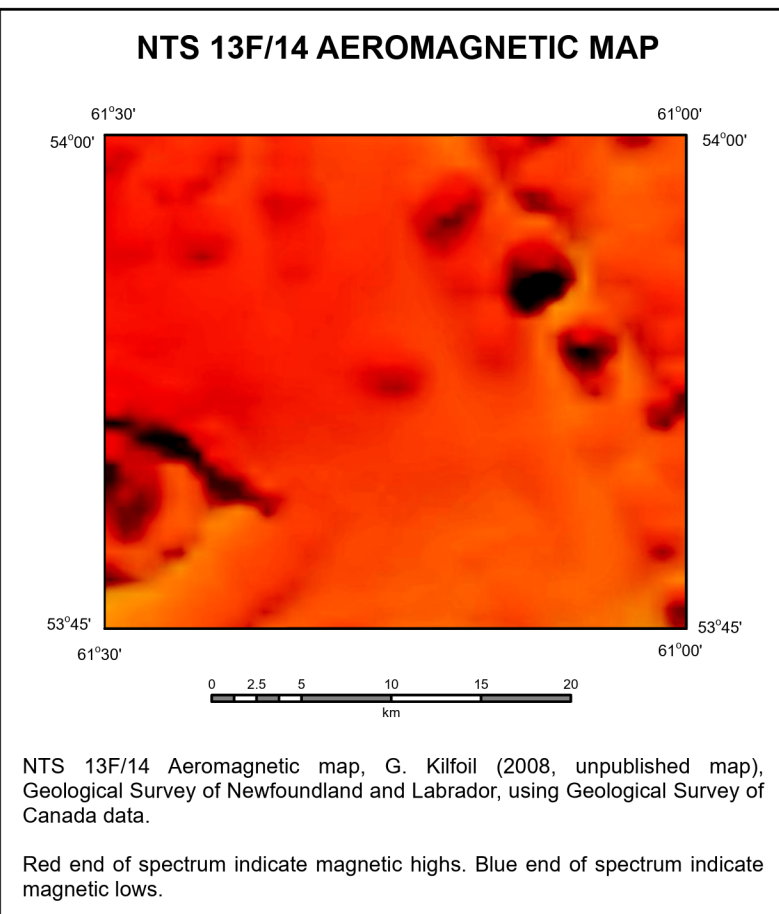
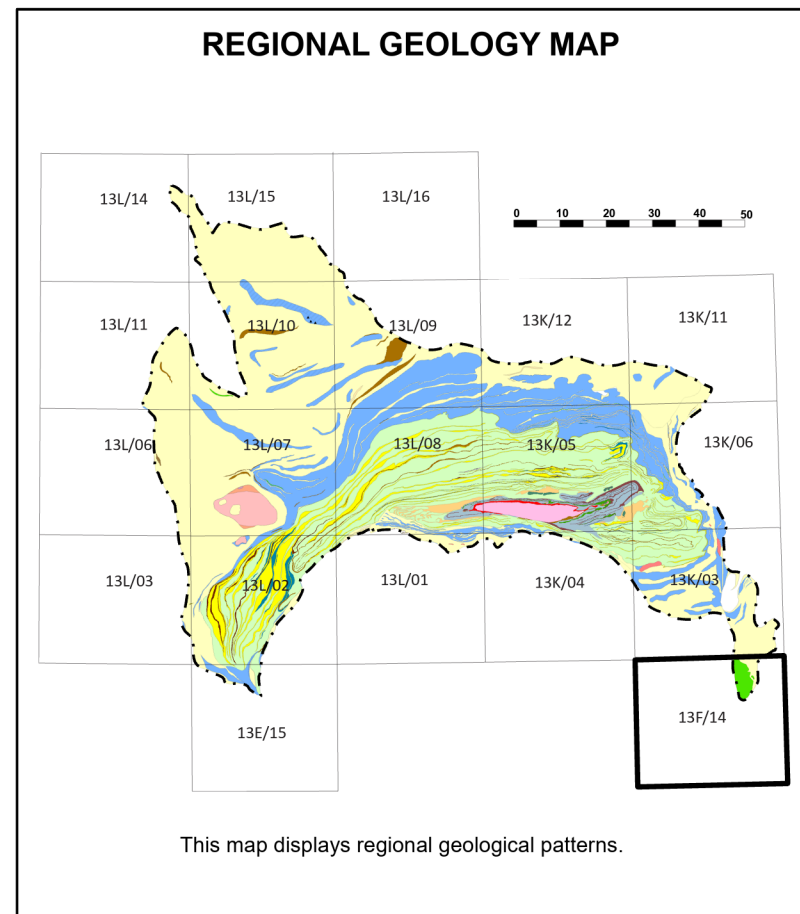
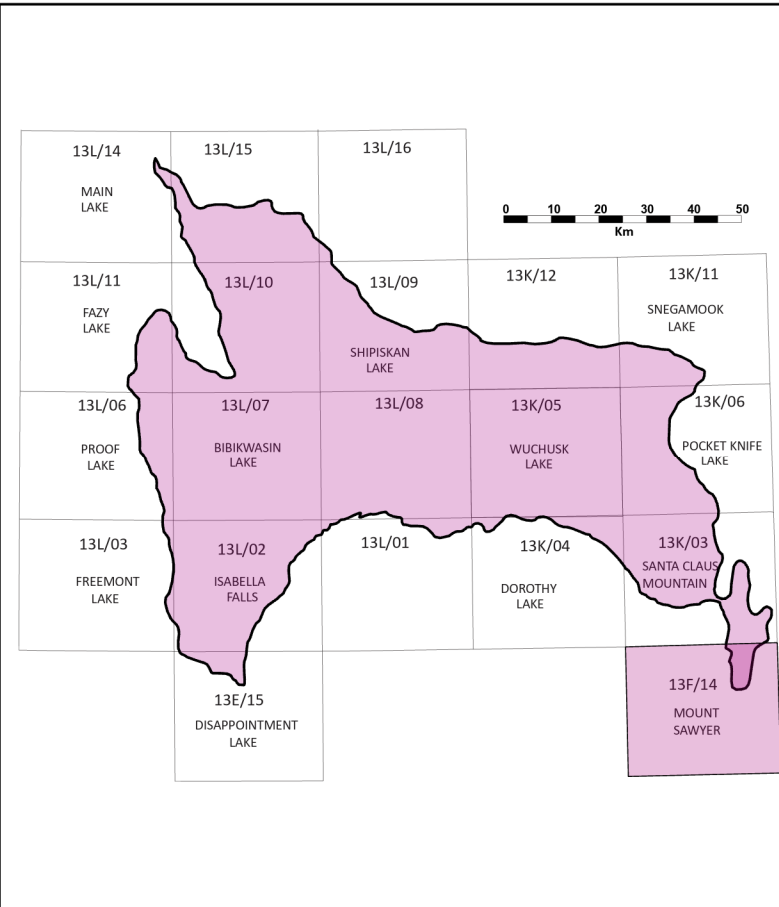
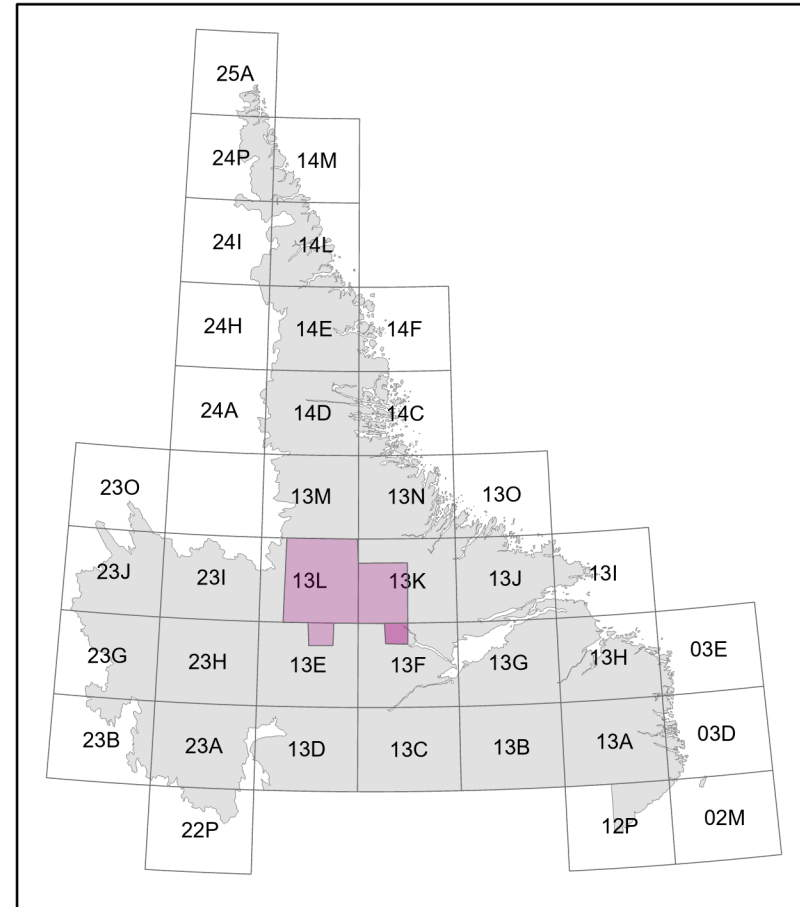
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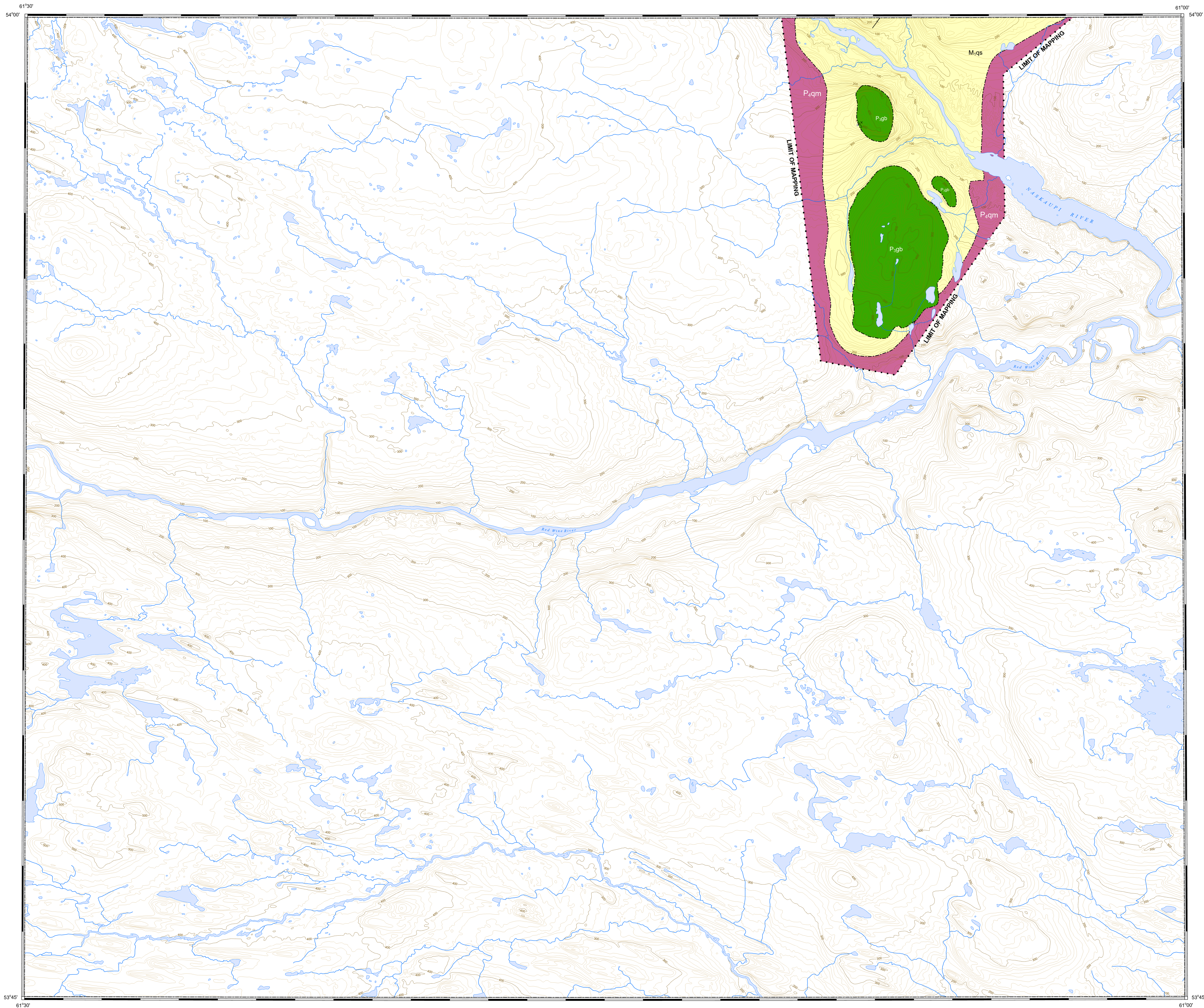
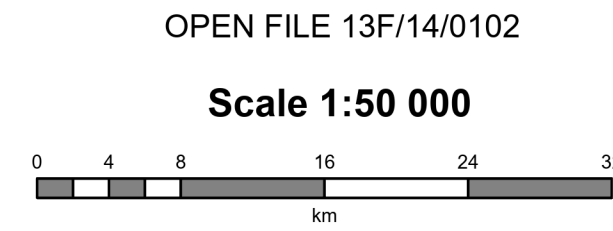
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INDEX MAPS



Map 2023-15
GEOLOGY OF THE MOUNT SAWYER
MAP AREA
(NTS 13F/14)
CENTRAL LABRADOR
OPEN FILE 13F/14/0102
Scale 1:50 000



MIDDLE MESOPROTEROZOIC

Seal Lake Group (1271-1225 Ma)

Upper Red Quartzite Formation

M_{uq} Red- to pink-weathering, fine- to medium-grained, well-sorted quartz arenite, arenite, and felsophatic arenite. Contains local, cm- to m-scale lenses, and layers of fine-grained slate and siltstone, particularly in the lower levels of the formation.

M_{uq} Fine-grained, maroon-weathering slate and siltstone. Occur as cm- to 10s of m-thick layers and lenses interbedded with quartzite and arenite near the base of the formation.

Adeline Island Formation
Upper Member

M_{uq} Maroon- to red-weathering, fine-grained shale, locally grades to slate.

M_{uq} Grey- to green-weathering, fine-grained slate.

M_{uq} Grey- to green-weathering, fine-grained slate, locally gradational to phyllite.

M_{uq} Red- to purple-weathering slate.

M_{uq} Grey-weathering, fine-grained sandy shale to slate.

M_{uq} Maroon- to purple-weathering, fine-grained slate.

M_{uq} Grey, shaly- to green-weathering, fine-grained slate, gradational to phyllite. This unit exhibits a distinctive 'valve-grey' sheen' and hosts most of the copper sulfide mineralization within the Seal Lake Group.

M_{uq} Maroon- to purple-weathering, fine-grained slate.

Lower Member

M_{uq} Pink-, red- to locally white-weathering variably recrystallized quartz arenite to arenite. This unit also contains local, thin layers and lenses of slate.

Lower Member

M_{uq} Maroon- to red-weathering, fine-grained slate. Basal unit of the Adeline Island Formation is locally intercalated with layers and lenses of fine-grained quartz arenite.

Salmon Lake Formation

M_{uq} Green- to brown-weathering, fine-grained, massive amygdaloidal basalt flows. Flows are 1- to 5-m thick, and intercalated with sedimentary units.

Whiskey Lake Formation

M_{uq} Brown, maroon- to red-weathering, thin-bedded to laminated slate, arenite, siltstone and subordinate calcareous rocks and chert.

M_{uq} Maroon-weathering, thin-bedded to laminated slate. Occurs predominantly as thin lenses and layers.

Wachuk Lake Formation

M_{uq} Predominantly pink-, white, grey- to red-weathering variably recrystallized quartz arenite and arenite occurring as layers of variable thickness. Interspersed with gabbro sills and basalt flows. Contains cm- and m-scale interbeds of siltstone, mudstone and calcareous rocks.

M_{uq} Brown- to tan-weathering, fine-grained, thin-bedded to laminated siltstone. Also contains thin quartz arenite, arenite, chert, and calcareous layers.

M_{uq} Fine-grained, red-, maroon- to brown-weathering mudstone, grading to shale and slate and having a weak to strongly developed to well-developed cleavage.

M_{uq} Black- to grey-weathering, fine-grained shale interbedded with siltstone and quartz arenite units. Exhibits localized and intermittent elevated radiometric signatures (inherited by recrystallization on outcrop surfaces).

M_{uq} Green-grey, brown- to red-weathering, fine- to medium-grained plagioclase-olivine-spinel-magnetite basalt. Textures range from homogeneous, massive, amygdaloidal, vesicular and porphyritic. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro.

M_{uq} Brown- to grey-weathering, volcaniclastic tuff containing 5-15% felsophatic clasts. Occurs as less than 25 m-thick layers intercalated with fine-grained basic shale. Locally records elevated radiometric signatures.

M_{uq} Green-, grey-brown- to rusty-weathering, fine- to very coarse-grained, massive to strongly foliated ophiolite gabbro. Rocks are deposited as tabular shaped sills. Contains local siltstone and calcareous zones. Some sills may consist of composite intrusions.

Majors and Bessie Lake formations (stratigraphically equivalent formations)

M_{uq} Brown- to maroon-weathering, fine-grained shale. Locally interbedded with quartz arenite, arenite and siltstone layers.

M_{uq} Brown- to tan-weathering, fine-grained, thin-bedded mudstone to siltstone. Unit contains cm- and 10s of m-scale, layers of quartz arenite, arenite and minor lime-bearing argillaceous rocks.

M_{uq} White, pink-, red- to grey-weathering, fine- to coarse-grained variably recrystallized quartz arenite and arenite. Predominant rock within the basal stratigraphic formation containing abundant cm- to 10s of m-scale interbedded layers of siltstone, mudstone, shale and minor calcareous rocks.

M_{uq} White, pink-, red- to grey-weathering, medium- to coarse-grained granule-, pebble- and cobble-bearing arenaceous conglomerate.

M_{uq} White- to grey-weathering, fine- to medium-grained, strongly foliated and recrystallized quartz arenite schist, derived from quartz arenite and arenaceous conglomerate. Contains quartz-alkali-feldspar-senescite-muscovite-magnetite.

M_{uq} Green-grey, brown- to red-weathering, fine- to medium-grained plagioclase-olivine-spinel-magnetite basalt. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro (as thin sills).

M_{uq} Green-grey- to brown-weathering, fine- to medium-grained, ophiolite-related volcaniclastic rocks. Locally exhibits a diffuse layering that may include volcaniclastic breccia and intrusive breccia. May also include fine-grained, homogeneous basalt flows and sedimentary rocks.

M_{uq} Green-grey- to brown-weathering, medium-grained, volcanic and intrusive breccia. Occurs as localized layers within thick sequences of basalt flows. Contains clasts and fragments of basalt, volcaniclastic rocks, gabbro and sedimentary rocks in basaltic and gabbroic matrices.

M_{uq} Green- to brown-weathering, fine- to medium-grained basalt flow containing local pillow structures.

M_{uq} Green-weathering, fine-grained, very strongly deformed basalt, metamorphosed to mylonitic-clastic schist. Occurs as thin zones adjacent to north and northeast-sinking thrust fault.

M_{uq} Green- to grey-weathering, fine- to medium-grained, massive, ophiolite-related gabbro. Occurs as rare, less than 100 m thick sills intruding quartz arenite and arenite and basalt flows.

Harp Dykes (1271 ± 1 Ma)

M_{uq} Northeast-sloping, olivine diabase dykes intrude orthogneiss and related rocks of the Harp Lake Intrusive Suite.

Letitia Lake Group (ca. 1327 Ma)

M_{uq} Fine- to medium-grained, black- to grey-weathering, strongly foliated and lineated hornblende-bearing, mafic-rich schist or volcanic tuff. Interpreted as an uppermost layer of Letitia Lake Group in unconformable contact with quartz-arenite schist at the base of the Seal Lake Group.

M_{uq} Well-banded and complexly foliated felsic volcanic rocks, volcanic derived sedimentary rocks of the Letitia Lake Group may include quartz-feldspar-rich sedimentary rocks of the country rock Letitia Lake Group.

M_{uq} White, buff- to grey-weathering, weakly foliated to gneissic, medium-grained, recrystallized rhyolite porphyry to trachyte and syenitic tuffs. Locally intercalated with unmetamorphosed basic volcanic rocks.

Red Wine Complex (ca. 1337 Ma)

Quartz calc-silicate series

M_{uq} Medium-grained, moderate to strongly foliated mafic to intermediate peralkaline granitoid intrusions. Includes granite, quartz syenite, alkali-feldspar granite and alkali-feldspar quartz syenite.

Quartz undersaturated series

M_{uq} Alkal syenite and metamorphic equivalents.

LEGEND

EARLY MESOPROTEROZOIC

Harp Lake Intrusive Suite (ca. 1490 Ma)

M_{uq} Grey- to grey-white-weathering, medium- to coarse-grained, massive to layered, orthopyroxene-magnetite-ilmenite-spinel orthogneiss, orthopyroxene and leucocrystic.

M_{uq} Light brown- to red-weathering, medium- to coarse-grained, massive biotite-hornblende granite, locally gradational to quartz monzonite.

LATE PALEOPROTEROZOIC

LATE LABRADORIAN ROCKS (1650 - 1650 Ma, reworked during Grenvillian Orogeny)

North Pole Brook Intrusive Suite (Trans-Labrador batholith, ca. 1650 Ma)

P_{uq} White- to pink-weathering, fine- to medium-grained, recrystallized, weakly foliated to mylonitic, K-feldspar porphyritic, biotite-hornblende quartz monzonite to granite, locally gradational to granodiorite.

P_{uq} Grey- to green-grey-weathering, medium- to foliated hornblende-biotite quartz diorite to diorite.

Unassigned intrusions

P_{uq} Unassigned gabbro to gabbroic granite.

Bruce River Group (ca. 1650 Ma)

Silva Lake Formation

P_{uq} Rhyolite, andesite, trachyandesite and basalt. Occurs as massive to brecciated flows, agglomerate and locally bedded tuffaceous rocks.

Brown Lake Formation

P_{uq} Volcaniclastic sandstone, tuff, minor conglomerate and arkose.

Middle Paleoproterozoic

Moran Lake Group (ca. 1800 Ma)

Warren Creek Formation

P_{uq} Grey- to black-weathering mudstone, slate, siltstone and minor limestone, dolomite and chert.

Archean-Paleoproterozoic

Southeastern Churchill Province (reworked during Grenvillian Orogeny)

A_{uq} Unmetamorphosed foliated granite and orthogneiss. May be correlative with rocks of the Seal Lake Intrusive Suite.

A_{uq} Fine- to medium-grained, weak to moderately foliated, biotite-hornblende granite to quartz monzonite.

A_{uq} Medium-grained, weakly foliated, hornblende-biotite quartz diorite to diorite. May be correlative with rocks of the Seal Lake Intrusive Suite.

A_{uq} Medium-grained, weakly to strongly foliated hornblende-biotite monzonite. May be correlative with rocks of the Seal Lake Intrusive Suite.

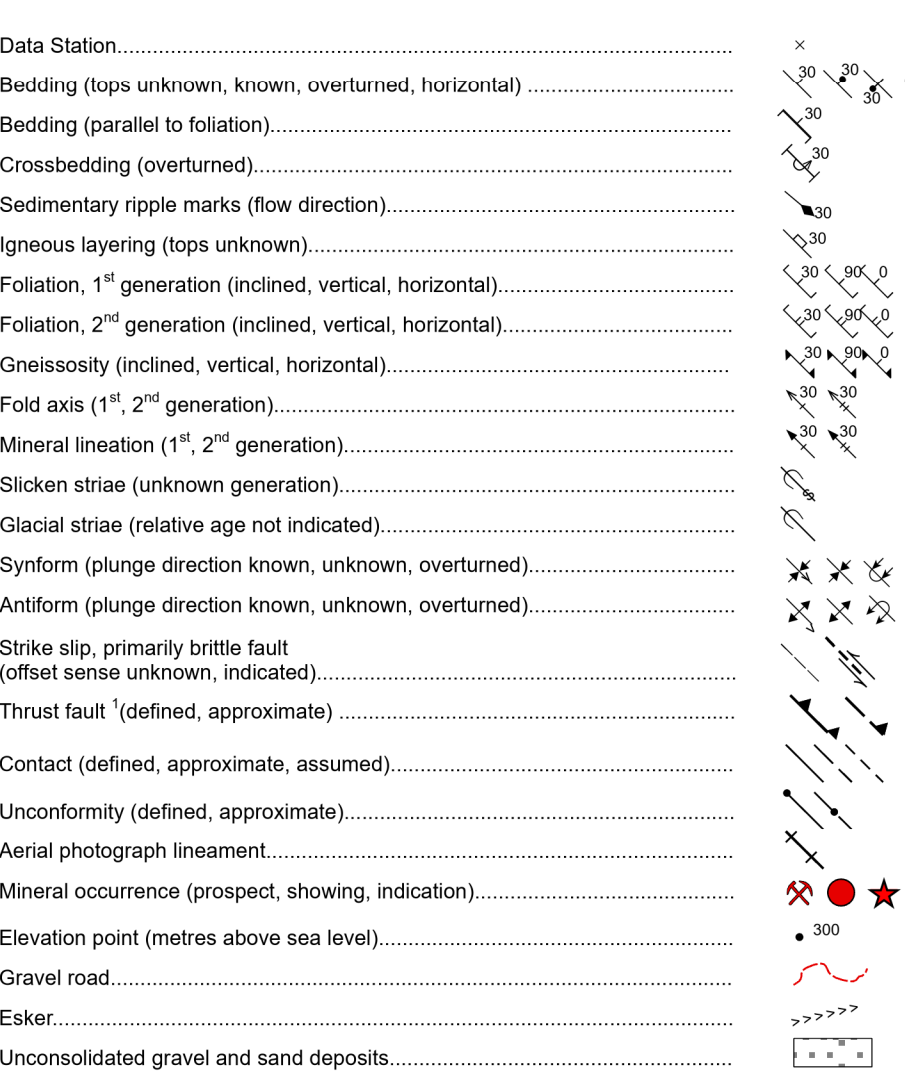
A_{uq} Seal Lake Intrusive Suite, includes foliated to gneissic granite, quartz monzonite, granodiorite, quartz diorite and diorite.

Southern Nain and Makkovik provinces

A_{uq} Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

Note: Legend is common to all maps (Map 2023-14 to Map 2023-33), but all units do not appear on every map.

SYMBOLS



* Thrust faults based on the presence of ductile features such as mylonitic bands, rotated phenocrysts and asymmetric pressure shadows and, in part, on aeromagnetic signatures. Direction of thrust sheets indicate the dip of thrust fault.

Mineral Occurrence

Cu Copper
Ag Silver
U Uranium (radioactive)
Th Thorium
Nb Niobium
Zr Zirconium

Data and location of mineral occurrences are referenced after Mineral Occurrence Database System 2020.