

NTS 13K/12

Areas of the map symbolized as 'Unconsolidated sand and gravel deposits' display underlying rock types) to portray the interpreted contrast of units, based on structural, aeromagnetic and topographic signatures. Rock types other than those shown may be present in the area.

All data obtained collected by the authors are plotted using GPS-based coordinates. This map also incorporates pre-GPS field data collected by Fahay (1969), Burner and Mann (1961), Knight (1972) and Enns (1980). The accuracy of field data stations that were re-sited from maps or field notes of these sources is considered on the original plotting accuracy. Mineral occurrences shown on the map are from the Newfoundland and Labrador Geological Survey's Mineral Occurrence Database System (MOCDS) (<http://gis.gesun.gov.nl.ca/mocds/mocds.asp>), and from unpublished assessment reports. The locations of most of these are dependent on initial plotting accuracy. MOCDS occurrences that were revisited by the authors and new mineral indications were located with GPS-based geographic coordinates.

The map is augmented by follow-up examination of slatted rock units, 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 features and observations are interpreted using data. Individual sections typically consist of several different rock types. The air polygon depicted is based on what was interpreted to be the dominant rock type present. All rock types recorded from an individual outcrop may be determined by consulting the 'field description' entry for that locality given in the digital database. Discrepancies in rock names applied to field outcrops versus those interpreted from slatted data or this sections have not been recorded in the digital database. Differences may be due to more refined identifications or the sample and/or the section may not be representative of the source material.

Field work in 2010 by T. van Nieuwland

Recommended citation
van Nieuwland, T.
2023. Geology of NTS 13K/12 map area, central Labrador. Scale 1:50 000. Geological Survey, Department of Industry, Energy and Technology, Government of Newfoundland and Labrador. Map 2023-21, Open File 13K/12/0358.

Geology compiled by T. van Nieuwland
Geological cartography by S. McNamee, K. Morgan and T. Sears

The digital topographic database map NTS 13K/12 used here is available from the Surveyor General Branch, Natural Resources, Canada. Magnetic declination at centre of the map is 20°37' West (March 21, 2023). Universal Transverse Mercator (UTM), Grid Zone 20, North American Datum (NAD) 83.

Elevations are in metres above sea level. Contour interval is 20 m.
Open File 13K/12/0358

Correspondence
T. van Nieuwland: Regional Geology, Geological Survey, Department of Industry, Energy and Technology, Government of Newfoundland and Labrador, P.O. Box 8700, St. John's, NL, A1B 4X8, Canada.
Email: tvannieuwland@gov.nl.ca

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 designators and the legends (see van Nieuwland and MacFarlane, 2011).

Map 2023-21 is eight of twenty (20) maps on the geology of the Seal Lake Group, including adjacent rocks of older tectonic provinces in central Labrador.

Department website: <https://gov.nl.ca/gov/geology>
Geological Survey website: <https://newfoundland.ca/mineres/geoscience>
Email: pub@gov.nl.ca

References
Burner, J.J. and Mann, E.L.
1961. Geology of the Seal Lake area, Labrador. Geological Society of America Bulletin, Volume 72, pages 1361-1382.

Enns, R.F.
1980. Geology and petrology of the Harp Lake Complex, central Labrador: An example of Eosian magmatism. Geological Survey of Canada, Bulletin 293, 138 pages.

Fahay, W.F.
1969. Snegmook Lake, coast of Labrador, Newfoundland. Geological Survey of Canada, 'A' Series Map 1079A.

Kilb, G.
2008. Compilation of colour-shaded relief images generated from airborne magnetic data flown by the Geological Survey of Canada from 1969 through 1972. Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, unpublished map, scale 1:250 000.

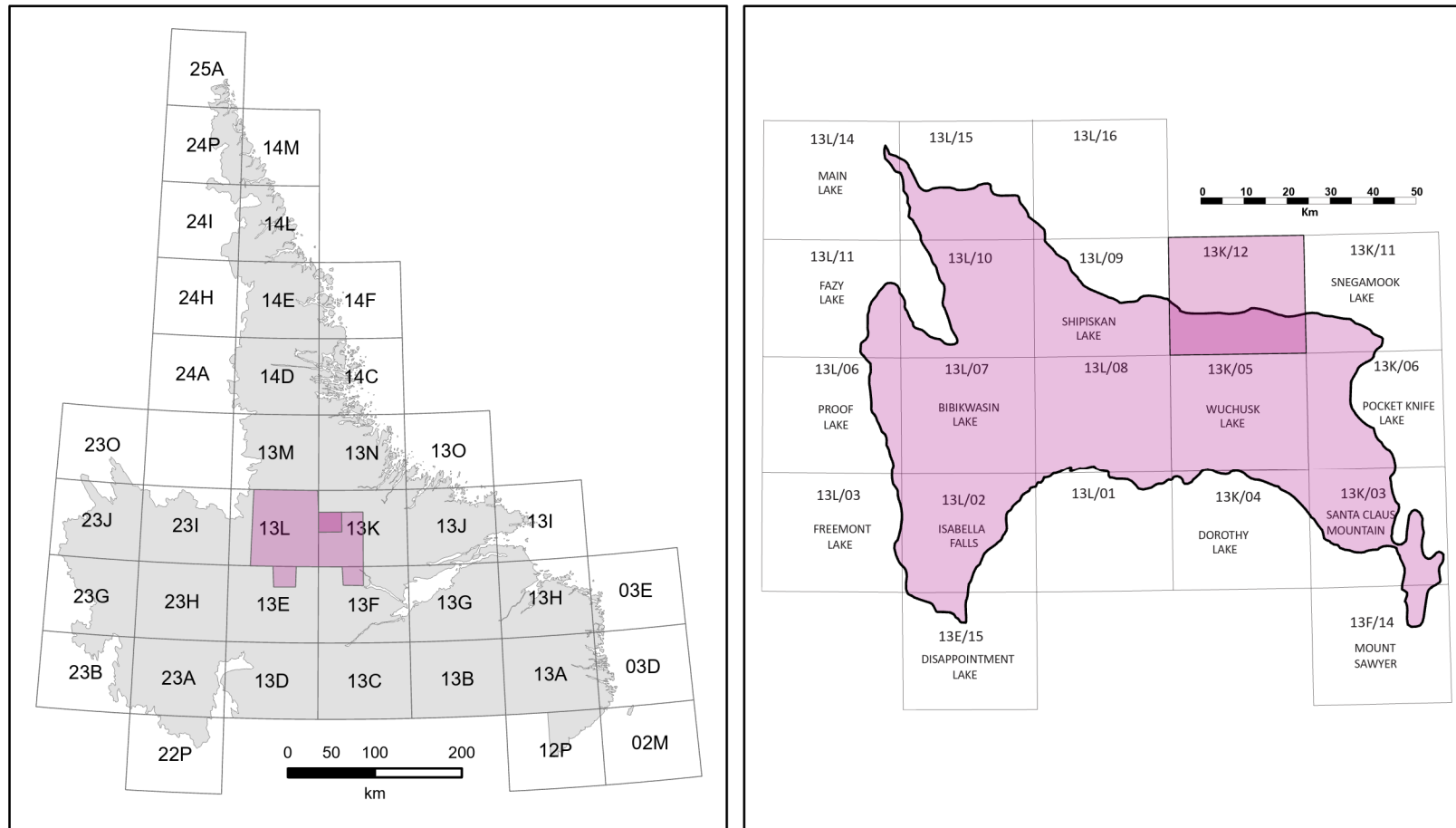
Knight, L.
1972. The geology of the Anson Lake area, north of Seal Lake, Labrador, Canada. Unpublished M.Sc. thesis, Memorial University, St. John's, Newfoundland, 210 pages.

van Nieuwland, T. and MacFarlane, A.
2011. Geology of the west-central Seal Lake Group, central Labrador (including parts of NTS map sheets 13K/6, 5 and 12 and 13L/1, 8, and 9). In Current Research, Government of Newfoundland and Labrador, Department of Natural Resources, Geological Survey, Report 11-1, pages 13-330.

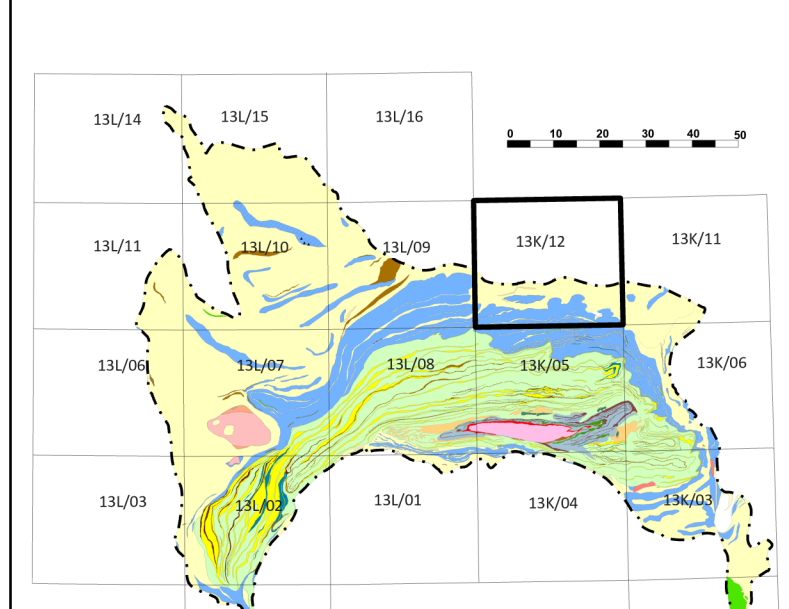
Note
Open file reports and maps issued by the Geological Survey Division of the Newfoundland and Labrador Department of Industry, Energy and Technology are made available for public use without being formally edited or peer reviewed. They are based upon preliminary data and evaluation. The purchaser agrees not to provide a digital reproduction or copy of this product to a third party. Derivative products should acknowledge the source of the data.

Disclaimer
The Geological Survey, a division of the Newfoundland and Labrador Department of Industry, Energy and Technology, the 'authors and publishers', warrants the title right to the original data and information based on a very prudent standard. The authors and publishers assume no legal liability or responsibility for any alterations, changes or misrepresentations made by third parties with respect to these products or original data. Furthermore, the Geological Survey assumes no liability with respect to digital reproductions or copies of original products or for derivative products made by third parties. Please consult with the Geological Survey to ensure originality and correctness of data and/or products.

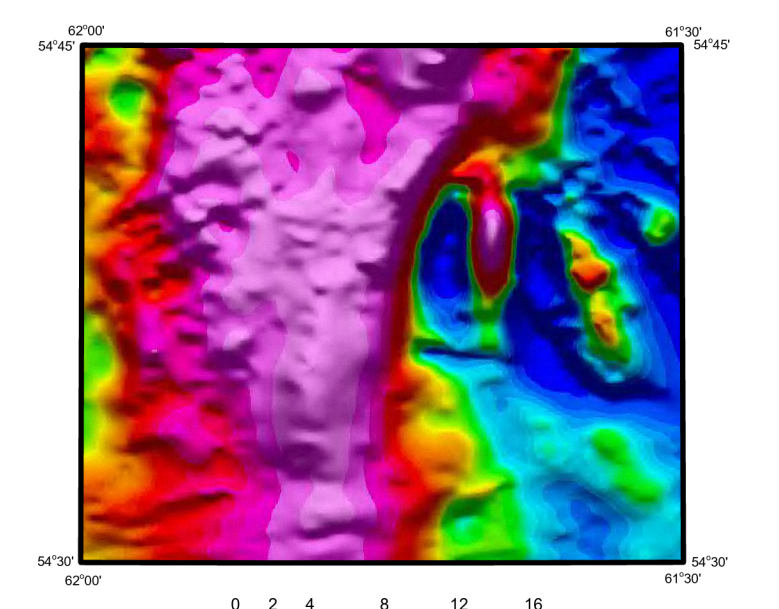
INDEX MAPS



REGIONAL GEOLOGY MAP

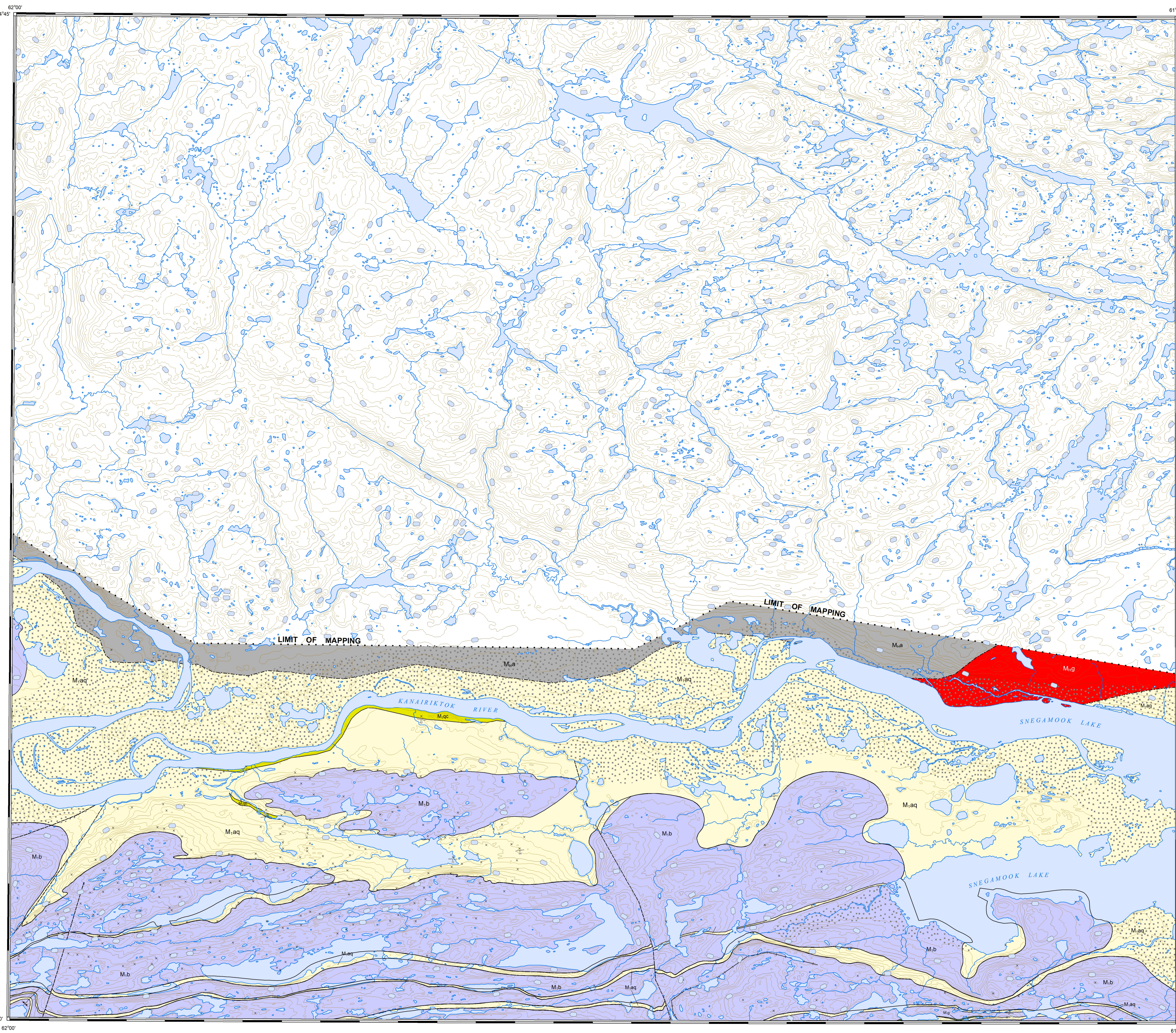


NTS 13K/12 AEROMAGNETIC MAP

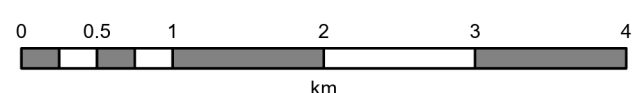


NTS 13K/12 Aeromagnetic map, G. Kilb (2008, unpublished map). Geological Survey of Newfoundland and Labrador, using Geological Survey of Canada data.

Red end of spectrum indicate magnetic highs. Blue end of spectrum indicate magnetic lows.



Map 2023-21
GEOLOGY OF THE
NTS 13K/12 MAP AREA
Central Labrador
OPEN FILE 13K/12/0358
Scale 1:50 000



LEGEND

MIDDLE MESOPROTEROZOIC

Seal Lake Group (1270-1225 Ma)

Upper Red Quartzite Formation

M.aq Red- to pink-weathering, fine- to medium-grained, well-sorted quartz arenite, arenite, and felsophic 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.a Fine-grained, maroon-weathering slate and siltstone. Occur as cm- to 10s of m-thick layers and lenses interbedded with quartzite and siltstone near the base of the formation.

Adeline Island Formation

M.aq Maroon- to red-weathering, fine-grained shale, locally grades to slate.

M.aq Grey- to green-weathering, fine-grained slate.

M.aq Grey- to green-weathering, fine-grained slate, locally gradational to phyllite.

M.aq Red- to purple-weathering slate.

M.aq Grey-weathering, fine-grained sandy shale to slate.

M.aq Maroon- to purple-weathering, fine-grained slate.

M.aq Grey- to green-weathering, fine-grained slate, gradational to phyllite. This unit exhibits a distinctive 'valve-grip' shew' and hosts most of the copper sulfide mineralization within the Seal Lake Group.

M.aq Maroon- to purple-weathering, fine-grained slate.

Lower Member

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

Upper Member

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

M.aq Maroon- to red-weathering, fine-grained slate. Locally contains thin, fine-grained interbedded siltstone and quartz arenite.

M.aq Grey- to green-weathering, fine-grained phyllite to slate.

M.aq Grey- to brown-weathering, fine-grained breccias with fine stromatolite layers. Also occurs as thin lenses and layers interbedded with other sedimentary rock units.

M.aq Pink- to grey-weathering, fine- to medium-grained variably recrystallized quartz arenite to arenite.

M.aq Green- to brown-weathering, fine- to medium-grained, moderate- to strongly foliated, massive and amygdaloidal basalt flows.

M.aq Green- to grey-weathering, fine- to medium-grained ophitic to equigranular gabbro. Occurs as tabular-shaped sills and small, irregular intrusions.

Whiskey Lake Formation

M.aq Brown- to red-weathering, thin-bedded to laminated slate, arenite, siltstone and subordinate calcareous rocks and chert.

M.aq Maroon-weathering, thin-bedded to laminated slate. Occurs predominantly as thin lenses and layers.

Wachuk Lake Formation

M.aq Predominantly pink- to 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 lenses of siltstone, mudstone and calcareous rocks.

M.aq Black- to tan-weathering, fine-grained, thin-bedded to laminated siltstone. Also contains thin quartz arenite, arenite, chert, and calcareous layers.

M.aq Fine-grained, red- to brown-weathering mudstone, grading to shale and slate and having a weak to strongly developed S- and/or cleavage.

M.aq Black- to grey-weathering, fine-grained shale interbedded with siltstone and quartz arenite units. Exhibits localized and intermittent developed radiolite signatures (recorded by north-south on outcrop surface).

M.aq Brown- to grey-weathering, fine- to medium-grained, well-bedded to massive limestone. Occurs as m to 10s of m-scale layers and beds interbedded with other sedimentary rock units.

M.aq Green-grey, brown- to red-weathering, fine- to medium-grained glauconitic-cherty-siltstone-magnetite basalt. Textures range from homogeneous, massive, amygdaloidal, vesicular and porphyritic. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro.

M.aq Brown- to grey-weathering volcanoclastic tuff containing 5-15% felsic clasts. Occurs as less than 25 m-thick layers intercalated with fine-grained basaltic shale. Locally records developed radiolite signatures.

M.aq Green- to grey-weathering, fine- to medium-grained, moderate- to strongly foliated ophitic gabbro. Rocks are deposited as tabular shaped sills. Contains local wackebolite and leucocrone zones. Some sills may consist of composite intrusions.

Majors and Bessie Lake formations (stratigraphically equivalent formations)

M.aq Brown- to maroon-weathering, fine-grained slate. Locally interbedded with quartz arenite, arenite and siltstone layers.

M.aq 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.aq White, pink, red-green- 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.aq White, pink- to red- to grey-weathering, medium- to coarse-grained granule- pebble- and cobble-bearing arenaceous conglomerate.

M.aq 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-senecite-muscovite-magnetite.

M.aq Green-grey, brown- to red-weathering, fine- to medium-grained glauconitic-cherty-siltstone-magnetite basalt. May contain intercalated layers of volcanic tuffaceous rocks, sedimentary rocks and gabbro (as thin sills).

M.aq Green-grey- to brown-weathering, fine- to medium-grained, ophiolite-bearing volcanoclastic rocks. Locally exhibits a diffuse layering that may include volcaniclastic breccias and intrusive breccia. May also include fine-grained, homogeneous basalt flows and sedimentary rocks.

M.aq 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, volcanoclastic rocks, gabbro and sedimentary rocks in basaltic and gabbroic matrices.

M.aq Green- to brown-weathering, fine- to medium-grained basalt flow containing local pillow structures.

M.aq 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.aq Green- to grey-weathering, fine- to medium-grained, massive, ophiolite-bearing volcanoclastic rocks. Occurs as rare, less than 100 m thick sills intruding quartz arenite and arenite and basalt flows.

Harp Dykes (1271 ± 1 Ma)

M.aq Northeast-sloping, oblique diabase dykes intrude orthogneiss and related rocks of the Harp Lake Intrusive Suite.

Letitia Lake Group (ca. 1327 Ma)

M.aq 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.aq 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's Seal Lake Group.

M.aq White, buff- to grey-weathering, weakly foliated to gneiss, medium-grained, recrystallized rhyolite porphyry to trachyte and syenitic tuffs. Locally intercalated with unmetamorphosed felsic volcanic rocks.

Red Wine Complex (ca. 1337 Ma)

M.aq Quartz-saturated series.

M.aq Medium-grained, moderate to strongly foliated mafic to intermediate peralkaline granitoid intrusions. Includes granites, quartz syenite, alkali-feldspar granites and alkali-feldspar quartz syenite.

M.aq Quartz-undersaturated series.

M.aq Mafic.

M.aq Alkali syenite and metamorphic equivalents.

EARLY MESOPROTEROZOIC

Harp Lake Intrusive Suite (1490 Ma)

M.aq Grey- to grey-white-weathering, medium- to coarse-grained, massive to layered, orthopyroxene-megacrystic-massive orthogneiss, megacrystic and megacrystic. The predominant rock type mapped proximal to the unconformity with Seal Lake Group rocks is massive orthogneiss, with zones of weakly foliated.

M.aq Light brown- to red-weathering, medium- to coarse-grained, massive biotite-hornblende granites, 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.aq 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.aq Grey- to green-grey-weathering, medium- to coarse-grained, massive hornblende-biotite quartz diorite to diorite.

P.aq Unassigned intrusions.

P.aq Unassigned intrusions.

P.aq Unassigned intrusions.

P.aq Unassigned intrusions.

P.aq Unassigned intrusions.

P.aq Unassigned intrusions.

Bruce River Group (ca. 1650 Ma)

P.aq Silica Lake Formation.

P.aq Rhyolite, andesite, trachyandesite and basalt. Occurs as massive to brecciated flows, agglomerate and locally bedded tuffaceous rocks.

P.aq Brown Lake Formation.

P.aq Volcanoclastic sandstone, tuff, minor conglomerate and arkose.

MIDDLE PALEOPROTEROZOIC

Moran Lake Group (ca. 1800 Ma)

P.aq Warren Creek Formation.

P.aq Grey- to black-weathering mudstone, slate, siltstone and minor limestone, dolomite and chert.

ARCHAEO-PALEOPROTEROZOIC

Southeastern Churchill Province (reworked during Grenvillian Orogeny)

A.aq Unfoliated foliated granite and orthogneiss. May be correlative with rocks of the Seal Lake Intrusive Suite.

A.aq Fine- to medium-grained, weak to moderately foliated, biotite-hornblende granite to quartz monzonite.

A.aq Medium-grained, weakly foliated, hornblende-biotite quartz diorite to diorite. May be correlative with rocks of the Seal Lake Intrusive Suite.

A.aq Medium-grained, weakly to strongly foliated hornblende-biotite monzonite. May be correlative with rocks of the Seal Lake Intrusive Suite.

A.aq Seal Lake Intrusive Suite, includes foliated to gneissic granite, quartz monzonite, granodiorite, quartz diorite and diorite.

Southern Nain and Makkovik provinces

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.

A.aq Granodiorite, tonalite orthogneiss and abundant mafic intrusions.