

Descriptive Notes

The area is characterized by widespread streamlined till landforms indicating ice flow towards the northwest to north-northwest, but locally in the eastern half, an older northward flow is preserved and crosscut by the younger northward flow. Small areas of hummocky till occur in the map area and are associated with moraine ridges developed both parallel to and perpendicular to ice flow. Widespread deposits of ridged till in the central and western regions consist of minor moraine ridges and ribbed moraine, oriented predominantly perpendicular to ice flow. A few of these moraine ridges are dummockied. Some northward trending glacioluvial outwash plain and terraced deposits are closely associated with eskers and other ice-contact sediments. First described by J.G. Fyles (1964, Operation Baker, unpublished notes), northward trending narrow, subglacial meltwater corridors consisting of both narrow-ridged and fat-topped eskers, kames, washed till, boulder lags and scoured bedrock cross the study area. There is evidence of short-lived, isolated ice-dammed glacial lakes of very limited extent with ice-contact deltas and rare beach ridges formed at 100, 170 and 200 m elevation in the western regions. The largest glacial lake formed in the Back River valley (Lower Gary Lake) but there is an absence of significant glaciolacustrine sediments and raised beaches, other than a few metres above current lake level, suggesting much of the terrain remained covered by stagnant ice. Glaciolacustrine deltas, beaches and associated sediments in the north extend southward up to 150-160 m elevation in the eastern half of the map area, where these sediments overlie some till at lower elevations. Active sand dunes and blowouts are found where modern river channels cut into glacioluvial sediments, as well as along some lake shorelines where glacioluvial sediments are exposed.

References

NOTE: Additional field ice flow measurements and station/sample data available from:

McMartin, I., Berman, R.G., Normandeau, P.X., and Percival, J.A., 2013. Till composition of a transect across the Thelon tectonic zone, Queen Maud block, and adjacent Rae craton: results from the Geo-Mapping Frontiers' Chantley project, Geological Survey of Canada, Open File 7418, doi:10.4095/292801

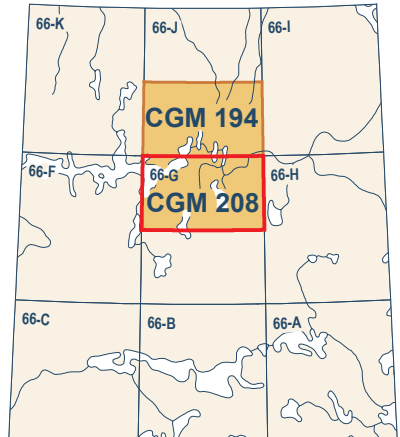
Wright, G.M., 1967. Surficial geology, Southeastern Barren Grounds, District of Keewatin and District of Mackenzie; Geological Survey of Canada, Map 1217A, scale 1:1 000 000, doi:10.4095/108855

Abstract

Preliminary surficial geology studies, based on air photo interpretation and limited legacy and recent field data, were undertaken in the north half of the Deep Rose Lake map area to provide an understanding of the distribution and nature of surficial materials, and regional glacial history.

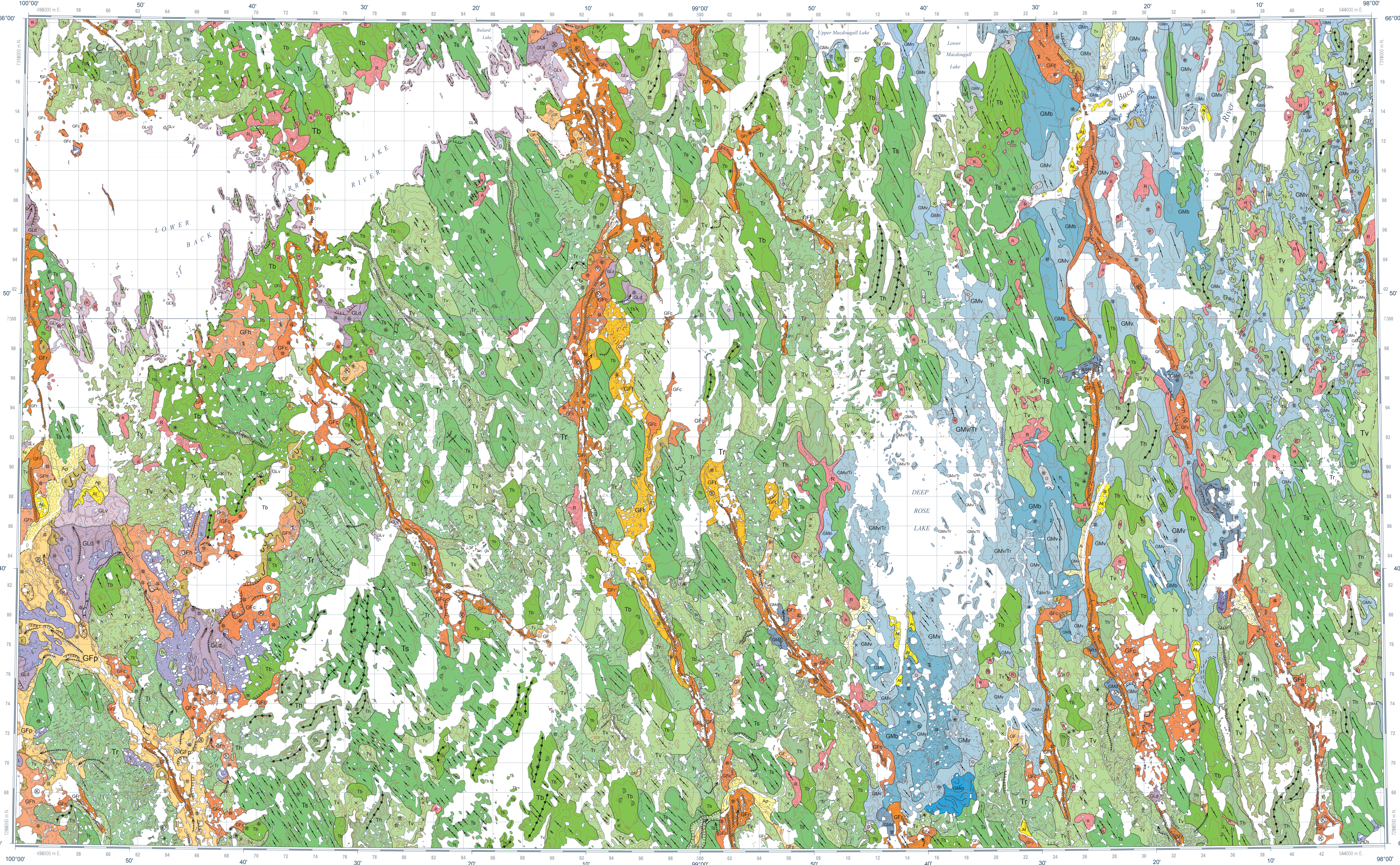
Résumé

Des études préliminaires de la géologie de surface basées sur l'analyse de photos aériennes et un ensemble limité de données patrimoniales et récentes collectées sur le terrain ont été réalisées dans la moitié nord de la région de la carte du lac Deep Rose pour comprendre la distribution et la nature des sédiments de surface et l'histoire glaciaire de la région.



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QUATERNARY

HOLOCENE

O	Organic deposits, undifferentiated: bog, swamp, and shallow lake deposits; variable thickness; generally overlies glaciolacustrine or glacioluvial sediments.
E	Eolian sediments, undifferentiated: sand; variable thickness; may include active and/or buried parabolic dunes with low cuts; generally associated with glacioluvial sediments; orientation of dunes suggests two dominant wind directions (north-northwestward and south-southwestward).
Ap	Alluvial floodplain sediments: sand and gravel; variable thickness; occur within the seasonal floodplain of rivers and systems entering lakes.
At	Alluvial terraced sediments: sand and gravel; variable thickness; terraced surface commonly gullied and channelled; occurs above the floodplain as a result of down cutting by the river; may include active dunes.
A	Alluvial sediments, undifferentiated: sand and gravel; variable thickness; may include floodplains, braided and meandering streams and terraces; commonly overlain by organics in low lying areas.
Ld	Lacustrine deltaic sediments: sand and gravel; variable thickness; surface flat or channelled; deposited in modern lakes by rivers.
Ln	Lacustrine littoral and nearshore sediments: sand and gravel; variable thickness; deposited or exposed near modern lake margins.
L	Lacustrine sediments, undifferentiated: sand; variable thickness; modern lakes developed on glacioluvial sediments; represent oriented lakes south of Lower Gary Lake whose long axis is generally parallel to some sand dunes recording winds from the south-southwest.

LAST GLACIATION (WISCONSIN)

PROGLACIAL AND GLACIAL ENVIRONMENT

GMd	Glaciolacustrine deltaic sediments: sand and gravel; variable thickness; surface flat, channelled or kettled; may exhibit raised beaches; deposited at or near the sea/ice interface by meltwater but may include early postglacial deltas; may contain ground ice.
GMn	Glaciolacustrine nearshore sediments: silt and sand; variable thickness; commonly overlain by organics in low lying areas; deposited in shallow glacial seas; may exhibit patterned ground.
GMv	Glaciolacustrine veneer: silt and sand; less than 2 m thick; generally overlies till.
GMb	Glaciolacustrine blanket: clay, silt, and sand; greater than 2 m thick; deposited in glacial environment and during early marine regression.
GMm	Glaciolacustrine moraine complex: silt, sand, and diamict; variable thickness; moraine sediments deposited at the ice-sea interface at or near marine limit.
GLd	Glaciolacustrine deltaic sediments: sand and gravel; variable thickness; surface flat, channelled, or kettled; deposited in glacially dammed lakes by meltwater; may contain ground ice.
GLV	Glaciolacustrine veneer: silt and sand; less than 2 m thick; represent sediments deposited in, or reworked by, isolated glacial lakes; restricted to shoreline environments of modern lakes.
GFp	Glacioluvial outwash plain sediments: sand, gravel, and boulders; greater than 2 m thick; outwash plains deposited by meltwater streams at or beyond the ice front; dissected by abandoned braided channels; may contain ground ice.
GFt	Glacioluvial terraced sediments: sand, gravel, and boulders; greater than 2 m thick; deposited by meltwater in various environments; terraces elevated above modern stream and river courses; may contain ground ice.
GFc	Glacioluvial ice-contact sediments: sand, gravel, and boulders; greater than 2 m thick; fat-topped, ridged, or kettled; deposited by meltwater streams in contact with glacier ice; may contain ground ice.
GFh	Glacioluvial hummocky sediments: sand, gravel, and boulders; variable thickness; forming irregular ridges to planar surfaces; deposited by meltwater streams in contact with inactive glacier ice; may contain thermokarst features and ground ice, and host oriented lakes.
GFr	Esker sediments: sand, gravel, and boulders; variable thickness; forming eskers and ridges several kilometres long; deposited by meltwater streams flowing within ice tunnels; may contain ground ice.
GF	Glacioluvial sediments, undifferentiated: sand, gravel, and boulders; variable thickness; deposited by meltwater in various environments; may contain ground ice.

GLACIAL ENVIRONMENT

Tv	Till veneer: diamict; less than 2 m thick; lodgement and ablation till that mimics underlying bedrock; unit may include small isolated patches of bedrock, glacioluvial deposits, till blanket and minor transverse ridges; may be reworked by meltwater and glaciolacustrine processes.
Tb	Till blanket: diamict; greater than 2 m thick; lodgement or basal meltout till; surface commonly gently rolling and may include flutings and minor moraines; fluted locally; masks underlying bedrock topography; may contain smaller areas of till veneer.
Th	Hummocky till: diamict; variable thickness but greater than 2 m; forming hillocks or ridges (moraines) associated with stagnant ice or retreat phases; moraine ridges may be dummockied; may include small patches of glacioluvial outwash and ice-wedge polygons.
Tr	Ridged till: diamict; variable thickness; contains small transverse ridges (ribbed moraine) generally perpendicular to ice flow; unit may include small isolated patches of scoured bedrock, glacioluvial deposits, till hummocks, and flutings.
Ts	Streamlined till: diamict; variable thickness but greater than 2 m; may be extensively fluted and include drumminized moraines; individual flutings (drumminoids, drumlins, and crag-and-tails) seldom exceed 5 km in length.

PRE-QUATERNARY

R	Bedrock, undifferentiated: may include patches of till veneer; glacioluvial and glaciolacustrine sediments, and washed scoured lag.
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A stratigraphic relationship is shown with a maximum of two map unit designators separated by a slash (/) (e.g. GMv/Tr designates glaciolacustrine veneer overlying ridged till).

Legend:

- Lag deposits, washed, scoured
- Large kettle
- Geological contact, defined
- Dune crest, sense known
- Terrace scarp
- Beach crest, trimline
- Minor meltwater channel, sense unknown
- Minor meltwater channel, sense known
- Major meltwater channel, sense unknown
- Minor moraine ridge, ribbed moraine, unspecified
- Major moraine ridge
- Esker, sense known
- Drumminoid
- Crossed drumminoids (1 = oldest, 2 = youngest)
- Drumlin
- Crag-and-tail
- Thermokarst
- Patterned ground (ice wedge polygons)
- Solifluction lobes
- Kettle lake
- Kame
- Striation, sense unknown
- Striation, sense known
- Crossed striations (1 = oldest, 2 = youngest)
- Small outcrop

Recommended citation
St-Onge, D.A. and Kerr, D.E., 2015. Reconnaissance surficial geology, Deep Rose Lake, Nunavut, NTS 66-G north; Geological Survey of Canada, Canadian Geoscience Map 208 (preliminary), scale 1:125 000, doi:10.4095/296667

Preliminary publications in this series have not been scientifically edited.



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Geology based on aerial photograph interpretation by D.A. St-Onge, 2014, with revisions and compilation by D.E. Kerr, 2014.
Geology conforms to Surficial Data Model v. 2.0
Geomatics and cartography by L. Landon-Roy

Initiative of the Geological Survey of Canada, conducted under the auspices of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM-2) program
Map projection Universal Transverse Mercator, zone 14, North American Datum 1983
Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area.
Magnetic declination 2015, 0°31'E, decreasing 6.1' annually.
Readings vary from 1°31'E in the NW corner to 0°49'W in the SE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Glacially polished and fluted bedrock with till veneer in depressions. Photograph by P. Normandeau, 2014-215

The Geological Survey of Canada welcomes corrections or additional information from users.
Data may include additional observations not portrayed on this map. See documentation accompanying the data.

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