References and additional ice flow data:

Cocking, R.B., Deblonde, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Hurtley, D.H., Inglis, E., Lavoilette, A., Parent, M., Plouffe, A., Robertson, L., St-Onge, D.A., and Weatherston, A., 2015: Surficial Data Model, version 2.1.0: Revisions to the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 7741, 276 p. doi:10.4095/296588

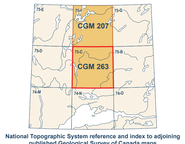
Mulligan, R. and Taylor, F.C. 1969: Geology, Hill Island Lake, District of Mackenzie; Geological Survey of Canada, Map 1203A, scale 1:253 440. doi:10.4095/109117

Abstract

Reconnaissance mapping, through air photograph interpretation and limited legacy field data in the Hill Island Lake map area, provides a basic understanding of surficial sediments and glacial history. Bedrock is well exposed throughout the map area but more extensive in the northern half. Till blanket, veneer and glaciofluvial outwash become increasingly more abundant towards the southern third of the map area. Drumlinized till, crag-and-tails, and striations record ice advance to the southwest. Small isolated moraine ridges may reflect deglacial stagnant ice. Glaciofluvial corridors of eskers and scoured bedrock, record a southwestward meltwater flow during deglaciation. Some corridors are topographically controlled. In the Hill Island and Taylor Lake basins, glaciolacustrine deltas are found at 340 m. Pockets of glaciolacustrine sediments occur along the Thoa, Nolan, Abita river basins, and in the Oswald, Delight, Kidder and other smaller lake basins. These are interpreted to be short lived, ice-dammed glacial lakes. Postglacial dune ridges up to 1–2 km long trend NW-SE.

Résumé

Une cartographie de reconnaissance, réalisée par l'interprétation de photos aériennes et l'interprétation d'une quantité limitée d'anciennes données de terrain pour la région cartographique de Hill Island Lake, nous fournit une compréhension sommaire des sédiments superficiels et de l'histoire glaciaire. Le substratum rocheux est bien exposé dans l'ensemble de la région cartographique, mais plus particulièrement dans la moitié nord. Une nappe ou un placage de till et des dépôts d'épandage fluvioglaciaires gagnent en importance dans le tiers sud de la région. Du till à drumlins, des structures en crag-and-tail et des stries rendent compte d'une avancée glaciaire vers le sud-ouest. De petites crêtes isolées de moraine pourraient témoigner de l'existence de glace stagnante à la déglaciation. Des corridors fluvioglaciaires révélés par la présence d'eskers et d'un substratum rocheux affouillé rendent compte d'un écoulement des eaux de fonte vers le sud-ouest à la déglaciation. Certains de ces corridors sont régis par la topographie. Dans les bassins des lacs Hill Island et Taylor, on observe des deltas glaciolacustres à une altitude de 340 m. Des amas de sédiments glaciolacustres sont présents le long des bassins des rivières Thoa, Nolan, Abita ainsi que dans les bassins des lacs Oswald, Delight et Kidder et de lacs plus petits. On croit qu'il s'agirait de lacs de barrage glaciaire de courte durée. Des dunes postglaciaires de 1–2 km de longueur s'étendent suivant une orientation nord-ouest–sud-est.



National Topographic System reference and index to adjoining published Geological Survey of Canada maps

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Natural Resources Canada / Ressources naturelles du Canada

CANADIAN GEOSCIENCE MAP 263

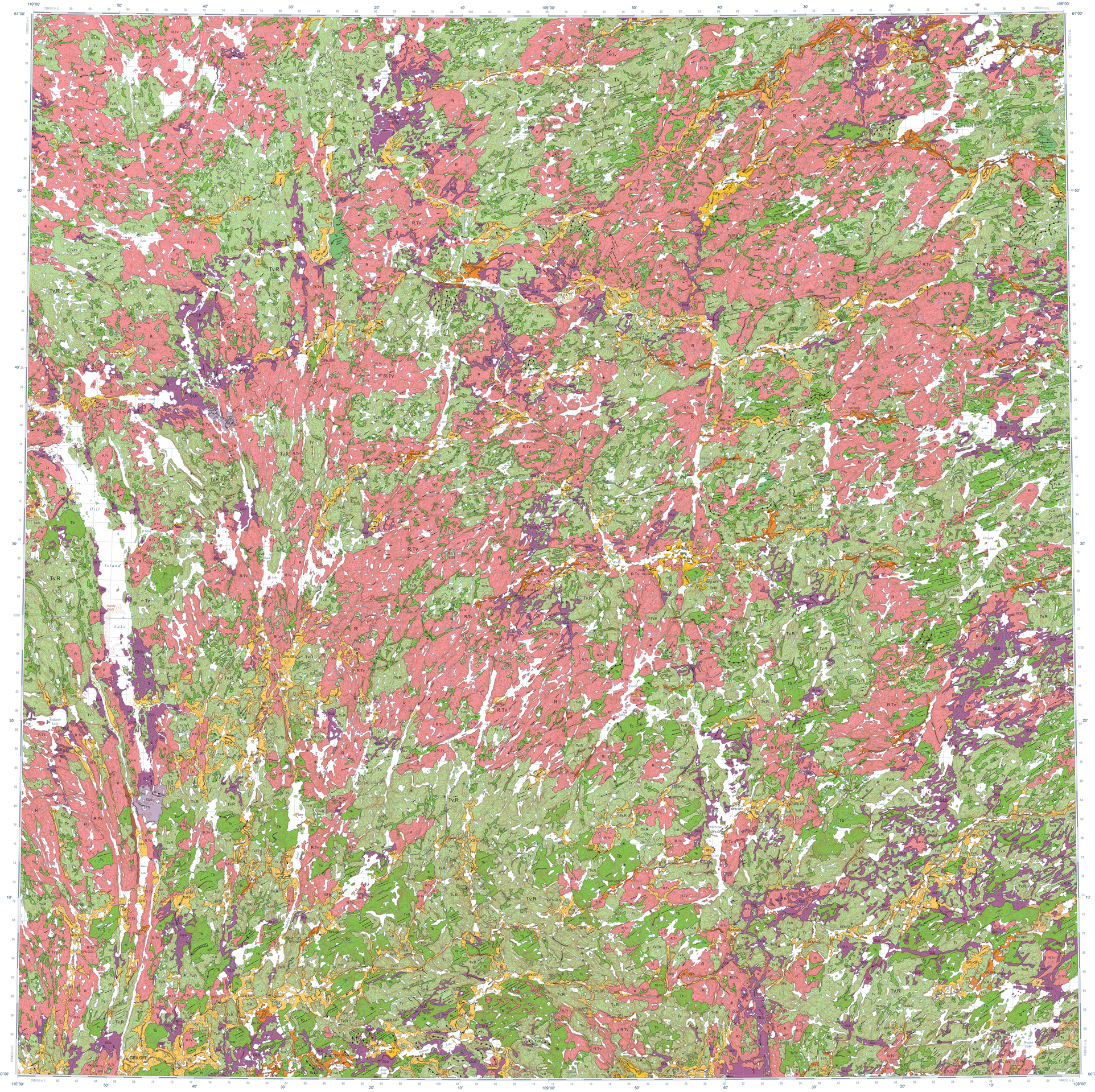
RECONNAISSANCE SURFICIAL GEOLOGY

HILL ISLAND LAKE

Northwest Territories

NTS 75-C

1:125 000



QUATERNARY

HOLOCENE

NONGLACIAL ENVIRONMENT

E	**Eolian sediments, undifferentiated:** fine to medium sand; variable thickness; may contain active and stabilized dunes and blowouts; derived predominantly from glaciofluvial and glaciolacustrine sediments.
Ca	**Colluvial apron:** diamicton, may include sand, gravel and angular clasts; variable thickness; formed predominantly from downslope movement of sediments; may include rare fans.
A	**Alluvial sediments, undifferentiated:** silt to gravel; 1 m to 3 m or more thick; deposited by modern streams and rivers; may include floodplains and alluvial fans in braided and meandering rivers.
L	**Lacustrine sediments, undifferentiated:** silt to gravel; variable thickness; exposed in modern lakes along shorelines and as islands.

PROGLACIAL AND GLACIAL ENVIRONMENT

GLd	**Glaciolacustrine deltaic sediments:** sand, gravel, and cobbles; variable thickness; associated with temporary ice-dammed lakes in valleys of the Tsizin River and Tatse, Hill Island, and Kidder lakes; may exhibit kettle lakes and braided paleochannels.
GLb	**Glaciolacustrine blanket:** fine grained sediments to sand and gravel; greater than 2 m thick; associated with temporary glacier-dammed lakes of variable size, including the Thoa River valley; may include deep water sediments and transitional subaerial outwash fans, deltas and subaqueous outwash; may be overlain by organic deposits up to 2–3 m thick in poorly drained areas, and contain modern alluvial sediments in valley bottoms.
GFp	**Glaciofluvial outwash plain sediments:** sand and gravel; variable thickness; generally flat-topped with braided paleochannels; occur as plains, may include terraces, deltas, ice-contact sediments.
GFt	**Glaciofluvial terraced sediments:** sand and gravel; variable thickness; deposited by glacial meltwater; occur in various depositional environments as terraces; surface may exhibit braided paleochannels.
GFr	**Esker sediments:** sand, gravel and cobbles; variable thickness; forms ridges with both sharp-crested and flat-topped segments of variable length; deposited at or behind the ice margin; formed subglacially or in subaerially exposed ice-walled channels; may be associated with zones of scoured rock and till veneer, boulder lags, and isolated kame deposits.
GFb	**Glaciofluvial blanket:** sand and gravel; greater than 2 m thick; variable surface expression with no specific morphology; may include terraced and kettled outwash, ice-contact sediments, eskers; may be reworked by modern rivers and streams.
GF	**Glaciofluvial sediments, undifferentiated:** sand and gravel; variable thickness; may include outwash plains, ice-contact sediments, eskers, kames and irregular ridges or hummocks.

GLACIAL ENVIRONMENT

Ts	**Streamlined till:** diamicton; greater than 2 m thick; occurs as drumlinoid fields with various streamlined landforms shown by symbols; may contain small areas of till veneer and bedrock.
Tv	**Till veneer:** diamicton; less than 2 m thick but may be thicker locally; occurs as a discontinuous layer where rock structure is generally visible, and as a lag on washed bedrock; may include outcrops, small isolated units of glaciolacustrine and glaciofluvial sediments, hummocky till, and till blanket; when overlain by reworked sediments symbol, veneer may include minor transverse/unoriented ridges within meltwater corridors.
Tb	**Till blanket:** diamicton; greater than 2 m thick; occurs as till plains mimicking bedrock topography and drumlinoid fields with various landforms shown by symbols; may contain small areas of till veneer, glaciofluvial sediments and bedrock; may be overlain by organics in depressions.

PRE-QUATERNARY

R	**Bedrock, undifferentiated:** may include patches of till and glaciofluvial sediments; may exhibit evidence of meltwater scour.

Reworked sediments

Complex units: Where the surficial cover forms a complex pattern and the map units are too small to be mapped individually, yet constitutes a significant aerial extent of the total polygon, a dot (") separates the first dominant map unit designator from the less abundant secondary unit (e.g. R Tv designates an area of bedrock with some areas of till veneer).

Stratigraphic relationship: where observed or can be confidently inferred, a map unit stratigraphic sequence is shown with a maximum of two map unit designators separated by a slash ("/") (e.g. Tv/Tb designates a till veneer overlying till blanket).

- Geological contact, defined
- Dune crest
- Terrace scarp
- Meltwater channel:
  - *Minor, paleoflow direction unknown*
  - *Minor, paleoflow direction known*
- Moraine ridge:
  - *Minor*
  - *Major*
- Esker:
  - *Paleoflow direction unknown*
  - *Paleoflow direction known*
- Drumlinoid ridge, 1 = older, 2 = youngest
- Drumlin
- Crag-and-tail
- Fluted bedrock, direction known
- Thermokarst depression
- Patterned ground
- Kame
- Striation, sense known
- Small outcrop

Recommended citation
Levson, V.M., Ferbey, T., and Kerr, D.E., 2016. Reconnaissance surficial geology, Hill Island Lake, Northwest Territories, NTS 75-C; Geological Survey of Canada, Canadian Geoscience Map 263 (preliminary), scale 1:125 000. doi:10.4095/298836

Preliminary Preliminary Preliminary Preliminary CANADIAN GEOSCIENCE MAP 263 Preliminary Preliminary Preliminary Preliminary

Geological Survey of Canada
Canadian Geoscience Maps

Canada

Authors: V.M. Levson, T. Ferbey, and D.E. Kerr

Geology by V.M. Levson, T. Ferbey, and D.E. Kerr, 2015

Geology conforms to Surficial Data Model v. 2.1

Geology based on aerial photograph interpretation by V.M. Levson and T. Ferbey, 2012, 2013, with revisions by D.E. Kerr, 2014, 2015. Striation data from Mulligan and Taylor, 1969.

Geomatics by L. Robertson

Cartography by D. Viner

Initiative of the Geological Survey of Canada as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program

Map projection Universal Transverse Mercator, zone 12. North American Datum 1983

Base map at the scale of 1:50 000 from Natural Resources Canada, with modifications.
Elevations above mean sea level are expressed in metres (NTS 75-C/1–12, 15, and 16) and feet (NTS 75-C/13 and 14)

CANADIAN GEOSCIENCE MAP 263
RECONNAISSANCE SURFICIAL GEOLOGY
HILL ISLAND LAKE
Northwest Territories
NTS 75-C
1:125 000

2 0 2 4 6 8 10 km

Mean magnetic declination 2016, 12°15'E, decreasing 14.6' annually. Readings vary from 12°08'E in the SE corner to 13°46'E in the NW corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Fluted till and bedrock recording southwestward ice flow, south of Vandyck Lake. NAPL air photograph A14004-31

The Geological Survey of Canada welcomes corrections or additional information from users.

Data may include additional observations not portrayed on this map. See map info document accompanying the downloaded data for more information about this publication.

This publication is available for free download through GEOSCAN (http://geoscan.nrcan.gc.ca/).

Preliminary publications in this series have not been scientifically edited.

CANADIAN GEOSCIENCE MAP 263
RECONNAISSANCE SURFICIAL GEOLOGY
HILL ISLAND LAKE
Northwest Territories
NTS 75-C