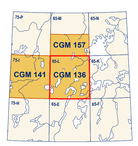
Abstract

Reconnaissance mapping, through aerial photograph interpretation and limited legacy field data in the Carey Lake map area, provides an understanding of surficial sediments and glacial history. The last major ice flow was predominantly westward, as indicated by crag-and-tails, drumlins, and other glacially fluted landforms occurring throughout the map area. Exposed granitic and gneissic bedrock, till veneer, and fluted till dominate the topographically lower region east of Mosquito, Mary, and Gravel Hill lakes. To the west of this series of lakes, hummocky till, till blanket, and large glaciofluvial corridors characterize the landscape. In the shallow basins of these same lakes, fine-grained glaciolacustrine sediments and raised beaches occur up to 320–330 m elevation, and are associated with glacial Lake Thelon. Other glaciolacustrine sediments, found around Carey Lake, as well as to the southwest and southeast, locally overlying areas of ridged till, may relate to an extension of glacial Lake Thelon, an isolated glacial lake, or possibly a phase of glacial Lake Kazan. Areas of organic deposits are presumably underlain by glaciolacustrine sediments, reflecting the uncertainty of glaciolacustrine sediment thickness and extent.

Résumé

La cartographie de reconnaissance, au moyen de l'interprétation de photos aériennes et d'un ensemble limité de données de terrain héritées de la région de la carte Carey Lake, permet d'améliorer les connaissances sur les sédiments superficiels et l'histoire glaciaire. La direction du dernier écoulement glaciaire majeur était principalement vers l'ouest, comme l'indiquent les crag-and-tails, les drumlins et les autres formes de relief glaciaire fuselées qui se trouvent dans la région de la carte. Les affleurements rocheux granitiques et gneissiques, le placage de till et le till fuselé dominent la région de faible relief à l'est des lacs Mosquito, Mary, et Gravel Hill. À l'ouest de cette série de lacs, du till bosselé, une nappe de till et de larges corridors fluvioglaciaires caractérisent le paysage. Dans les bassins peu profonds de ces lacs, des sédiments glaciolacustres à grain fin et des plages soulevées, présents jusqu'à 320 à 330 m d'altitude, sont associés au Lac glaciaire Thelon. D'autres sédiments glaciolacustres situés autour du lac Carey ainsi qu'au sud-ouest et au sud-est, qui recouvrent par endroits des zones de till formant des crêtes, pourraient être liés à un prolongement du Lac glaciaire Thelon, un lac glaciaire isolé, ou possiblement à une phase du Lac glaciaire Kazan. Des zones de dépôts organiques reposent sur des sédiments glaciolacustres, ce qui explique l'incertitude quant à l'épaisseur et à l'étendue des sédiments glaciolacustres.



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

Cover illustration
Wind erosion of sandy glaciofluvial sediments.
Photograph by D. Sharpe. 2013-061

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CANADIAN GEOSCIENCE MAP 136

RECONNAISSANCE SURFICIAL GEOLOGY

CAREY LAKE

Northwest Territories
NTS 65-L
1:125 000

Authors: D. Maynard and D.E. Kerr

Geology based on aerial photograph interpretation by D. Maynard, with minor additions and compilation by D.E. Kerr, 2012–2013.

Geomatics by QSP Geographics Inc., F. Fortin, and L. Robertson

Cartography by F. Fortin, L. Robertson, and D. Viner

Initiative of the Geological Survey of Canada, conducted under the auspices of the Geo-mapping Frontiers Project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) Program.

Map projection Universal Transverse Mercator, zone 13. North American Datum 1983

CANADIAN GEOSCIENCE MAP 136
RECONNAISSANCE SURFICIAL GEOLOGY
CAREY LAKE
Northwest Territories
NTS 65-L
1:125 000

2 0 2 4 6 8 10 km

Base map at the scale of 1:250 000 from Natural Resources Canada, with modifications.
Elevations in metres above mean sea level

Magnetic declination 2014, 7°15'E, decreasing 19' annually. Readings vary from 5°53'E in the NE corner to 8°30'E in the SW corner of the map.

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.

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

Preliminary publications in this series have not been scientifically edited.

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CANADIAN GEOSCIENCE MAP 136
RECONNAISSANCE SURFICIAL GEOLOGY
CAREY LAKE
Northwest Territories
NTS 65-L

QUATERNARY

HOLOCENE

NONGLACIAL ENVIRONMENT

- O — **Organic deposits, undifferentiated:** peat, muskeg, bogs, variable thickness.
- Ev — **Eolian veneer:** sand, <2 m thick, wind-blown sediments.
- Er — **Eolian dune sediments:** sand, variable thickness, wind-blown sediments forming dunes.
- Ca — **Colluvial apron deposits:** diamicton, variable thickness, talus derived from bedrock, may include some outcrops.
- Cf — **Colluvial fan deposits:** diamicton, variable thickness, derived from debris mass movement, forming fans.
- Cv — **Colluvial veneer:** diamicton, <2 m thick, derived from bedrock, may include some outcrops.
- Cb — **Colluvial blanket:** diamicton, >2 m thick, derived from bedrock, may include some outcrops.
- Af — **Alluvial fan sediments:** sand and gravel, variable thickness, fan surface expression.
- Ap — **Alluvial plain sediments:** sand and gravel, variable thickness, associated with small meandering streams and channels.
- At — **Alluvial terraced sediments:** sand and gravel, variable thickness, inactive sediments occurring as benches elevated above modern floodplains.
- Av — **Alluvial veneer:** sand and gravel, <2 m thick, inactive.
- Lr — **Lacustrine beach sediments:** sand and gravel, variable thickness, beach ridges associated with margins of present-day lakes.
- Ld — **Lacustrine deltaic sediments:** sand and gravel, variable thickness, delta active in present-day lakes.
- Ln — **Lacustrine nearshore sediments:** sand and silt, variable thickness, associated with present-day lakes and depressions, littoral and nearshore environments.
- Lv — **Lacustrine veneer:** sand and silt, <2 m thick, associated with present-day lakes and depressions.
- Lb — **Lacustrine blanket:** sand and silt, >2 m thick, associated with present-day lakes and depressions.
- L — **Lacustrine sediments, undifferentiated:** sand and silt, variable thickness.

LAST GLACIATION (WISCONSIN)

PROGLACIAL AND GLACIAL ENVIRONMENTS

- GLr — **Glaciolacustrine beach sediments:** sand and gravel, variable thickness, includes raised beach ridges and strandlines associated with a glacial lake.
- GLd — **Glaciolacustrine deltaic sediments:** sand and gravel, variable thickness, near outlets of meltwater channels at edges of a glacial lake.
- GLf — **Glaciolacustrine subaqueous outwash fan sediments:** sand and gravel, variable thickness, presumed to have been deposited subaqueously in a glacial lake.
- GLn — **Glaciolacustrine nearshore sediments:** sand and silt, variable thickness, mantling valley floors or depressions that are presumed to be within the limit of a glacial lake, littoral, and nearshore environments.
- GLv — **Glaciolacustrine veneer:** clay, silt, and sand, <2 m thick, may form a veneer over till, may be associated with low lying areas often adjacent to organic deposits.
- GLb — **Glaciolacustrine blanket:** sand and gravel, >2 m thick, associated with strandlines on muted ridges (enhanced white reflectivity on air photos) and terraces along upland slopes.
- GLm — **Glaciolacustrine subaqueous moraine sediments:** diamicton, variable thickness, valley-floor sediments that occur within the limit of the largest glacial lakes; locally pitted and may represent thermokarst depressions.
- GL — **Glaciolacustrine sediments, undifferentiated:** sand and silt, variable thickness.
- GFp — **Glaciofluvial outwash plain sediments:** sand and gravel, 8–30 m thick, associated with river valleys such as the Thelon River, may be terraced; may exhibit rotational slumps; stratigraphic sections abundant due to river erosion exposing Quaternary sediment sequences.
- GFt — **Glaciofluvial terraced sediments:** sand and gravel, variable thickness, terraces elevated above modern stream courses; may be associated with large glaciofluvial systems.
- GFv — **Glaciofluvial veneer:** sand and gravel, <2 m thick, locally common in some areas as a widespread veneer over bedrock or till.
- GFb — **Glaciofluvial blanket:** sand and gravel, >2 m thick.
- GFf — **Glaciofluvial outwash fan sediments:** sand and gravel, variable thickness, fan surface expression.
- GFc — **Glaciofluvial ice-contact sediments:** sand and gravel, 8–30 m thick, in the form of mounds, hummocks, sinuous ridges (eskers) and circular ponds (kettles) surrounded by gravel ridges berms; the unit forms distinct westward-trending "belts" parallel to regional ice flow; these belts have sharp boundaries (ice walled?) with adjacent till areas, and are also associated with areas of exposed bedrock.
- GFh — **Glaciofluvial hummocky sediments:** sand and gravel, variable thickness, irregular (non-linear) surface expression; hummocks have rounded-tops.
- GFr — **Glaciofluvial esker sediments:** sand and gravel, variable thickness, includes individual eskers, ridges and esker complexes; small eskers are represented by line symbols.
- GF — **Glaciofluvial sediments, undifferentiated:** sand and gravel, variable thickness.
- Tv — **Till veneer:** diamicton, <2 m thick, may include bedrock outcrops.
- Tb — **Till blanket:** diamicton; moderately compact; from 2 to 5 m thick; occurs as till plains mimicking bedrock topography and as extensive drumlinoid fields with various streamlined landforms shown by symbols; may contain small areas of till veneer.
- Th — **Hummocky till:** diamicton; compact; from 3 m to at least 5 m thick; forms irregular to rolling terrain, may contain low morainal ridges a few km in length, local relief up to 5 m; areas have abundant small esker segments.
- Tm — **Moraine complex:** diamicton, variable thickness, occurs where many small ridges are superimposed on a mantle of till; symbols identify small ridges.
- Tr — **Ridged till:** diamicton, variable thickness, concentration of well-defined till ridges.
- Ts — **Streamlined till:** diamicton, variable thickness, fluted and drumlinized, includes crag-and-tail features; may incorporate bedrock exposures.
- T — **Till, undifferentiated:** diamicton, variable thickness.

HOLOCENE AND LAST GLACIATION (WISCONSIN)

NONGLACIAL ENVIRONMENT AND PROGLACIAL AND GLACIAL ENVIRONMENT

- Ww — **Regolith veneer:** weathered rock, <2 m thick, occurs where isolated exposures of bedrock surfaces with rock structure are visible.

PRE-QUATERNARY

- R — **Bedrock, undifferentiated:** bedrock with variable (10–40+ %) surficial veneer.

A stratigraphic relationship is shown with a maximum of two map unit designators separated by a slash ("/") (e.g. CvTb designates colluvial veneer overlying till blanket). Where the surficial cover forms a complex pattern and the map units are too small to be mapped individually, yet constitutes a significant areal extent of the total polygon, a dot (".") separates the first dominant map unit designator from the less abundant secondary unit (e.g. Tb.O designates an area of till blanket with some areas of organics).

- Geological contact, defined
- Geological contact, approximate
- Geological contact, inferred
- Debris flow track
- Landslide escarpment
- Terrace scarp, glaciolacustrine
- Beach crest
- Spillway, sense known
- Minor meltwater channel, sense unknown
- Minor meltwater channel, sense known
- Major meltwater channel
- Minor moraine ridge
- Major moraine ridge
- Esker, sense unknown
- Esker, sense known
- Drumlinoid ridge
- Drumlin
- Crag-and-tail
- Landslide scar
- Thermokarst depression
- Delta, sense unknown
- Delta, oriented
- Kettle
- Karre
- Striation, sense unknown
- Striation, sense known
- Small outcrop

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Craig, B.G., 1964. Surficial geology of East-Central District of Mackenzie; Geological Survey of Canada, Bulletin 99.

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.

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