

Descriptive Notes

The Wecho River predictive surficial geology map was generated using statistically balanced LANDSAT 7 imagery, the history, elevation models, and integration of knowledge gained from an photo interpretations of training areas, field observations, and legacy datasets. Some of these additional geological features include small bedrock outcrops, sandbars, water ridges, beach ridges, and ice flow indicators such as striations, crag-and-tails, and fluted bedrock point and line features. These geological features may also exist beyond the boundaries of the airborne interpreted training areas. Small map unit polygons and most small outcrops derived from remote predictive mapping are not shown on the map but are included in the accompanying geodatabase. Lakes may include bathymetric layers and mean areas. The map conforms to Geological Survey of Canada's Surficial Data Model (SDM version 2.1, Cocking et al., 2015). See digital Supplementary Notes for full methodology.

References and additional ice flow indicator sources:

Cocking, R.B., Deborde, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Hurley, D.H., Ingle, E., Lavolette, A., Pavey, M., Phelan, A., Robertson, L., Co-Chair, D.A., and Weatherman, J., 2013. Surficial Data Model version 2.1.0. Revisions to the scientific language of the integrated Geological Survey of Canada data model for surficial geology maps. Geological Survey of Canada, Open File 7141, 279 p. doi:10.4095/69669.

Jackson, V.A., 1999. Geology of the northern Russell Lake area (85-C4). NWT Geological Division, Department of Indian Affairs and Northern Development, Yellowknife, N.W.T. EOS 1999-08, 1 map, 1:50 000 scale.

Jackson, V.A., 2003. Preliminary compilation of the geology of the Sene River 1998-2002 results, Wapinnet Lake, Labrier Lake and Russell Lake area, parts of 85-O, C.S., East Northern Geoscience Centre, Yellowknife, N.W.T. NWT Open report 2003-002, 1 map, 1:100 000 scale.

Kerr, D.E., 1990. Surficial geology of the Yellowknife River basin, parts of NTS 85-L, 85-L, 85-O, 85-P, and 86A. NWT Geological Division, Indian and Northern Affairs Canada, EOS 1990-03.

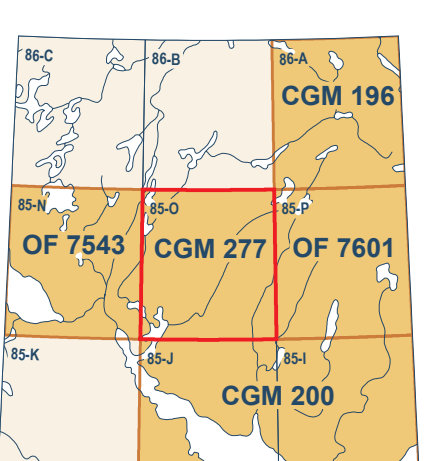
Yardley, D.H., 1949. Wecho River, east half, District of Mackenzie, Northwest Territories. Geological Survey of Canada, Paper 49-14, 1 sheet. doi:10.4095/108921

Abstract

The glaciated landscape exhibits ice flow features associated with ice advance such as drumlinoids, crag-and-tail, and fluted bedrock, which together with striations, record a southwesterly ice flow during the last glaciation. Glacially scoured bedrock dominates the area. Discontinuous till veneer is generally restricted to the northeastern part area. Glaciolacustrine sediments, including eskers and kames generally trend southwesterly. Many small ice flow features, such as short segments. During deglaciation about 11-10 ka BP, fine-grained, glaciolacustrine sediments, associated with glacial Lake McConnell, were deposited in many western and southern topographic basins, up to 340 m or possibly higher. Re-tilled glaciolacustrine deltas and beaches, marking the decreasing elevation of the glacial lake over time due to isostatic rebound, occur at 270-285 m, although isolated deltas have also been observed at 310, 320, 330 m and as high as 350 m in the northeast. Postglacial esker sediments exhibit dunes recording both north-northwestward and south-southwestward paleowind directions.

Résumé


Le paysage glacé présente des entités associées à l'avancement des glaces, comme des drumlinoids, des structures en crag-et-tail et un substratum cannelé, lesquelles témoignent, avec les stries, d'un mouvement glaciaire dirigé vers le sud-ouest lors de la dernière glaciation. Un substratum rocheux affleurant par les ice glaciaires constitue l'élément dominant de la région. La présence d'un phasage de till discontinu est en général limitée au nord-est de la région cartographiée. Des sédiments fluvioglaciaires, se présentant entre autres sous la forme d'éskers et de kames, s'alignent généralement une direction sud-ouest. De nombreux deltas sont constitués d'une série de courts segments. Lors de la déglaciation à environ 11-10 ka BP, des sédiments glaciolacustres fins, associés au Lac glaciaire McConnell, se sont déposés dans des dépressions topographiques à l'ouest et se sont jusqu'à une altitude de 240 m et peut-être plus. Des deltas et des dunes glaciolacustres, témoignant de l'altitude décroissante du lac glaciaire dans temps en réponse au relèvement isostatique, se trouvent à une altitude de 270-285 m, bien que des deltas isolés aient également été observés à 310, 320 et 330 m et même jusqu'à 350 m au nord-est. Des sédiments eskers postglaciaires présentent des dunes qui enregistrent des vents dominants en provenance du nord-nord-ouest et du sud-sud-est.




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

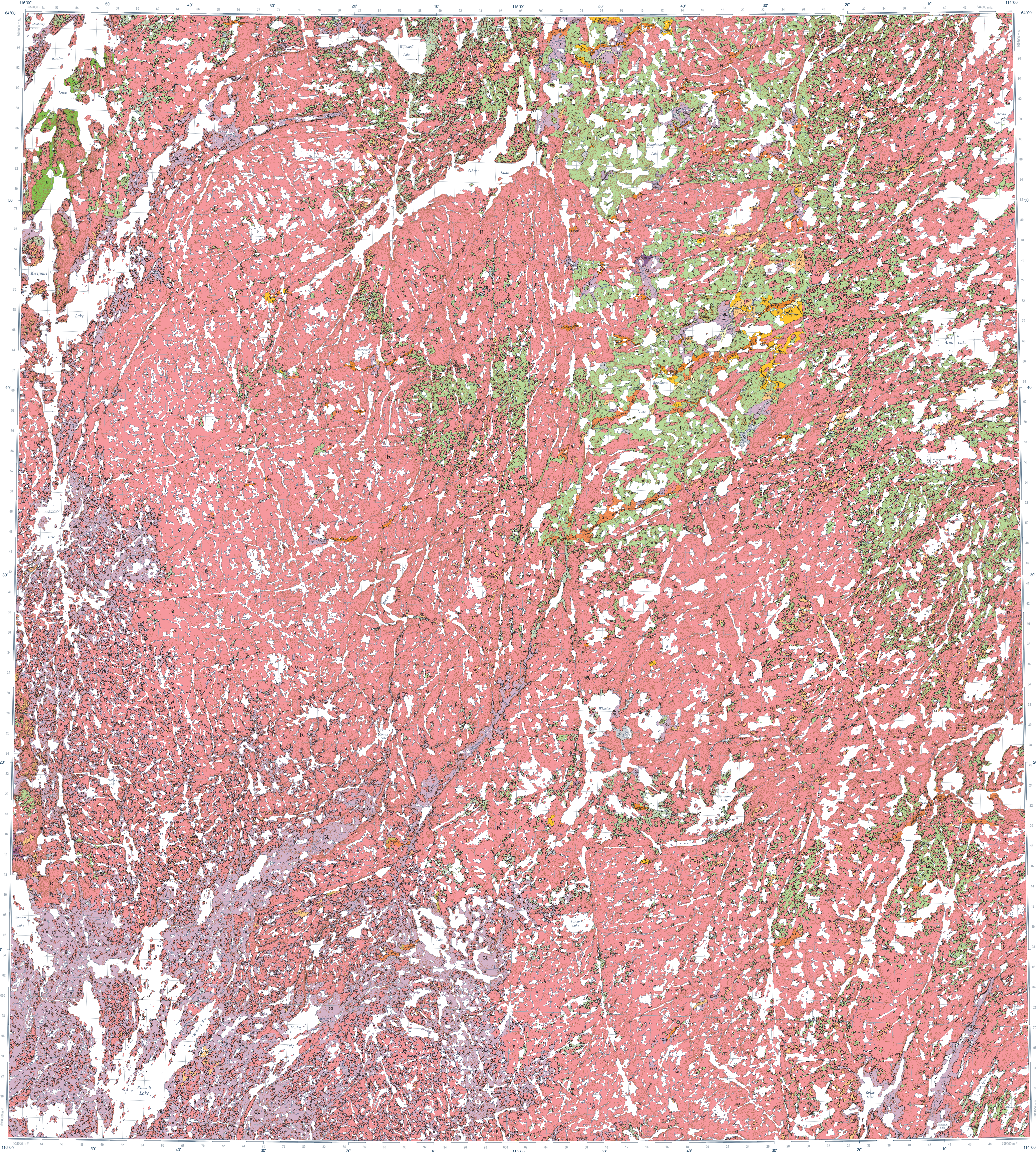
Catologue No. M185-1277-2016E-POF
ISBN 978-0-662-64724-4
doi:10.4095/298686

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Ressources naturelles du Canada

CANADIAN GEOSCIENCE MAP 277
PREDICTIVE SURFICIAL GEOLOGY
WECHO RIVER
Northwest Territories
NTS 85-O
1:125 000





QUATERNARY

HOLOCENE

ln	Snowpack or ice : ice and snow, variable thickness; annual or perennial accumulations formed during winters or years, observed on aerial photographs taken in 1954.
O	Organic deposits, unfossilized : peat and muck, variable thickness; formed occasionally by the accumulation of vegetative material in bogs, occurs in depressions along the Wecho River and in the Mackenzie River valley bottoms; may contain ice-wedge polygons; small unmapped organic deposits occur in most terrain units.
E	Colluvial sediments, unfossilized : fine to medium sand, variable thickness; may contain dunes and blow outs; may be active or stabilized by vegetation.
A	Alluvial sediments, unfossilized : silt to gravel, variable thickness; deposited by modern streams and rivers; may include floodplains and alluvial fans in creased and meandering streams.

PROGLACIAL AND GLACIAL ENVIRONMENT

GLr	Glaciolacustrine beach sediments : sandy gravel; may contain cobbles and boulders; variable thickness; derived from reworked glaciolacustrine sediments, forming raised beaches associated with ancestral Great Slave Lake, as a result of isostatic uplift.
GLd	Glaciolacustrine deltaic sediments : sand and gravel, variable thickness but greater than 2 m; deposited in glacial Lake McConnell and smaller temporary glacial-dammed lakes; may contain ground ice.
GLm	Glaciolacustrine subaqueous moraine complex : silt to gravel diamict; poorly sorted, variable thickness but generally greater than 2 m; deposited in glacial lake in close proximity to retreating ice front.
GLv	Glaciolacustrine veneer : sand to silty clay; less than 2 m thick; may include small wave-washed outcrops and patches of fluted till veneer; deposited in glacial Lake McConnell and ancestral Great Slave Lake.
GLb	Glaciolacustrine blanket : fine sand to silty clay; greater than 2 m thick and up to 15 m or more; may include small outcrops and patches of till veneer; deposited in glacial Lake McConnell and capped by sediments related to ancestral Great Slave Lake at lower elevations.
GL	Glaciolacustrine sediments, unfossilized : fine sand to silty clay; up to 10 m or more thick; may include small outcrops and patches of till veneer; deposited in glacial Lake McConnell and capped by sediments related to ancestral Great Slave Lake at lower elevations.
GLp	Glaciolacustrine outwash plain sediments : sand and gravel; greater than 2 m thick; generally flat topped subaerial deposits or terraces with channelled valleys; associated with esker systems; may contain ground ice.
GLc	Glaciolacustrine ice-contact sediments : sand and gravel to cobbles, variable thickness; may contain kettle holes, outcrops and terraces; may be reworked by glacial meltwater or wave action; may contain ground ice.
GLw	Esker sediments : sand, gravel and cobbles; greater than 2 m thick; ridges with both steep crested and flat-topped segments with hummocks and flexing spurs; deposited by meltwater at or behind the ice margin; formed subglacially or in subglacially exposed ice-walled channels; may be associated with zones of scoured bedrock and till veneer; boulder lags; isolated kame deposits; may extend onto lakes and contain ground ice.
GF	Glaciolacustrine sediments, unfossilized : sand and gravel to cobbles, variable thickness; forming esker ridges, terraces, outwash plains; may be reworked by wave action forming raised beaches; may include small areas of bedrock; may contain ground ice.
Tv	Till veneer : silt to gravel diamict; poorly sorted; variable thickness but generally less than 2 m; may be modified by meltwater processes, and glaciolacustrine and lacustrine processes during isolation; silt may contain small bedrock outcrops and glaciolacustrine veneer.
Tb	Till blanket : silt to gravel diamict; poorly sorted; variable thickness but generally greater than 2 m; locally fluted; may be modified by meltwater processes.
T	Till, unfossilized : silt to gravel diamict; poorly sorted; variable thickness but generally greater than 2 m; may be modified by meltwater processes.

PRE-QUATERNARY

R	Bedrock, unfossilized : Archean Slave Craton; glacially scoured and outcrops; may be overlain by discontinuous cover of till veneer, glaciolacustrine veneer and thin glaciolacustrine sediments.
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Geological contact:

- Approximate
- Dune crest
- Beach crest
- Escher meltwater channel; paleoflow direction known
- Escher
- Paleoflow direction unknown
- Paleoflow direction known or inferred
- Drumlinoid ridge
- Crag-and-tail
- Fluted bedrock, direction known
- Thermokarst depression
- Patterned ground
- Kame
- Striation
- Ice flow direction unknown
- Ice flow direction known
- Small outcrop