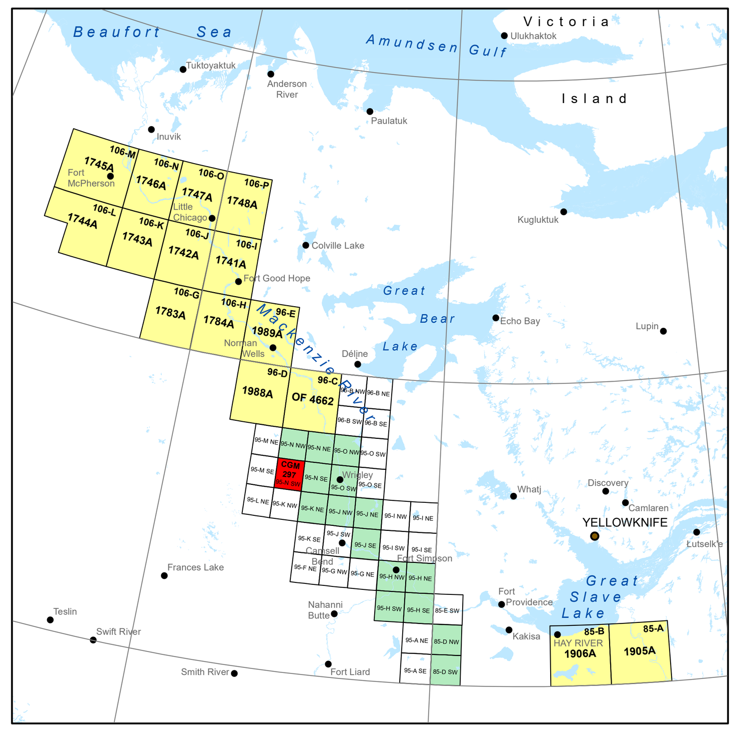


Figure 1. Surficial geology location map, southern Mackenzie Corridor.

Descriptive Notes

This map area is located ~60 km west of the Mackenzie River. It is crossed in the northwest by Ravens Throat River and Dahadinni River in the east. Several ranges including the Redstone, Dusky and Rouge, in addition to Painted Mountains, extend south-southeast to north-northwese across this map area. There are two main intervening valleys (10–17 km wide) and several small intermontane valleys (2 km max. width). The valleys are structurally controlled by synclines and/or faults which extend in the same direction as the ranges. Paleo divides have been shifted to the south between 10–25 km at the headwaters of Dahadinni and Johnson rivers as result of glacial diversion and meltwater erosion by the Laurentide Ice Sheet.

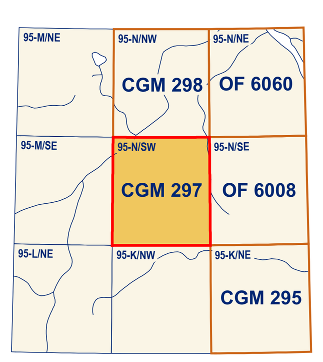
This map area was inundated by glaciers associated with the Late Pleistocene Laurentide Ice Sheet. The only regions in this map-area not covered by ice were nunataks in the Rouge Range at elevations above 1545 m. The Laurentide glacier carried distinctive pink Canadian Shield granites from a minimum distance of 400 km to the east. The Laurentide Ice Sheet reached its maximum extent ~50 km west of this map-area. The ice-sheet reached 1600 m in the central part of the map-area and up to 1300 m elevation in the Painted Mountains. This area was also affected by small cirque-glaciers which formed at elevations between 1300–1800 metres after the Laurentide maximum. Their deposits usually truncate those of Laurentide origin. However, there is evidence that the Laurentide glaciation deposited sediments in cirques that predate the Late Pleistocene glaciation. There is also evidence in this area of older montane glacial deposits in stratigraphic sections where montane till underlies Laurentide till (MIS 6–8?).

Abstract

The surficial geology represented in this map has been prepared at 1:50 000 scale and published at 1:100 000 scale. The surficial deposits cover approximately 65% of the map-area. About 40% of the total surface is covered by till (units Tb, Tv, Tp, Td, Tr, Tm, Tx). Lacustrine (units Lp, Lb, L v, Lm and Lx) deposits cover ~7% of the area corresponding to "glacial Lake Redstone". About 15% of the area is covered by slope deposits (units Cv, Cx and Cz) the main component being landslide deposits (unit Cz). Glaciofluvial sediments (units Gt, Gp, Gd, Gf, Gv and Gx) cover about 2% of the map area forming terraces along the Dahadinni River, Marten Creek, and a northern tributary to Root River that drains between Dusky and Rouge ranges. About 2% are alluvial deposits (units Ap, Af and Ax). Peat deposits cover ~2%. Bedrock covers ~ 32% of the map area. It is represented mainly by Devonian shale, limestone and sandstone, and minor Ordovician and Silurian dolomite.

Résumé

La géologie des formations superficielles représentée sur cette carte a été préparée à l'échelle de 1/50 000 et publiée à l'échelle de 1/100 000. Les dépôts superficiels couvrent environ 65 % de la région cartographique. Environ 40 % de la surface totale est couverte de till (unités Tb, Tv, Tp, Td, Tr, Tm, Tx). Des dépôts lacustres (unités Lp, Lb, Lv, Lm, Lx) couvrent ~7 % du secteur correspondant au « Lac glaciaire Redstone ». Environ 15 % de la région est couverte par des dépôts de pente (unités Cv, Cx Cz) dont la principale composante correspond à des dépôts de glissement (unité Cz). Des sédiments fluvioglaciaires (unités Gt, Gp, Gd, Gf, Gv, Gx) couvrent environ 2 % de la région cartographique, formant des terrasses le long de la rivière Dahadinni, du ruisseau Marten et d'un affluent nord de la rivière Root qui s'écoule entre les chaînons Dusky et Rouge. Environ 2 % sont des dépôts alluvionnaires (unités Ap, Af, Ax), tandis que les dépôts de tourbe couvrent ~2 %. Le substratum rocheux occupe ~32 % de la région cartographique. Il est constitué principalement de shale, de calcaire et de grès du Dévonien ainsi que de faibles quantités de dolomie de l'Ordovicien et du Silurien.



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

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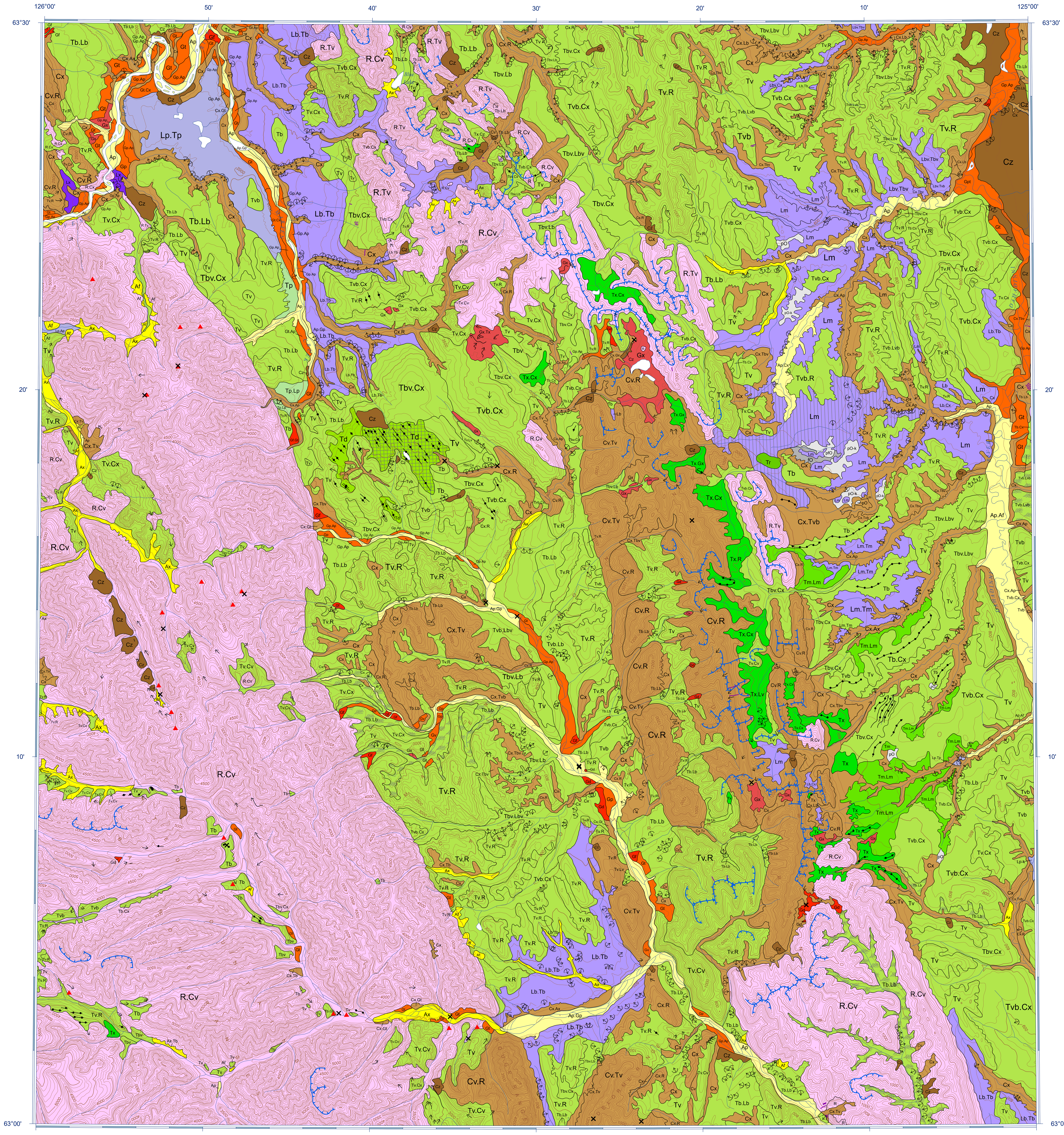
CANADIAN GEOSCIENCE MAP 297
SURFICIAL GEOLOGY
DAHADINNI RIVER
Northwest Territories
NTS 95-N southwest
1:100 000



HOLOCENE

ORGANIC DEPOSITS: peat and muck, occurring as flat to gently sloping plains.

- fO — **FENLAND:** woody sedge peat; 1–2 m thick.
- pO — **PEATLAND:** sphagnum peat generally underlain by woody sedge peat; 0.5–2 m thick.
- pO-k — **PEATLAND:** contains thermokarst depressions.
- pfO — PEATLAND (>50%) AND FENLAND

ALLUVIAL DEPOSITS: sand, silt and minor gravel in association with modern and post-glacial drainage regime.

- Ap — **ALLUVIAL PLAIN:** coarse sand and gravel with silt, fine sand and some organic detritus, occurring as channel and overbank floodplain sediments or in-channel bars; 3–5 m thick.
- Af — **ALLUVIAL FAN:** mainly sand and silt with minor gravel and discontinuous layers of peat occurring as fan deposits.
- At — **ALLUVIAL TERRACE:** mainly sand and silt with minor gravel; well stratified; <5 m thick.
- Ax — **ALLUVIAL COMPLEX:** floodplain and fan deposits; may contain small areas of colluvium.

COLLUVIAL AND LANDSLIDE DEPOSITS: diamicton and rubble derived from bedrock and/or surficial material through a variety of colluvial and landslide processes.

- Cv — **COLLUVIAL VENEER:** discontinuous veneer of diamicton and rubble that conforms to local topography.
- Cx — **COLLUVIAL COMPLEX:** slope complex consisting of diamicton and rubble; may include minor landslides (Cz) and/or alluvial fan (Af) units; >2 m thick.
- Cz — **LANDSLIDE:** bedrock, rubble and/or diamicton occurring as stepped or tongue-shaped deposits; formed by rotational slumping, retrogressive thaw flow, debris flows, rock topple and translational slides in surficial sediments and/or bedrock; they are prominent along former meltwater channels.

LATE PLEISTOCENE

GLACIOLACUSTRINE DEPOSITS: silt and clay with minor sand and diamicton; sediments deposited in a proglacial lake.

- Lp — **LACUSTRINE PLAIN:** flat to gently sloping cover; locally overlain by eolian sand; 1–10 m thick.
- Lp-k — **LACUSTRINE PLAIN WITH THERMOKARST DEPRESSIONS:** flat to gently sloping cover; locally overlain by eolian sand; 1–10 m thick.
- Lb — **LACUSTRINE BLANKET:** deposit conforms to local topography up to 8 m of relief; locally overlain by eolian sand; 2–10 m thick.
- Lv — **LACUSTRINE VENEER:** discontinous deposits, conforming to local topography; commonly associated with small lakes following ice retreat; locally overlain by eolian sand.
- Lvb — **LACUSTRINE VENEER TO BLANKET;** locally overlain by eolian sand; <3 m thick.
- Lbv — **LACUSTRINE BLANKET TO VENEER;** locally overlain by eolian sand; <3 m thick.
- Lm — **LACUSTRINE PLAIN, ROLLING:** rolling, occurring as low ridges; locally overlain by eolian sand; 2–15 m thick.
- Lx — **LACUSTRINE COMPLEX:** deltaic sediments transitional between glaciofluvial and glaciolacustrine deposits with upper 0–5 m consisting of sand; locally overlain by eolian sand.

GLACIOFLUVIAL DEPOSITS, OUTWASH: sand and gravel locally with a veneer of eolian silt and/or sand; deposited as proglacial sediment by glacial meltwater.

- Gp — **GLACIOFLUVIAL PLAIN:** flat to gently sloping; 2–20 m thick.
- Gpt — **GLACIOFLUVIAL PLAIN TO TERRACE:** glaciofluvial plain dominant; flat to gently sloping, with no visible boundaries between them; these units occur only along major rivers or interbedded with other drift types.
- Gt — **GLACIOFLUVIAL TERRACE;** 10–50 m thick.
- Gv — **GLACIOFLUVIAL VENEER:** with slopes conforming to underlying topography.
- Gd — **GLACIOFLUVIAL DELTA:** gently sloping, abrupt scarp, showing sudden change in lake level; deposited in a glacial lake; 5–15 m thick.
- Gf — **GLACIOFLUVIAL FAN:** mainly coarse gravel with minor sand, locally with mudflow deposits; commonly deposited in a meltwater channel or lake; 5–7 m thick.

GLACIOFLUVIAL DEPOSITS, ICE CONTACT: sand and gravel locally with a veneer of eolian silt and/or sand; deposited as ice-contact sediment by glacial meltwater.

- Gx — **GLACIOFLUVIAL COMPLEX:** includes eskers, kames and plains, commonly with thermokarst ponds in places; 2–30 m thick.

TILL DEPOSITS: unsorted silt, sand, and clay with clasts (pebbles, cobbles and some boulders) deposited by glacial ice in a variety of landforms.

- Tp — **TILL PLAIN:** flat to gently sloping; 3–5 m thick.
- Tb — **TILL BLANKET:** gently to moderately sloping plain conforming to underlying topography; 2–8 m thick.
- Tbv — **TILL BLANKET TO VENEER:** conforming to underlying topography; 2–8 m thick.
- Tvb — **TILL VENEER TO BLANKET:** conforming to underlying topography.
- Tv — **TILL VENEER:** conforming to underlying topography; <2 m thick.
- Td — **TILL, DRUMLINOID:** hilly till plain with individual drumlins or extensive flutes; 3–15 m thick.
- Tr — **TILL, RIDGED:** surface of generally coarse till (20–50% pebbles) deposited as ridges; commonly lateral and frontal moraines and hummocks.
- Tm — **TILL PLAIN, ROLLING:** till plain with broad hummocks 10–20 m high (5–20% pebbles and larger); typically bouldery till in mountains.
- Tx — **TILL COMPLEX:** largely hummocky, ridged, and/or hilly with patches of gravel; in some places Tx forms veneer over bedrock; elsewhere it is up to 25 m thick.

PALEOZOIC TO MESOZOIC

BEDROCK: Cretaceous shale (various colours) and limestone mostly in plains area; Paleozoic limestone, dolomite, shale (various colours), siltstone, mudstone and sandstone.

- R — **BEDROCK:** primarily prominent ridges, escarpments and hills.

ORGANIC DEPOSITS: as patterns.

This pattern is used when organic deposits appear as a second or third component in a polygon.

- Peatland constituting 10–49% of the map unit.
- Peatlands and fenlands undivided constituting 10–49% of the map unit.

COLLUVIAL DEPOSITS: as pattern.

This pattern is used when colluvial veneer and sheetwash deposits appear as third component in a polygon, e.g. Tv.Lb.Cx

- Discontinous veneer (<1 m) colluvium and sheetwash deposits.

Symbols:

- Geological boundary (defined)
- Moraine ridge: unconsolidated sediments (till, sand and gravel) deposited in ridges at terminal, recessional, lateral and medial positions with respect to ice margins
- Drumlin, drumlinoid ridge or flute (direction uncertain): streamlined hill or ridge of till with long axis paralleling direction of iceflow
- Drumlin, drumlinoid ridge or flute (direction certain): streamlined hill or ridge of till with long axis paralleling direction of iceflow; elliptical base and arched profile with long gentle slope pointing in downstream direction
- Cirque (Late Pleistocene): steep-walled, half bowl-like basins situated high on mountainsides; horseshoe or semi-circular in planform and produced by glacial erosion of valley headwalls
- Meltwater channel (minor): erosion and channel formation by meltwater flow along, beneath or in front of a glacier or ice sheet; range from broad, shallow channels to deeply incised, steep-sided channels, may run across or along slope contours; may be presently dry
- Debris flow
- Shield erratic
- Landslide
- Ground station

UNDERSTANDING THE LEGEND

The genetic category of surficial material is indicated by the first upper case letter, e.g. G (glaciofluvial). The morphologic category is indicated in lower case following the genetic category, e.g. Gp (glaciofluvial plain). The modifying processes are indicated in lower case separated from the morphologic category by a (-) e.g. Gp-k (glaciofluvial plain with thermokarst processes).

Combined units are used where, for reasons of scale, the units cannot be separated. The main unit, covering over 50% of the geologic polygon, is separated by a (.) from the secondary unit, e.g. Gp-k.Lp. In cases where the polygon has a third unit it is represented by a patterened symbol, e.g. eolian sand cover, peatlands or fenlands.

Superscripts "M", "G" and "u" are used to indicate the age for montane glacial deposits: "M" -Mountain River age (MIS 6/8); "G" – Gayna River age (oxygen isotope 18 stage 2) and "u" for deposits of uncertain, uncorrelated or undifferentiated age. Labels with no superscripts are of Late Pleistocene Laurentide age.

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Authors: A. Duk-Rodkin and D.H. Huntley

Geology by A. Duk-Rodkin and D.H. Huntley, 2006–2007
Air photo interpretation by A. Duk-Rodkin
Geomatics by D.A. Lemay and M. Le
Cartography by the Geological Survey of Canada

SURFICIAL GEOLOGY
DAHADINNI RIVER
Northwest Territories
NTS 95-N southwest
1:100 000
2 0 2 4 6 8 km

Map projection Universal Transverse Mercator, zone 10. 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 95-N/1, 8) and feet (NTS 95-N/2, 7)

Mean magnetic declination 2018, 20°17'E, decreasing 23.9' annually. Readings vary from 20°24'E in the NW corner to 20°09'E in the SE corner of the map.

This map is not to be used for navigational purposes.

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.

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This publication has been scientifically reviewed, but it has not undergone a formal edit.

Canada

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DAHADINNI RIVER
Northwest Territories
NTS 95-N southwest