

**References**

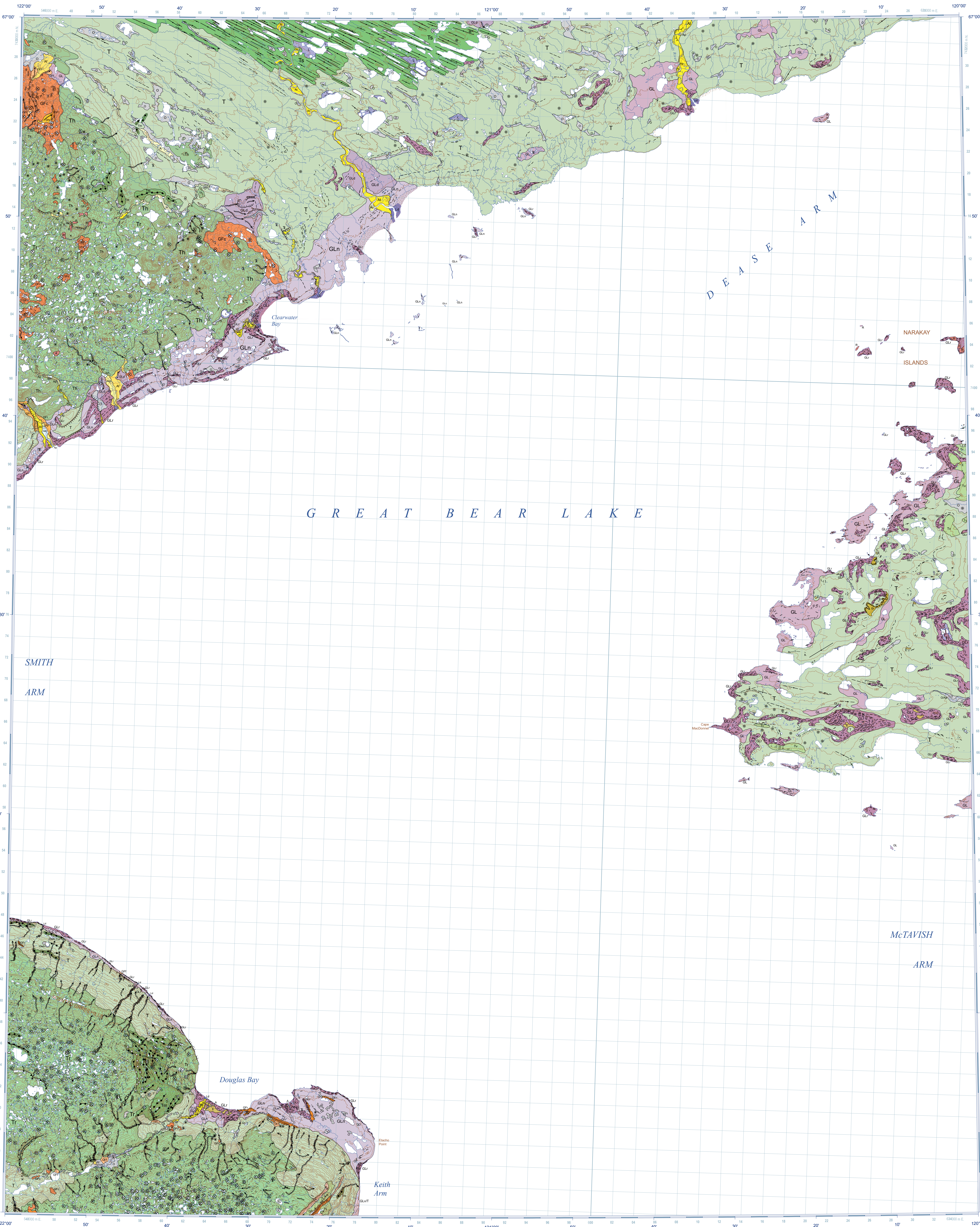
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**Suggested Readings**

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**QUATERNARY**

**HOLOCENE**

**POSTGLACIAL ENVIRONMENT**

**In** **Onb** **O**

**Organic deposits:** accumulation of in situ vegetative material.

**Big deposits:** organic vegetation; may include fine-grained mineral soil; 0.5 to 5 m thick or more; raised deposits bordering lake margins in till.

**Organic deposits, unfossilized:** fen, bog, muskeg, and floating aquatic vegetation in lakes and ponds; 0.5 to 2 m thick or more; poor surface drainage; widespread and commonly overlying glaciolacustrine sediments and till in low lying areas.

**EOLIAN SEDIMENTS:** fine to medium sand transported and deposited by wind.

**Dune sediments:** fine to medium sand; variable thickness; deposited by wind; forming dune ridges and blowouts; active and stabilized; derived primarily from glaciolacustrine sediments.

**Eolian sediments, unfossilized:** fine to medium sand; variable thickness; deposited by wind; may contain dunes and blowouts; active and stabilized; derived primarily from glaciolacustrine sediments.

**COLLUVIAL AND MASS-WASTING DEPOSITS:** material deposited at base of steep slope of hillsides by various processes.

**Colluvial deposits, unfossilized:** clastic; variable thickness; material resulting from downslope movements, covering steep moraine slopes, gullies, and bedrock escarpments; may include small bedrock outcrops.

**ALLUVIAL SEDIMENTS:** silt, sand, and gravel deposited by modern streams and rivers since deglaciation.

**Floodplain sediments:** sand, gravel, and cobbles; variable thickness; essentially flooded by active streams and rivers, and include meandering channels; inactive areas may be overlain by organics; more elevated surfaces may exhibit paleochannels.

**Fan sediments:** silt, sand, and gravel; variable thickness; forming low-angle, broad fans deposited by streams and rivers; may include inactive seasonal flooded terrain overlain by organics.

**Terraced sediments:** silt, sand, and gravel; variable thickness; deposited by streams and rivers; terraced ridges along active and inactive floodplains; inactive surfaces may be vegetated.

**Alluvial sediments, unfossilized:** silt, sand, and gravel; variable thickness; deposited by rivers and streams; include inactive and seasonally flooded terrain and minor terraces along modern meandering streams and rivers; may include various alluvial environments; may be overlain by organics.

**LACUSTRINE SEDIMENTS:** silt and sand; associated with modern lakes.

**Deltaic sediments:** silt to gravel; variable thickness; formed where alluvial sediments enter a lake forming a gently sloping delta surface that may exhibit braided channels; locally vegetated.

**Lacustrine sediments, unfossilized:** silt and sand; variable thickness; associated with small drainage, possibly drained, or infilled lakes; may be vegetated; may exhibit thermokarst activity.

**LATE PLEISTOCENE (WISCONSIN GLACIATION)**

**PROGLACIAL AND GLACIAL ENVIRONMENT**

**GLACIOLACUSTRINE SEDIMENTS:** sediments deposited at or beyond a retreating ice front by meltwater entering a glacial lake; include sediments associated with recessed Great Bear Lake; may contain ground ice; surfaces may be vegetated.

**Beach sediments:** sandy gravel, may contain cobbles and boulders; variable thickness; derived mainly from reworked glaciolacustrine sediments and till locally forming raised beach ridges from modern beach ridges 150 to 1 m a.s.l. to 250 m elevation; may contain organics between beach ridges associated with Great Bear Lake and glacial Lake McConnell as a result of isostatic uplift.

**Deltaic sediments:** silt to gravel; variable thickness; associated with recessed Great Bear Lake and glacial Lake McConnell forming gently sloping deltas deposited as proglacial outwash, ice-contact, and more distal outwash sediments by meltwater; between 180 and 220 m elevation; surfaces may exhibit paleochannels.

**Littoral nearshore sediments:** silty clay to fine sand; variable thickness; commonly trapped over till and may include patches of reworked till; may be overlain by mud, muskeg, and organic of variable thickness; may contain thermokarst features; geological contact with till may be approximate.

**Glaciolacustrine veneer:** silt to gravel; less than 2 m thick but may be thicker locally; may be overlain by organics; generally overlies till in areas submerged by glacial Lake McConnell; may include reworked till surfaces; geological contact with till may be approximate.

**Glaciolacustrine sediments, unfossilized:** silty clay to fine sand; variable thickness; deposited in nearshore to offshore environments; generally overlies till in areas submerged by glacial Lake McConnell; may be overlain by organics; may include reworked till surfaces; geological contact with till may be approximate.

**GLACIOLACUSTRINE SEDIMENTS:** sand and gravel; deposited by meltwater flowing from, or in contact with, glacial ice; may contain ground ice; surfaces may be vegetated.

**Outwash plain sediments:** sand and gravel; variable thickness; generally flat topped; occur as a plain; may include minor terraces along active meandering rivers and ice-contact sediments; surfaces exhibit paleochannels and patterned ground.

**Terraced sediments:** sand to cobbles; variable thickness; forming raised terraces above modern rivers; surfaces may exhibit paleochannels and patterned ground.

**Outwash fan sediments:** sand and gravel; variable thickness; forming irregular outwash fans sourced from eskers and meltwater channels; surfaces exhibit meltwater paleochannels.

**Ice-contact sediments:** sand and gravel to cobbles; variable thickness; flat to irregular surface; may contain kettles and small scale ridges.

**Esker sediments:** sand and gravel to cobbles; variable thickness; deposited by glacial meltwater; forming flat and sharp crested ridges deposited by subglacial and englacial tunnels and deposits of glacial ice; may contain kettles; may exhibit beaches where submerged by glacial Lake McConnell.

**GLACIAL ENVIRONMENT**

**GLACIAL SEDIMENTS (TILL):** unsorted glacial debris and clastic; deposited beneath or along the margin of glacier as lodgment till, meltout till, and gravity-flow deposits; may contain ground ice; surface may be vegetated.

**Hummocky till:** clastic; variable thickness but greater than 2 m; deposited directly by stagnant glacier in northwestern map area; forms small, low, subcircular to irregular hummocks and hills; locally steep-sided mounds, dissected by meltwater channels; contains short, disorganized major moraine ridges; surface may be pitted with small ponds, thermokarst depressions, kettles, and kames; may contain minor unspecified ridges and large ice-wedge polygons.

**Moraine complex:** clastic; variable thickness but greater than 2 m; deposited directly by stagnant glacier in western map area; contains short ridges and minor moraine ridges, with some ice-contact eskers; surfaces may be pitted with kettles; may contain minor meltwater channels.

**Ridge till:** clastic; variable thickness; extensive piled areas of minor, irregular to sinuous moraine ridges with variable orientations (from transverse to parallel to ice flow); may include recessed till, meltwater corridors, small eskers, and kettle lakes; associated with stagnant ice; predominantly associated with highlands of Big Spruce and Scattered Grass hills.

**Streamlined till:** clastic; variable thickness; strongly fluted till defined by a close grouping of drumlins and rare drumlins in northern map area; surfaces may be washed, and include glaciolacustrine silt and sand veneer below 225 m elevation.

**Till veneer:** clastic; less than 2 m thick; generally occurs as a featureless, gently to steeply sloping surface in southern and eastern map areas; may contain glaciolacustrine veneer locally below 225 m elevation.

**Till, unfossilized:** clastic; variable thickness but generally greater than 2 m thick; locally contains flutings, minor ridges, eskers, and meltwater channels; generally associated with till topography of the Big Spruce and Scattered Grass hills, and boulders in the northeast and east; surfaces may be washed, and include glaciolacustrine silt and sand veneer below 225 m elevation.

**PRE-QUATERNARY**

**R**

**Stratigraphic relationship:** two map-unit designators separated by a slash (/) are used where a stratigraphic relationship is observed or confidently inferred (e.g., GL/T indicates glaciolacustrine veneer overlying till). The map-unit polygon is coloured according to the overlying unit.

**Geological contact, defined:** contacts for units GL and GLn may be appropriate.

**Thermokarst depression**

**Patterned ground:** ice wedge

**Dune crest**

**Terrace, meltwater channel scarp, escarpment**

**Beach crest:** depositional and erosional, thin lines

**Kettle lake**

**Meltwater channel:**

**Minor, direction unknown**

**Minor, direction known**

**Major, channel scarp**

**Major subglacial meltwater corridor margin, channel scarp**

**Moraine ridge:**

**Minor, may include other unspecified ridges**

**Major end, interbedded, unspecified**

**Ice-contact scarp**

**Kame**

**Esker ridge:**

**Direction unknown**

**With beach ridges, direction unknown**

**With beach ridges, direction inferred**

**Drumlinoid ridge, buried, 1 = older, 2 = younger**

**Drumlinoid ridge**

**Drumlin ridge**

**Fluting, drumlinoid, poorly defined**

**Small outcrop**

**Recommended citation**

Kerr, D.E., 2022. Reconnaissance surficial geology, Cape MacDonnell, Northwest Territories, NTS 96-I. Geological Survey of Canada, Canadian Geoscience Map 453, scale 1:125 000. <https://doi.org/10.4095/330074>

**Abstract**

Preliminary surficial geology, based on airphoto interpretation of the Cape MacDonnell map area, reports three glacial and landform terraces. First, rippled, hummocky till dominates Big Spruce and Scattered Grass hills between 300 and 650 m elevation. Second, unfossilized till covers the lower flanks of Big Spruce and Scattered Grass hills, also extending northward of the latter, where down-sloping till occurs. Third, glaciolacustrine sediments are confined to some lowlands below 200 to 250 m, where they discontinuously cover various till units along the shores of Great Bear Lake. Variable ice flow and local stagnation characterizes glacial history in northern regions, ice flowed southward and then veered northward, with evidence of local ice streaming in east-central regions; flow was generally westward in the southwest; flow was northward. Retreating and stagnating, remnant, ice-disrupted, rippled, and hummocky moraine, which may also coincide with out-baked ice. Glacial Lake McConnell inundated towards to at least 250 m a.s.l. in the east, and to 210 m in the west.

**Résumé**

La cartographie préliminaire de la géologie des formations superficielles de la région cartographiée de Cape MacDonnell, fondée sur l'interprétation de photos aériennes, rend compte de trois terrasses glaciaires et des reliefs glaciaires qui les distinguent. Premièrement, du till à ridges et du till localement dominent les collines Big Spruce et Scattered Grass entre 300 et 650 m d'altitude. Deuxièmement, des sédiments glaciolacustres sont confinés à certaines basses terres en dessous de 200 à 250 m, où ils recouvrent de façon discontinue diverses unités de till le long des rives du Grand lac de l'Ours. Un écoulement glaciaire variable et une stagnation locale caractérisent l'histoire glaciaire. Dans les régions du nord, la glace s'est écoulée vers le sud-ouest, avant de s'incurver vers le nord-ouest, et on y relève, par endroits, des preuves de développement d'un courant glaciaire. Dans les régions du centre et du nord-ouest, vers le nord-ouest. La glace en retrait et stagnante a laissé du till à ridges et du till bosselé, ce qui pourrait également coïncider avec l'existence de conditions d'un glacier à base froide. Le Lac glaciaire McConnell a inondé les basses terres jusqu'à au moins 250 m d'altitude à l'est, et à 210 m à l'ouest.

**CGM 453**

**CGM 451**

**CGM 452**

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**CGM 460**

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

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**CANADIAN GEOSCIENCE MAP 453**

**RECONNAISSANCE SURFICIAL GEOLOGY**

**CAPE MACDONNELL**

Northwest Territories

NTS 96-I

1:125 000

Geological Survey of Canada  
Canadian Geoscience Maps

Canada

**CANADIAN GEOSCIENCE MAP 453**

**RECONNAISSANCE SURFICIAL GEOLOGY**

**CAPE MACDONNELL**

Northwest Territories

NTS 96-I

1:125 000

Author: D.E. Kerr

Geology by D.E. Kerr, 2020 and 2021, based on air photo interpretation of 1:60 000 scale NAPS air photos taken in June and July, 1953 and 1954

Geological data conforms to Surficial Data Model v. 2.4.0 (Deblonde et al., 2018)

Geomorphics and cartography by L. Robertson

Scientific editing by L. Ewert

Initiative of the Geological Survey of Canada, conducted under the auspices of the Supporting Adaptation to Permafrost Regions project as part of Natural Resources Canada's Climate Change Geoscience Program

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 in metres above mean sea level

Mean magnetic declination 2022, 19°10'E, decreasing 15.9' annually

Readings vary from 19°12'E in the NW corner to 19°50'E in the SE corner of the map

This map is not to be used for navigational purposes.

Title photograph: Pitted and ridged till, Scattered Grass Hills, Northwest Territories. Photo from the National Air Photo Library, NAPS, photo A12701-S

The Geological Survey of Canada welcomes corrections or additional information from users ([geopublications-geopublications@nrcan-mn.ca](mailto:geopublications-geopublications@nrcan-mn.ca)).

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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Scale bar: 0 to 10 km