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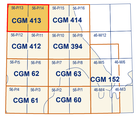
Abstract

This new surficial geology map product represents the conversion of Open File 5016, map 3 (Little, 2006) and its legend only, using the Geological Survey of Canada's Surficial Data Model (SDM version 2.3.14) (Deblonde et al., 2018). All geoscience knowledge and information from Open File 5016, map 3 that conformed to the SDM was converted during the conversion process. Supplementary legacy information (descriptive notes) on the original map is not included here. Limited legacy information was added to complement the converted geoscience data. This consists of striations (McMartin et al., 2003). It is identified in the accompanying geodatabase. The purpose of converting legacy map data to a common science language and common legend is to enable and facilitate the efficient digital compilation, standardization, integration and dissemination of geological map information in a structured and consistent manner. This provides an effective knowledge-management tool designed around a geodatabase that can expand following the type of information to appear on new surficial geology maps.

Résumé

Ce nouveau produit cartographique de la géologie des formations superficielles correspond à la conversion de la carte 3 du Dossier public 5016 (Little, 2006) et de sa légende uniquement, en se servant du Modèle de données pour les formations superficielles (MDSF version 2.3.14) de la Commission géologique du Canada (Deblonde et al., 2018). Toutes les connaissances et l'information de nature géoscientifique de la carte 3 du Dossier public 5016 qui sont en conformité avec le modèle de données ont été conservées pendant le processus de conversion. De l'information additionnelle (notes descriptives) présente sur la carte originale n'est pas incluse ici. Une quantité limitée de données existantes a été ajoutées en complément aux données géoscientifiques converties. Il s'agit de stries (McMartin et al., 2003). Elles sont identifiées dans la géodatabase. Le but de la conversion de cartes publiées antérieurement suivant un langage scientifique commun et une légende commune est de permettre et de faciliter la compilation, l'interprétation, la gestion et la diffusion efficaces de l'information géologique cartographique en mode numérique de façon structurée et cohérente. Cette façon de faire offre un outil efficace de gestion des connaissances élaboré à l'aide d'une géodatabase qui pourra évoluer suivant le type d'information à paraître sur les nouvelles cartes de la géologie des formations superficielles.



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

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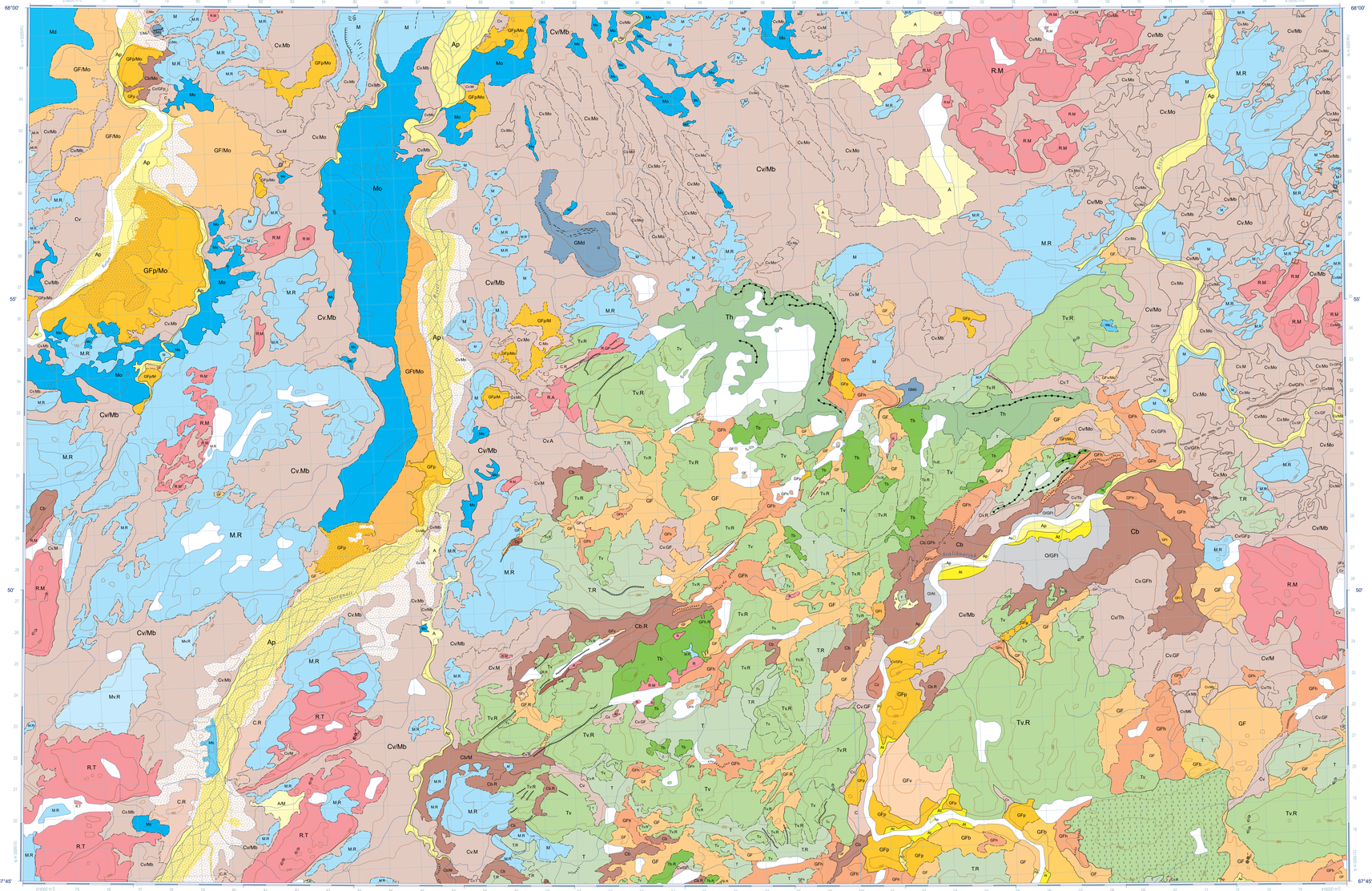
NATURAL RESOURCES CANADA
GEOLOGICAL SURVEY OF CANADA
CANADIAN GEOSCIENCE MAP 413
CANADA-NUNAVUT GEOSCIENCE OFFICE
OPEN FILE MAP 2022-04

SURFICIAL GEOLOGY

AVALIKUARJUK RIVER

Nunavut
NTS 56-P/13 and 14
1:50 000



QUATERNARY

HOLOCENE

POSTGLACIAL ENVIRONMENT

Organic deposits, undifferentiated: water-saturated organic sediments; varied thickness; commonly underlying peatmoss layers.

ALLUVIAL SEDIMENTS: silt, sand, and gravel deposited by streams, either within channels or as overbank deposits; deposits are usually stratified and moderately to well sorted, with the exception of some alluvial fan deposits.

Floodplain sediments: predominantly sands and gravels; thickness ranges from 1 to 5 m; may be locally overlain by or include lacustrine silt, clay, and minor peat and organic silt deposited in abandoned channels and along floodplain margins; typically forms plains within approximately 1 m of present stream level.

Fan sediments: gravel and gravelly diamicton, stratified, poorly to moderately sorted; thickness can reach up to 10 m; forms fan-shaped landforms where streams enter larger valleys.

Terraced sediments: sand and gravel with minor silt, massive to stratified, moderately to well sorted; thickness ranges from sporadic cover on bedrock to several metres; terraced sediments are of floodplain origin and presently isolated from flooding by stream incision.

Alluvial sediments, undifferentiated: complex of alluvial units too small to be represented at the scale of mapping; varied thickness; consist primarily of alluvial units, but may have relatively small pockets of colluvium, till, and glaciolacustrine, glaciofluvial, glaciomarine, and/or marine sediments.

HOLOCENE AND LATE PLEISTOCENE (WISCONSINAN GLACIATION)

PERIGLACIAL AND GLACIAL ENVIRONMENT

COLLUVIAL DEPOSITS: typically less than 1 m thick, but can reach thicknesses up to 2 m; poorly sorted, unconsolidated debris (diamicton) deposited on slopes; derived from bedrock or glacial parent materials.

Colluvial apron deposits: diamicton and poorly sorted sand and gravel, stratified; thickness up to 10 m; thinning at head and toe of deposit; deposit forms a wedge-shaped, slope-toe complex of colluvium, till, and glaciolacustrine, glaciofluvial, glaciomarine, and solifluction deposits derived from bedrock and glacial debris.

Landslide deposits: diamicton; thickness is highly varied, but may range up to 10 m; formed of broken rock, soil, and glacial deposits; forms a hummocky or ridged topography with ridges transverse to direction of movement; direction of movement indicated by symbol.

Colluvial veneer: diamicton and other materials; less than 1 m thick or discontinuous sheets of colluvial materials; colluvial veneer may form complex units with another surficial material.

Colluvial blanket: diamicton; thickness greater than 1 m; forming a mantle of colluvial material.

Colluvial deposits, undifferentiated: colluvial units too small to be represented at the scale of mapping; varied thickness; consist primarily of colluvial units, but may have relatively small pockets of alluvium, till, and glaciolacustrine, glaciofluvial, glaciomarine, and/or marine sediments.

POSTGLACIAL AND GLACIAL ENVIRONMENT

MARINE AND GLACIOMARINE SEDIMENTS: sediments deposited from suspension in a marine or glaciomarine environment by submarine gravity flows, and those sediments that accumulate in the littoral zone.

Marine deltaic sediments: sand and rounded gravels, cross-stratified; several metres thick; associated with fluvial deposition into a marine paleo-environment; a scarp or face with a low-relief mantle.

Marine intertidal sediments: silty sand to silt and clay, moderately sorted material, locally containing pockets of nearshore silts and sands; thickness ranges from 1 to 10 m; tidal flats commonly strewn with a boulder lag; may include modern and paleoenvironments.

Nearshore marine sediments: silt to fine and/or medium sand, well sorted, massive or rhythmically stratified; thickness typically less than 1 m, but may reach 10 m; usually forms thin sheets to gullied blankets that fill topographic lows; appear only as secondary unit in complex relationships within polygons.

Marine offshore sediments: silt, silty clay, and clay, rhythmically stratified; thickness ranges from 1 m to greater than 20 m; usually form thick sequences that exhibit extensive gullying; locally fossiliferous.

Marine veneer: gravel, sand, silt, and clay; stratified to massive; thickness less than 1 m; may occur as patches over rock; may occur as a unit in complex polygons.

Marine blanket: silt, sand, and gravel; varied thickness but greater than 1 to 2 m; comprising only marine units such as units Mv, Mn, Mi, and/or Md.

Marine sediments, undifferentiated: silt, sand, and gravel; varied thickness; complex may have relatively small pockets of alluvial or colluvial sediments, till, and glaciofluvial, and/or glaciomarine sediments too small to be represented at the scale of mapping.

Glaciomarine deltaic sediments: sand and rounded gravels, cross-stratified; varied thickness; a scarp or face with a low-relief mantle associated with glaciofluvial deposition into a glaciomarine environment.

PROGLACIAL AND GLACIAL ENVIRONMENT

GLACIOFLUVIAL SEDIMENTS: well stratified to massive sand, gravel with minor silt, and diamicton deposited by streams flowing away from, or in contact with, glacial ice; these sediments can range from well to poorly sorted; strata are commonly deformed due to syndepositional collapse from the melting of supporting ice.

Outwash plain sediments: sand and rounded gravels, moderately to well sorted, cross-stratified; 1 to 20 m thick; forming low-relief mantle.

Terraced sediments: sand and rounded gravels, moderately to well sorted; cross-stratified; varied thickness; a scarp or face with a low-relief mantle of glaciofluvial or alluvial deposits.

Humm ocky sediments: composed primarily of sand and gravel, poorly sorted; from 5 to 15 m thick; complex arrangement of slopes extending from rounded depressions to irregular conical ice-contact mounds and includes esker ridges.

Glaciofluvial veneer: gravel, sand, and silt, stratified to massive; thickness is typically less than 1 m; may occur in patches or as gravel lag over rock; may occur as a unit in complex polygons.

Glaciofluvial blanket: sand and gravel; varied thickness but greater than 1 to 2 m thick; comprising units GFv, GFt, GFp, and/or GFh.

Glaciofluvial sediments, undifferentiated: sand and gravel; varied thickness; consists primarily of glaciofluvial units, but may have relatively small pockets of alluvial, or colluvial sediments, till, and/or glaciolacustrine sediments too small to be represented at the scale of mapping.

GLACIAL ENVIRONMENT

GLACIAL SEDIMENTS (TILL): diamicton (granule- to boulder-sized clasts suspended in a poorly sorted clay to sand matrix); ground moraine deposited directly by glacial ice; redeposition directly from glacial ice is by sediment gravity flow and/or ductile deformation; subtracting vegetation cover reflecting compositional differences; thickness ranges from 1 m to greater than 20 m.

Thrust-block moraine: diamicton, stratified; subglacial gravel and sand, stratified to massive; stratification often exhibits syndepositional deformation features caused by slumping or ice meltout; up to 20 m or more thick; may contain varied amounts of ice-walled glaciofluvial and glaciolacustrine sediments; forms hummocky surface (kame and kettle topography); in places, the unit may exhibit prominent ridges marking major recessional ice margins, or diffuse zones marking boundaries between glacial-ice regimes.

Till veneer: diamicton; less than 1 m thick; occurs in patches over rock and is interspersed with rock outcrop; deposits are thin enough to reveal details of underlying rock structure; may occur as a unit in complex polygons.

Till blanket: diamicton; thickness generally from 1 to 5 m; surface morphology conforms to underlying bedrock topography; may exhibit crag-and-tails, flutes, and/or rochés moutonnées; some areas have large fluid polygons and stone nets.

Till, undifferentiated: diamicton; varied thickness; complex may have relatively small pockets of alluvial or colluvial sediments, and glaciofluvial, glaciolacustrine, glaciomarine, and/or marine sediments too small to be represented at the scale of mapping.

PRE-QUATERNARY

Bedrock, undifferentiated: various lithologies; where felsenmeer overlay is present, frost-heaved, angular blocks of bedrock occur and are only identifiable from field observations.

Complex units: two map-unit designators separated by a dot (.) are used where the surficial cover forms a complex area and the units are too small to be mapped individually (e.g. Cv.T designates an area of colluvial veneer with numerous small deposits of till). The map-unit polygon is coloured according to the dominant unit and labeled in descending order of cover.

Stratigraphic relationship: two map-unit designators separated by a slash (/) are used where a stratigraphic relationship is observed or confidently inferred (e.g. Cv/GFh indicates colluvial veneer overlying hummocky glaciofluvial sediments). The map-unit polygon is coloured according to the overlying unit.

Area of felsenmeer

Geological contact:
- *Defined*
- *Approximate*
- *Inferred*

Landslide escarpment, active

Terrace scarp, escarpment

Beach crest

Meltwater channel, minor, paleoflow direction unspecified

Major moraine ridge

Ice-contact scarp

Esker:
- *Paleoflow direction unspecified*
- *Paleoflow direction known*

Striation:
- *Poorly defined, ice-flow direction unknown*
- *Well defined, ice-flow direction unknown*
- *Well defined, ice-flow direction known*

Crossed, 1 = older, 2 = younger

Station location, marine and terrestrial observation

Dated sample location (with number, see Table 1)

Table 1. Radiocarbon age.

Fossil site number	Lab ID	Latitude	Longitude	Elevation (m)	Analysis	Media	Species	¹⁴C Uncorrected age (ka)	Reservoir Corrected age (Δ¹⁴C-0.45ka) (ka)*	Reservoir Corrected age (Δ¹⁴C-0.63ka) (ka)**
11	BU-0208-A	67.9555	89.8080	116	Standard	Shell	*S. groenlandicus*	7.23 ± 0.17	6.83	6.8
13	BU-1661-A	67.9489	89.0048	170	Standard	Shell	*M. truncata*	8.76 ± 0.06	8.36	8.13

* Reservoir Correction "A" is presented to allow for correction to papers using a reservoir correction of ~ -400 years (e.g. Dyke and Peltier, 2000); these shell ages are used in the sea-level curve reconstruction-II to ensure that new values presented herein are comparable to values present in papers using the -400 year reservoir correction.

** Reservoir Correction "B" presents modern reservoir corrections based on Little (2006); these shell ages are used in the sea-level curve reconstruction-II to ensure that new values presented herein are comparable to values present in papers using the -630 year reservoir correction.

Recommended citation
Geological Survey of Canada, 2022. Surficial geology, Avalikuarjuk River, Nunavut, NTS 56-P/13 and 14; Geological Survey of Canada, Canadian Geoscience Map 413 (Surficial Data Model v. 2.3.14 conversion of Open File 5016, map 3); Canada-Nunavut Geoscience Office, Open File Map 2022-04, scale 1:50 000. https://doi.org/10.4095/315017

GSC CANADIAN GEOSCIENCE MAP 413 • CNGO OPEN FILE MAP 2022-04

Geological Survey of Canada
Canadian Geoscience Maps

Canada

Author: Geological Survey of Canada

Geology by E.C. Little, M. Giangioppi, D. Utting, T. Ferbey, and C. Ozyer, 2003; additional air photo interpretation along the northeastern map margin by D.E. Kerr, 2017

Geological compilation by E.C. Little, 2004 and 2005

Geology conforms to Surficial Data Model v. 2.3.14 (Deblonde et al., 2018).

Geological data conversion by D.E. Kerr, 2016 to 2018

Geology has been spatially adjusted to fit the updated base.

Geomatics by J. Kingsley, C.D. Stevens, and L. Robertson

Cartography by D. Viner

Scientific editing by L. Ewert

Joint initiative of the Geological Survey of Canada and the Canada-Nunavut Geoscience Office, conducted under the auspices of the Information Management Project as part of Natural Resources Canada's Geo-Mapping for Energy and Minerals (GEM) program

SURFICIAL GEOLOGY
AVALIKUARJUK RIVER
Nunavut
NTS 56-P/13 and 14
1:50 000

1 0 1 2 3 4 km

Map projection Universal Transverse Mercator, zone 16
North American Datum 1983

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

Proximity to the North Magnetic Pole causes the magnetic compass to be erratic in this area.
Magnetic declination 2022, 13°26'W, decreasing 27.5' annually

This map is not to be used for navigational purposes.

The Geological Survey of Canada welcomes corrections or additional information from users
(gscpublications-scpublications@nrcan-rncan.gc.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.

This publication is available for free download through GEOSCAN (https://geoscan.nrcan.gc.ca/) and Canada-Nunavut Geoscience Office (https://cngo.ca/).

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