Natural Resources Canada | Ressources naturelles Canada

CANADIAN GEOSCIENCE MAP 315

SURFICIAL GEOLOGY

NORTHWEST SMALLWOOD RESERVOIR

Newfoundland and Labrador
NTS 23-I southeast

Map Information Document

Preliminary

Celebrating 175 yrs

Geological Survey of Canada
Canadian Geoscience Maps

2017

Canada

MAP NUMBER

Natural Resources Canada, Geological Survey of Canada
Canadian Geoscience Map 315 (Preliminary)

TITLE

Surficial geology, northwest Smallwood Reservoir, Newfoundland and Labrador, NTS 23-I southeast

SCALE

1:100 000

CATALOGUE INFORMATION

Catalogue No. M183-1/315-2017E-PDF
ISBN 978-0-660-08104-5
doi:10.4095/300685

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RECOMMENDED CITATION

Paulen, R.C., Rice, J.M., and McClenaghan, M.B., 2017. Surficial geology, northwest Smallwood Reservoir, Newfoundland and Labrador, NTS 23-I southeast; Geological Survey of Canada, Canadian Geoscience Map 315 (preliminary), scale 1:100 000. doi:10.4095/300685

ABSTRACT

Approximately 60% of the map-area is covered by the Smallwood Reservoir, created in 1974 with the damming of the Churchill River at Churchill Falls. The terrain is of moderate relief, with higher elevation regions in the northeast that correspond to the southern extent of the Paleoproterozoic De Pas Batholith and Late Archean Orma domain intrusive rocks. Three general phases of ice flow are observed in the map-area: to the northeast, southeast, and east. Meltwater corridors and eskers crosscut the southeasterly oriented glacial landforms and drained to the southeast and east towards the former ice margin. A large shallow glacial lake filled the Smallwood Reservoir basin. This glacial lake was previously unmapped. This lake is herein informally referred to as 'glacial Lake Low' named after A.P. Low of the Geological Survey of Canada, who first recognized that the final disintegration of the continental ice sheet occurred in this region.

RÉSUMÉ

Environ 60 % de la région cartographique est occupée par le réservoir Smallwood, créé en 1974 à la suite de l'endiguement du fleuve Churchill à Churchill Falls. Le terrain présente un relief modéré avec, dans le coin nord-est de la carte, des régions de plus haute altitude coïncidant avec le prolongement sud du batholite de De Pas du Paléoprotérozoïque et les roches intrusives du domaine d'Orma de l'Archéen tardif. Trois phases générales d'écoulement glaciaire ont laissé leurs traces dans la région cartographique suivant des directions nord-est, sud-est et est. Des corridors d'eau de fonte et des eskers recoupent les reliefs glaciaires de direction sud-est et drainaient les eaux en direction du sud-est et de l'est, vers l'ancienne marge glaciaire. Un grand lac glaciaire peu profond a rempli le bassin du réservoir Smallwood. Ce lac glaciaire n'avait jamais été cartographié auparavant. On lui donne ici le nom informel de « Lac glaciaire Low », en mémoire de A.P. Low de la Commission géologique du Canada, qui a été le premier à reconnaître que la désagrégation finale de l'inlandsis s'est produite dans cette région.

SHEET 1 OF 1, SURFICIAL GEOLOGY

GENERAL INFORMATION

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Geology based on air photo interpretation and fieldwork by R.C. Paulen, J.M. Rice and M.B. McClenaghan, 2014–2016

Geological compilation by R.C. Paulen, 2014–2016

Geology conforms to Surficial Data Model v. 2.2

Geomatics by L. Robertson

Cartography by D. Viner

Initiative of the Geological Survey of Canada, conducted under the auspices of the GEM-2 Hudson-Ungava Core Zone Project as part of Natural Resources Canada's Geo-mapping for Energy and Minerals (GEM) program

Logistical support provided by the Polar Continental Shelf Program as part of its mandate to promote scientific research in the Canadian north. PCSP 05915 (2015) and 06016 (2016)

Map projection Universal Transverse Mercator, zone 20.
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 feet (NTS 23-I/1,2,8) and metres (NTS 23-I/7)

Mean magnetic declination 2017, 21°15'W, decreasing 13.1' annually. Readings vary from 21°02'W in the SW corner to 21°28'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: A southeast-trending sinusoidal esker within the Smallwood Reservoir, 23-I/01 (54°11'31"N / 64°28'38"W), Newfoundland and Labrador. Photograph by R.C. Paulen. 2017-037

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.

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

Preliminary publications in this series have not been scientifically edited.

Map Viewing Files

The published map is distributed as a Portable Document File (PDF), and may contain a subset of the overall geological data for legibility reasons at the publication scale.

Descriptive Notes

This region is mostly covered by the Smallwood Reservoir, which was created in 1974 with the damming of the Churchill River at Churchill Falls, and now occupies the former basins of Ossokmanuan, Lobstick, and Michikamau lakes.

Three general phases of glacial erosion trends consistently occur in the map-area. An oldest flow that flowed to the northeast, a strong radial flow phase (from the Ancestral Labrador divide of the Laurentide Ice Sheet) to the southeast, and streamlined mega-scale glacial lineations from an ice-stream corridor that flowed to the east. Eskers were deposited during glacial retreat, after the ice streams shut down. Landforms mapped within the reservoir are visible during lower reservoir levels.

A large shallow glacial lake that filled the basin of the current Smallwood Reservoir, with maximum glaciolacustrine washing limits at about 480 m above sea level (about 8 metres above current reservoir levels) is here recognized for the first time. This glacial lake, south of the Quebec–Labrador drainage divide, is named glacial Lake Low, after A.P. Low of the Geological Survey of Canada, who first recognized that the final disintegration of the continental ice sheet occurred in this region (Low, 1896). Areas affected by the inundation of this glacial lake are defined by winnowed till deposits, strandlines, wave-cut benches in glacial landforms, and littoral beach deposits.

Acknowledgments

Surficial mapping was undertaken under the Geo-mapping for Energy and Minerals (GEM) in collaboration with the Ministère de l'Énergie et des Ressources naturelles du Québec (MERNQ), the Geological Survey of Newfoundland and Labrador (GSNL), and the University of Waterloo. This research benefitted from the support of the Polar Continental Shelf Program. A. Lion (University of Ottawa), E. Rufiange (University of Ottawa), G. Hagedorn (University of Guelph) and H. Campbell (Geological Survey of Newfoundland and Labrador) are thanked for their support and assistance in the field. M. Pyne (GSC Ottawa) and G. Huot-Vézina (GSC Quebec) are thanked for GIS and database support.

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COORDINATE SYSTEM

Projection: Universal Transverse Mercator
Units: metres
Zone: 20

Horizontal Datum: NAD83
Vertical Datum: mean sea level

Bounding Coordinates

Western longitude: 65°00’00”W
Eastern longitude: 64°00’00”W
Northern latitude: 54°30’00”N
Southern latitude: 54°00’00”N

Software Version

Data has been originally compiled and formatted for use with ArcGIS™ desktop version 10.2.2 developed by ESRI®.

Data Model Information

Surficial

The Geological Survey of Canada (GSC) through the Geomapping for Energy and Minerals Program (GEM) has undertaken the Geological Map Flow to develop protocols for the collection, management (compilation, interpretation), and dissemination of surficial and bedrock geology data and map information. To this end, a data model has been created.

The Surficial Data Model (SDM) was designed using ESRI geodatabase architecture. The XML workspace document provided can be imported into a geodatabase, and the geodatabase will then be populated with the feature datasets, feature classes, tables, relationship classes, subtypes, and domains.

Shapefile and table (.dbf) versions of the data are included within the data. Column names have been simplified and the text values have been maintained within the shapefile attributes. The direction columns are numerical, to display rotation for points, and the symbol fields will hold the correct values to be matched to the appropriate style file.

For a more in depth description of the data model please refer to the official publication:

Cocking, R.B., Deblonde, C., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Laviolette, A., Parent, M., Plouffe, A., Robertson, L., Smith, I.R., and Weatherston, A., 2016. Surficial Data Model, version 2.2.0: Revisions to the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 8041, 45 p. doi:10.4095/298767