



Natural Resources  
Canada

Ressources naturelles  
Canada

# CANADIAN GEOSCIENCE MAP 333

## SURFICIAL GEOLOGY

# RIVIÈRE DE PAS

Quebec  
NTS 23-P northwest



## Map Information Document

Preliminary



## Geological Survey of Canada Canadian Geoscience Maps

2017

Canada



## **MAP NUMBER**

Natural Resources Canada, Geological Survey of Canada  
Canadian Geoscience Map 333 (Preliminary)

## **TITLE**

Surficial geology, Rivière De Pas, Quebec, NTS 23-P northwest

## **SCALE**

1:100 000

## **CATALOGUE INFORMATION**

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## **ABSTRACT**

The Rivière De Pas area is of moderate relief, characterized by extensive till blanket units in lowlands and till veneer units and bedrock outcrops at higher elevations. The region was differentially eroded by the Laurentide Ice Sheet throughout Wisconsin time, largely influenced by the migration of the Ancestral Labrador Ice Divide, originally from east of the De Pas batholith to west of the map area. Phases of radial ice flow from the migrating ice divide imparted discordant erosional ice-flow landforms and flow indicators on the landscape. Significant regions of bedrock at higher elevations have been washed of till from late-phase ablation of the ice sheet during deglaciation, with associated small meltwater channels. Below 425 m elevation, the region was inundated by glacial Lake McLean, a proglacial lake that occupied the lowlands in the northwest. Sediments from glacial Lake McLean are limited to littoral beach deposits and winnowed till surfaces.

## **RÉSUMÉ**

La région de la rivière De Pas montre un relief modéré et est caractérisée par la présence de nappes de till étendues dans les basses terres et de placages de till et d'affleurements rocheux à des altitudes plus élevées. La région a été soumise à une érosion différentielle par l'Inlandsis laurentidien au cours du Wisconsinien, en grande partie sous l'influence de la migration de la protoligne de partage glaciaire du Labrador, d'une position située à l'est du batholithe de De Pas jusqu'à l'ouest de la région cartographique. Les phases d'écoulement glaciaire radial à partir de la ligne de partage glaciaire en déplacement ont laissé dans le paysage des formes de relief et des indicateurs d'écoulement discordants. D'importantes zones de substrat rocheux à de plus hautes altitudes ont été dépouillées de leur couverture de till par les eaux de fonte libérées dans les derniers stades d'ablation de la nappe glaciaire lors de la déglaciation et auxquelles sont associés de petits chenaux. Au-dessous de 425 m d'altitude, la région a été inondée par le Lac glaciaire McLean, un lac proglaciaire qui occupait les basses terres dans le nord-ouest. Les sédiments du Lac glaciaire McLean sont limités à des dépôts de plage littoraux et à des surfaces de till vanné.

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## **SHEET 1 OF 1, SURFICIAL GEOLOGY**

### **GENERAL INFORMATION**

Authors: J.M. Rice, R.C. Paulen, and M. Ross

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

Geological compilation by J.M. Rice and R.C. Paulen, 2017

Geology conforms to Surficial Data Model v. 2.3

Geomatics by L. Robertson

Cartography by E. Everett

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 in metres above mean sea level

Mean magnetic declination 2017, 21°50'W, decreasing 14.2' annually. Readings vary from 21°35'W in the SW corner to 22°04'W in the NE corner of the map.

This map is not to be used for navigational purposes.

Title photograph: Washed bedrock overlooking the Rivière De Pas, glacial fluvial deposits can be observed as exposed by the river along its banks, Quebec. Photograph by J.M. Rice. 2017-040

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/>).

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

### **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 surficial map represents a complex ice-flow history associated with the migration of the Ancestral Labrador ice divide (Vincent, 1989). Three phases of glacial erosion consistently were observed throughout the map area. The oldest ice flow recorded in the striation record was to the northeast. The second flow phase was a radial flow situated somewhere near the eastern edge of the map sheet on the higher relief terrain of the De Pas Batholith (a major bedrock unit associated with the Core Zone). A westward migration of that ice divide caused an offset in the radial ice flow directions, for the final ice-flow phase. Evidence of this ice divide shift across the region is best exemplified by numerous double-stoss outcrops (Figure 1) that were documented within the divide migration areas.

The presence of the Ancestral Labrador ice divide resulted in a relict landscape impacted by minor glacial erosion and landforms. The northwestern region of the map, furthest away from the former ice divide, has large crag-and-tail landforms, and are the only large-scale ice-erosional features mapped in this area. During the latter stages of deglaciation, the northwest lowlands was inundated by glacial Lake McLean (Ives, 1960). Proglacial Lake McLean covered the general region of present day Lac Champdoré and Lac Tudor. These regions are characterized by washed bedrock surfaces, winnowed till surfaces, and littoral beach deposits.

### **ACKNOWLEDGMENTS**

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#### **ADDITIONAL INFORMATION**

The Additional Information folder of this product's digital download contains figures and tables that appear in the map surround as well as additional geological information not depicted on the map, nor this document, nor the geodatabase.

- PDF of each figure/table that appears in the CGM surround.

#### **AUTHOR CONTACT**

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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: 66°00'00"W

Eastern longitude: 65°00'00"W

Northern latitude: 56°00'00"N

Southern latitude: 55°30'00"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 Geo-mapping 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:

Deblonde, C., Cocking, R.B., Kerr, D.E., Campbell, J.E., Eagles, S., Everett, D., Huntley, D.H., Inglis, E., Parent, M., Plouffe, A., Robertson, L., Smith, I.R., and Weatherston, A., 2017. Surficial Data Model, version 2.3.0: revisions to the science language of the integrated Geological Survey of Canada data model for surficial geology maps; Geological Survey of Canada, Open File 8236, 1 .zip file.  
<https://doi.org/10.4095/302717>