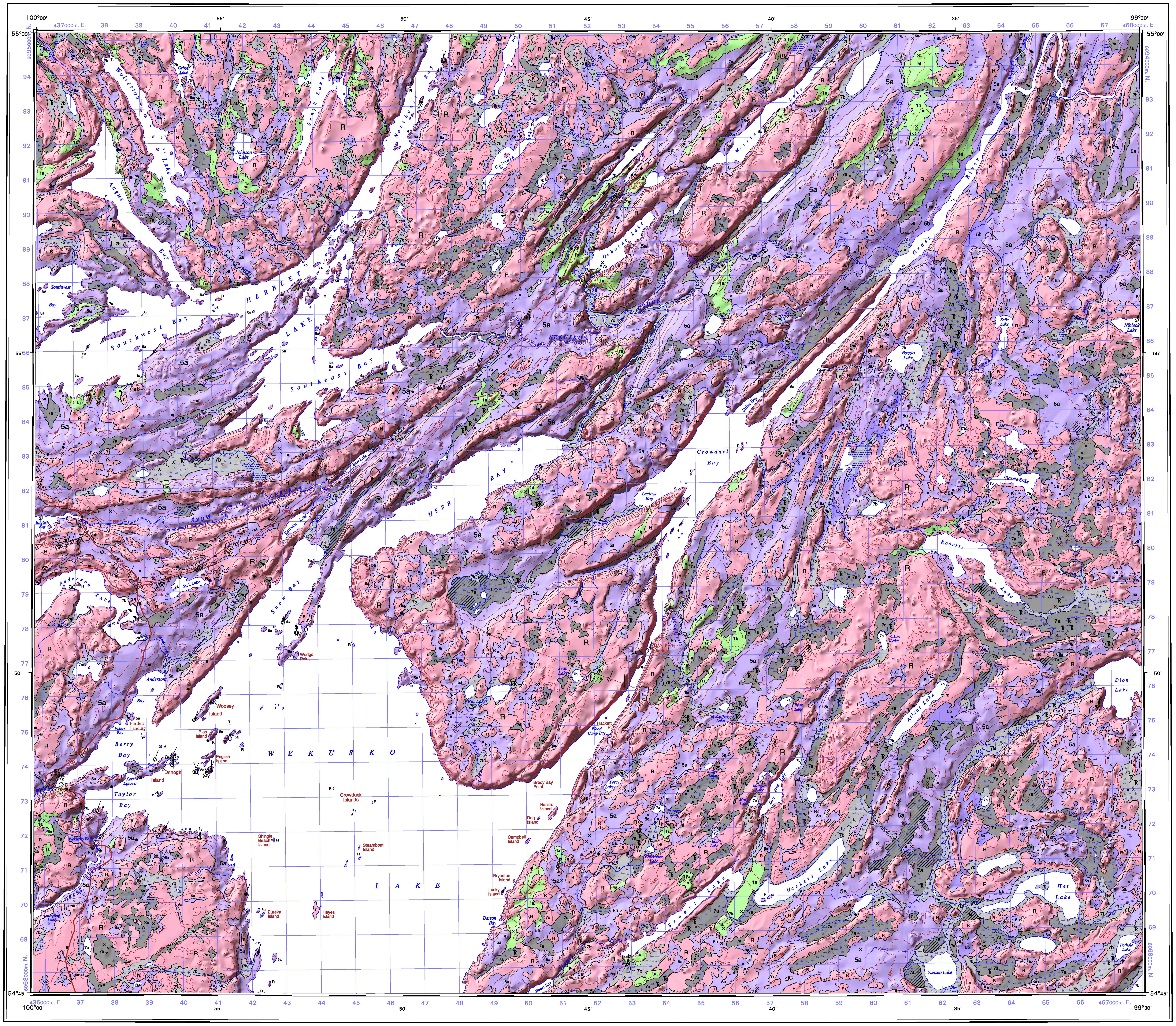
Natural Resources Canada Ressources naturelles Canada

GEOLOGICAL SURVEY OF CANADA COMMISSION GÉOLOGIQUE DU CANADA



LEGEND

This legend is common to the GSC maps that are shown in Figure 1 below.
Coloured legend blocks indicate map units that appear on this map.

SURFICIAL DEPOSITS
QUATERNARY

NONGLACIAL ENVIRONMENT

ORGANIC DEPOSITS: *peat, muck; 1 to 3 m thick; commonly underlain by fine-grained glacial lake deposits; occurs in confined, low-lying, poorly drained parts of the Shield.*

7b	***Fen peat:*** *wet sedge and moss peat; includes string fen, floodplain, and riverine marshes; occurs as flat grassy surfaces with few trees, and commonly visible surface waters; permafrost present in isolated palsa or small peat plateaus which occur within the fen.*
7a	***Bog peat:*** *moss and woody peat; occurs as raised irregular surfaces with an open to closed tree cover; derived from spruce forest vegetation; thermokarst depressions and ponds, wooded palsa and forested peat plateaus are common; contains some areas of collapse scar fens.*
6	***ALLUVIAL DEPOSITS:*** *silt, sand, and minor gravel, 1 to 30 m thick; floodplain and channel-fill sediments deposited in modern drainage ways.*

PROGLACIAL ENVIRONMENT

GLACIAL LAKE DEPOSITS: *massive to stratified clay, silt, sand, and gravel; thickness ranges from a thin veneer to tens of metres; glacial sediments reworked by wave action in glacial Lake Agassiz, or carried to the basin in large part by glacial meltwater and deposited in deep water of Lake Agassiz.*

5c	***Nearshore and littoral sediments:*** *sand, gravel, or rock shingle, moderately well sorted and commonly horizontally bedded; occur as isolated or series of ridges, 1 to 3 m in height, including beaches, bars, and spits; blankets of sand, commonly less than 2 m thick, grade basinward into finer sediments.*
5b	***Offshore sediment blanket:*** *clay, silt and silty sand, minor sand, gravel, and diamicton; fine-grained deep water sediments are non to weakly calcareous and commonly massive near surface; 2 to 45 m thick; form flat plains in low relief areas, mantled with peat; surfaces locally inscribed by iceberg scours.*
5a	***Offshore sediment veneer:*** *clay, silt, and silty sand; less than 2 m thick; forms a discontinuous blanket mimicking underlying glacial and bedrock topography; includes undifferentiated glaciolacustrine sediments deposited in deep water beyond or near the ice margin; surfaces locally inscribed by iceberg scours.*

GLACIAL ENVIRONMENT

GLACIOFLUVIAL DEPOSITS: *stratified sand and gravel, minor diamicton; sorted coarse-grained sediment deposited by flowing glacial meltwater in contact with or near the glacier.*

4	***Subaqueous outwash sediments:*** *well sorted fine sand; commonly rippled and/or crossbedded; interbedded with clay, gravel, and diamictic units of variable thicknesses; 1 to 20 m thick; deformation and faulting common; deposits occur as outwash fans or down-ice of bedrock highs; sediments deposited in glacial Lake Agassiz at or near the retreating ice front by meltwater turbidity currents.*
3	***Proximal glaciofluvial sediments:*** *moderately to well sorted and well rounded interstratified sand and gravel, minor diamicton; 3 to 25 m thick; forming eskers and crevasse fillings; deposited by sub- or englacial meltwater streams.*

GLACIAL DEPOSITS: *unsorted to poorly sorted diamictons deposited at the ice margin or beneath the glacier. The area has been glaciated by ice originating from two dispersal centres, the Keewatin Sector to the north, and the Labrador Sector to the east. Deposits have been subdivided into two units based on provenance: a) till of northern provenance overlying Precambrian rocks is generally sandy, permeable, non to slightly calcareous, and locally derived; b) till of eastern provenance is silty sandy, weakly permeable, moderately to strongly calcareous, and contains fewer Shield clasts.*

2a 2b	***Till blanket:*** *forms a continuous cover, 2 to several metres thick, locally up to 20 m thick in streamlined landforms, masking underlying bedrock topography; deposits form drumlinized till plain and minor deGeer moraines; 2a - till of northern provenance underlain by Precambrian rocks; 2b - till of eastern provenance.*
1a 1b	***Till veneer:*** *forms a moderately discontinuous cover, 1 to 2 m thick, reflecting underlying bedrock structure; commonly occurs on the down-ice side of Precambrian bedrock outcrops; surface may be covered by a thin veneer of Lake Agassiz offshore sediments or littoral sand and gravel; 1a - till of northern provenance underlain by Precambrian rocks; 1b - till of eastern provenance.*

PRE-QUATERNARY
BEDROCK

R	***Precambrian rocks:*** *metavolcanic and metasedimentary rocks, associated intrusive bodies; glacially scoured outcrops forming abundant roches moutonnées and striated or grooved surfaces; gently rolling topography with thin patchy drift cover.*

Geological boundary (defined) . . . . ～
Thermokarst depression large . . . . ////
Thermokarst depression small . . . . Tk
Palsen and peat plateau . . . . ⅄
Drumlin, drumlinoid ridge, fluting; undifferentiated . . . . /
Striae (ice flow direction known, unknown, unknown poorly defined) . . . . ⌀ ⌀ ⌀
Crossed striae (numbers indicate relative age, 1 being the oldest) . . . . 1 2 ✕
Mine . . . . ⚒
Small bedrock outcrop . . . . ×
Till sample . . . . ●

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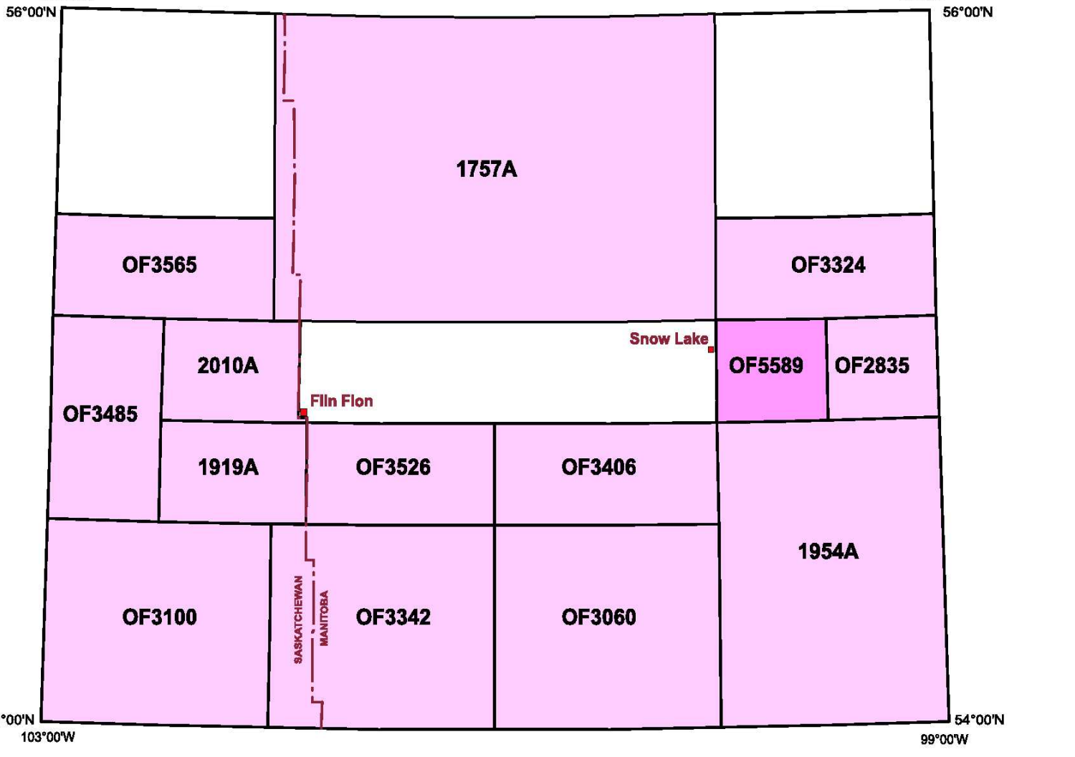
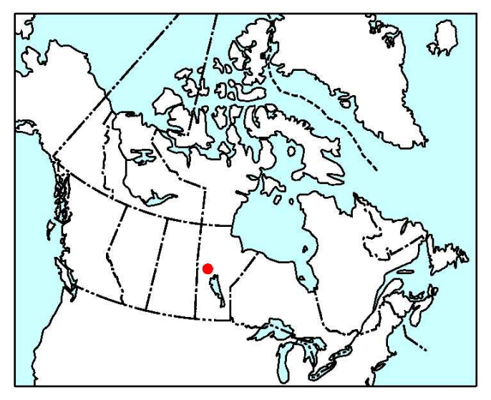


Figure 1. Index map showing the location of the Herb Lake map and surrounding surficial geology maps published within the NATMAP Shield Margin Project area. Sources used in the compilation are as follows: 1757A, Kaszycki, C.A. and Way Nee, V.J., 1:250 000; 1919A, Campbell, J.E. and Henderson, P.J., 1:50 000; 1954A, McMartin, I., 1:100 000; 2010A, Henderson, P.J., 1:50 000; OF2835, McMartin, I., 1:100 000; OF3060, McMartin, I. and Boucher, R., 1:100 000; OF3100, McMartin, I., Campbell, J.E., and Boucher, R., 1:100 000; OF3324, McMartin, I., 1:100 000; OF3342, McMartin, I., 1:100 000; OF3406, McMartin, I., 1:100 000; OF3485, Campbell, J.E., McMartin, I., and Millard, M., 1:100 000; OF3526, McMartin, I., 1:100 000; OF3565, Campbell, J.E., Millard, M., and McMartin, I., 1:100 000.



LOCATION MAP

OPEN FILE 5589

SURFICIAL GEOLOGY

HERB LAKE

MANITOBA

Scale 1:50 000/Échelle 1/50 000

kilometres 1 0 1 2 3 4 kilomètres

Universal Transverse Mercator Projection
North American Datum 1983

Projection transverse universelle de Mercator
Système de référence géodésique nord-américain, 1983

Authors: P.J. Henderson and I. McMartin

Geology by E. Nielsen (Manitoba Energy and Mines) and I. McMartin, 1991–1992; and P.J. Henderson and I. McMartin, 2006

Digital compilation by P.J. Henderson and I. McMartin, 2006

Digital compilation by Géotech and L. Robertson, GSC Northern Canada Division, 2006

Digital cartography by E. Everett, Data Dissemination Division (DDD)

This map was produced from processes that conform to the Scientific and Technical Publishing Services Subdivision (DDD) Quality Management System, registered to the ISO 9001: 2000 standard

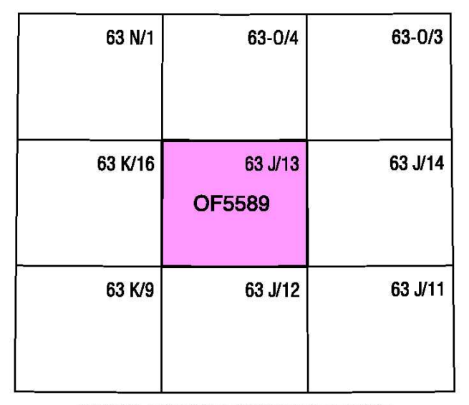
Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Geomatics Canada, modified by DDD

Shaded relief image prepared by DDD, derived from the digital elevation model suppied by GSC Northern Canada Division
Illumination: azimuth 315°, altitude 45°, vertical factor 2x

Mean magnetic declination 2007, 6°16' W, decreasing 11.6' annually

Elevations in feet above sea level



63 N/1	63-0/4	63-0/3
63 K/16	63 J/13 OF5589	63 J/14
63 K/9	63 J/12	63 J/11

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE

OPEN FILE
DOSSIER PUBLIC
5589
GEOLOGICAL SURVEY OF CANADA
COMMISSION GÉOLOGIQUE DU CANADA
2007

Recommended citation:
Henderson, P.J. and McMartin, I.
2007: Surficial geology, Herb Lake, Manitoba; Geological Survey of Canada, Open File 5589, scale 1:50 000.

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