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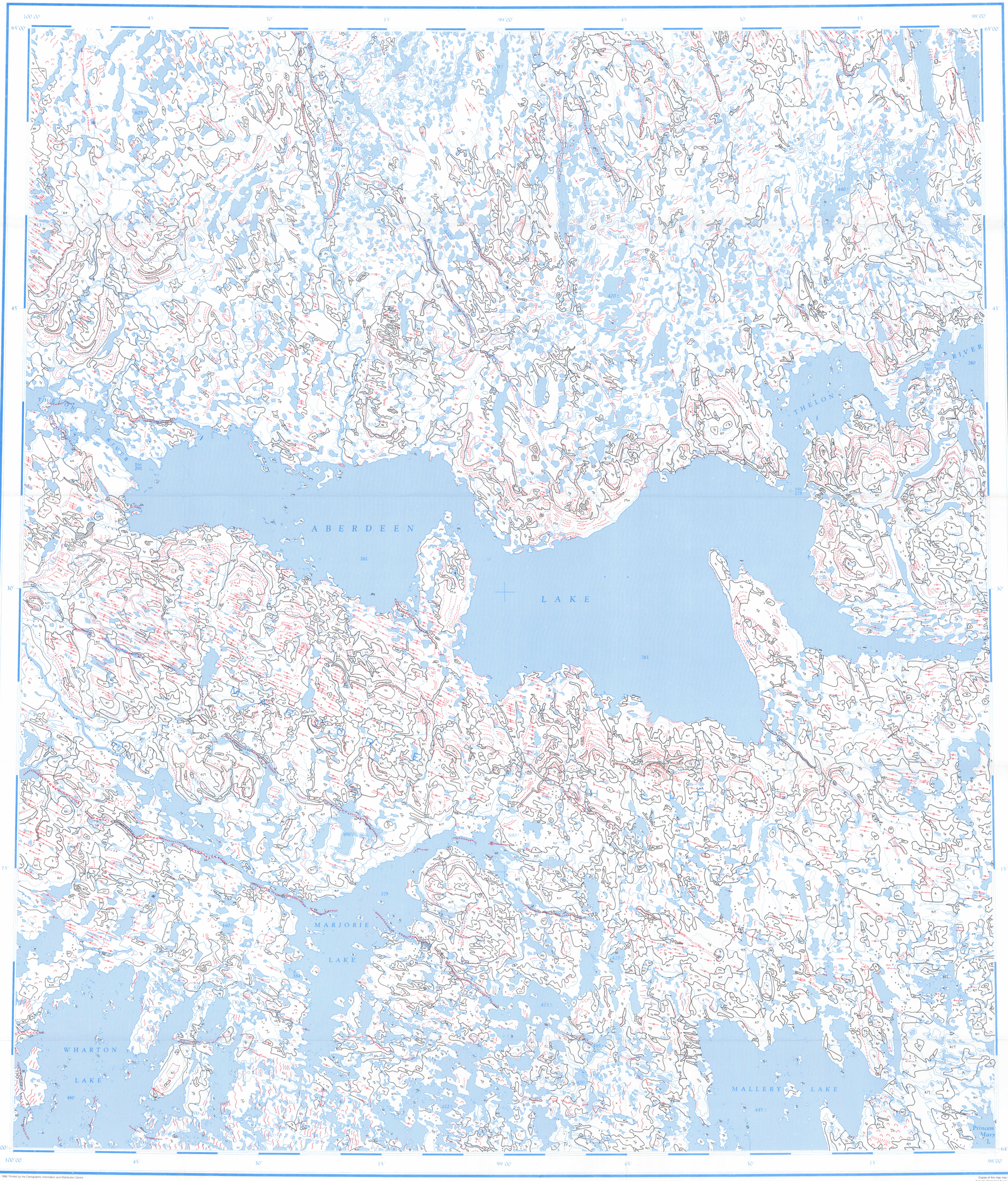
GEOLOGICAL SURVEY OF CANADA | COMMISSION GÉOLOGIQUE DU CANADA



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MAP 44-1989

SURFICIAL GEOLOGY

ABERDEEN LAKE

DISTRICT OF KEEWATIN

NORTHWEST TERRITORIES

Scale 1:125 000 - Echelle 1/125 000

Kilometres 2 0 2 4 6 8 10 Kilometres

Universal Transverse Mercator Projection
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INDEX MAP

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LEGEND

Note: some map units and symbols shown in the legend may not appear on this map

SURFICIAL GEOLOGY

SURFICIAL DEPOSITS QUATERNARY		NOTES
	ALLUVIAL DEPOSITS: stream deposited material within modern active drainage systems; "modern" is defined as the period since retreat of the sea, proglacial lakes, or glacial ice	
Ac	Alluvium: silt, sand, and gravel deposited in channels and on floodplains; may include alluvium in terraces which formed as streams cut to present level in glacial and marine sedimentary fill	
Ad	Deltaic sediments: sand, gravel, and boulders deposited where modern streams enter lakes or Hudson Bay	
AM	Alluvium and marine sand or silt, undifferentiated; occurs as flat areas consisting of modern alluvium mixed with silt and sand that were washed from slopes by wave action or deposited in the sea by meltwater streams	Surface generally covered by fibrous peat on which mosses, sedges, and grasses grow. Surface characterized by frost polygons and thaw ponds related to vertical ice wedges extending to a depth of 2 to 3 m
AG	Alluvium and outwash gravel, undifferentiated; occurs as flat areas in stream valleys or abandoned channels above marine limit	
	LACUSTRINE DEPOSITS: materials deposited in glacial lakes ponded on the western side of the Keewatin Ice Divide, and glacial deposits modified by lacustrine processes	
Ln	Nearshore sediments: generally well sorted sand, gravel, cobbles, or boulders deposited as beaches, bars, spits, and ice-pushed ridges	Surface characterized by sparse vegetation and orthogonal frost cracks
Ld	Deltaic sediments: sand, pebbly sand, and gravel deposited in glacial lakes by glacial or nonglacial streams and subsequently abandoned as glacial lakes drained	Surface characterized by sparse vegetation and polygonal frost cracks
	MARINE DEPOSITS: materials deposited in the Tyrrell Sea and glacial deposits modified by marine processes	
Md	Deltaic sediments: sand, pebbly sand, and gravel deposited in the Tyrrell Sea by glacial or nonglacial streams	Surface characterized by sparse vegetation and polygonal frost cracks
Mn	Nearshore sediments: generally well sorted sand, gravel, cobbles, or boulders deposited as beaches, bars, spits, and ice-pushed ridges	
Mw	Offlap sediments: thin sheet of sand deposited by a migrating shoreline; probably a lag developed by wave reworking of marine clayey sand or silty sand or glacial till	Characterized in places by a surface mottled pattern resulting from periglacial processes or gullying by streams or tidal currents
Mq Ms Mm	Offshore sediments: clay,silt and silty sand deposited in a deep water environment; may occur anywhere below marine limit but distribution is patchy above 60 m a.s.l.; thickest deposits generally occur in major river valleys or valleys with major eskers Ms, prominent striped pattern on airphotos Mm, mottled pattern on airphotos	Difficult to differentiate on airphotos from units Tp and Ts. Surface vegetation is dominantly shrubs in turf circles around mudboils. Striped pattern (Ms) consists of dark and light stripes, 10 to 20 m wide, running downslope, and reflects vegetation differences. Mottled pattern (Mm) due to shrub- and mudboil-covered mounds, 5 to 10 m in diameter and less than 0.5 m high, surrounded by light coloured grass-sedge vegetation; likely has high ground ice content
	GLACIOFLUVIAL DEPOSITS: water-sorted sediments deposited in, around, or near a glacier, largely as a result of meltwater flow	
Gk	Ice contact stratified drift: sand and gravel deposited near ice margins in, over, or around ice or in ice tunnels, commonly as eskers but includes isolated hummocky deposits of uncertain origin	Many eskers are beaded or interrupted at irregular intervals by major bulges marking positions where deltaic or subaqueous fan deposition occurred during periods of slowed ice retreat
Go Gq	Outwash: sand, gravel, and silt with terraced, hummocky, and kettled surfaces Go, sand and gravel deposited by subaerial meltwater streams in areas above local sea level or level of proglacial lakes; includes 1) sediment deposited between the esker ridge and valleysides, commonly over stagnant ice that forms temporary floor, 2) outwash fans, 3) outwash plains, and 4) materials on the floor or at the mouth of meltwater channels Gq, silt, sand, and fine gravel; distal fine sediment debouching from the subaqueous mouth of an ice tunnel; material settled preferentially in depressions between the esker ridge and valleysides	Sparsely vegetated Vegetation is commonly sedge, grass, and moss growing on thin, fibrous peat. Surface characterized by thaw ponds and tundra polygons. Difficult to differentiate from unit AM
Gh	Disintegration moraine: till, sand, and gravel, undifferentiated; occurs as short ridges or hummocks, probably deposited in holes and crevasses in stagnant ice; ridge orientation may form a reticulate pattern	Sparsely vegetated. Periglacial features vary from mudboils in till to frost cracks in sorted sediments
	TILL DEPOSITS: Poorly sorted sediments with distinctive forms deposited directly by glacial ice	
Tp Ts	Till plain: generally sandy, silty, noncalcareous grey till; includes areas of clay-rich red till Ts, prominent striped pattern on airphotos	Surface characterized by 1-2 m diameter patches of bare or lichen-covered mud (mudboils) surrounded by elevated peaty rings on which grow shrubs, mosses, and grasses. At lake margins characterized by cobble-covered, 2 m wide ribs separated by 2 m wide boulder-filled troughs, generally trending downslope to a water depth of about 2 m. Striped pattern (Ts) thought to be due to solifluction of clay-rich till
Tr	Ribbed (Rogen) moraine: generally bouldery till, in places sand and gravel, forming hummocks and straight to sinuous ridges, generally less than 1 km long and 2 to 10 m high; ridges generally oriented at right angles and form trains parallel to direction of ice flow	Individual ribs may be asymmetric in cross-section with steep side facing down-ice; trains of ribs pass laterally into drumlin fields and may be drumlinized in the transition zone. Surfaces have sparse vegetation and generally a heavy cover of large boulders and mudboils where composed of till, and marked by frost cracks where composed of gravel
Th	Hummocky till: till without significant boulder cover occurring as low, rounded hummocks; includes ridges of till that are minor end moraines or erosion remnants between subparallel meltwater channels	Extensive areas are present in the region of the Keewatin Ice Divide and in some places adjacent to areas of ribbed moraine (Tr). Exact origin unknown; may have formed in association with stagnant ice and in some places from erosion of till surfaces by streams in anastomosing meltwater channels. Vegetation and periglacial features similar to those on till plain (Tp)
TM	Till and marine silt, undifferentiated: till-cored landforms blanketed by marine sediments or marine deposits in depressions among till landforms	
ROCK PRE-QUATERNARY		
	Precambrian intrusive igneous and metamorphic rocks, red volcanic rocks, and unmetamorphosed sediments	
R	Surface comprises more than 80% outcrop	Vegetation sparse, surface may be glacially rounded or covered by felsenmeer
R/T R/Tr R/AM R/Ag R/Mn R/Mq	Surface comprises 20 to 80% outcrop, or bedrock is mantled with an average of less than 1 m of the surficial deposit indicated	

Geology by J.M. Aylsworth,
based on airphoto interpretation with ground observation, 1980, 1983

Striae measurements by J.G. Fyles, 1954

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

Base map at the scale of 1:250 000 published by the Army Survey Establishment, R.C.E., 1966

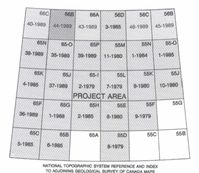
Copies of the topographical edition of this map may be obtained from the Canada Map Office, Department of Energy, Mines and Resources, Ottawa K1A 0E9

Mean magnetic declination 1990, 7°52'East, decreasing 17.5' annually.
Readings vary from 5°03'E in the NE corner to 10°20'E in the SW corner of the map area

Elevations in feet above mean sea level

DESCRIPTIVE NOTE

During deglaciation the ice front retreated eastward towards the Keewatin Ice Divide, damming a large lake in Thelon River valley and Aberdeen Lake basin. Lake levels dropped in stages, from 210 m in the west to 180-170 m in the east of this map area, as each new and lower outlet to the Back River system to the north was uncovered by the eastwardly retreating ice front. When the Keewatin Ice Divide was breached, marine water inundated the basin to some undetermined depth. Due to the difficulty of differentiating between marine and lacustrine beaches in the absence of shells, an elevation of 150 m was arbitrarily selected to separate the lower marine deposits from the higher lacustrine beaches. This elevation coincides with marine limit in the neighbouring area to the east



Recommended citation:
Aylsworth, J.M.
1990. Surficial geology, Aberdeen Lake, District of Keewatin, Northwest Territories; Geological Survey of Canada, Map 44-1989
scale 1:125 000

44-1989 c.3
G 340 .C5
1978-
G4
Borrett

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