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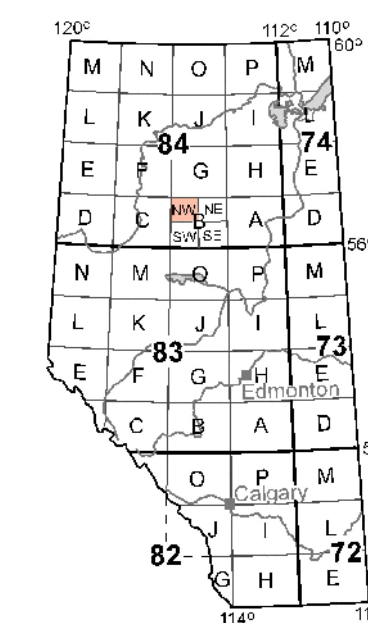


Map 265

Surficial Geology of the Southeast Buffalo Head Hills Area, Alberta (NTS 84B/NW)

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Scale 1:100 000
Projection: Universal Transverse Mercator, Central Meridian 115° 30'
Datum: North American Datum, 1983



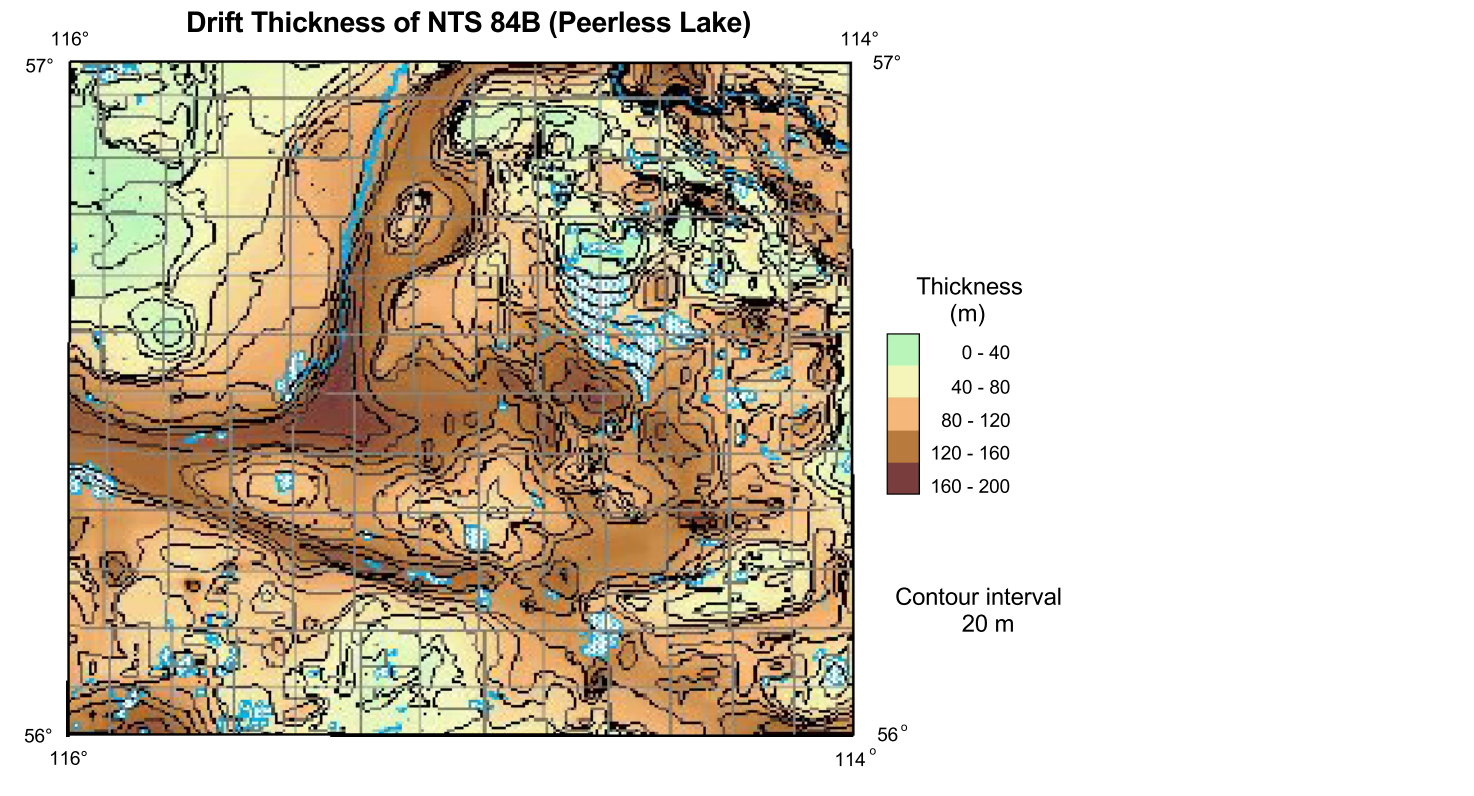
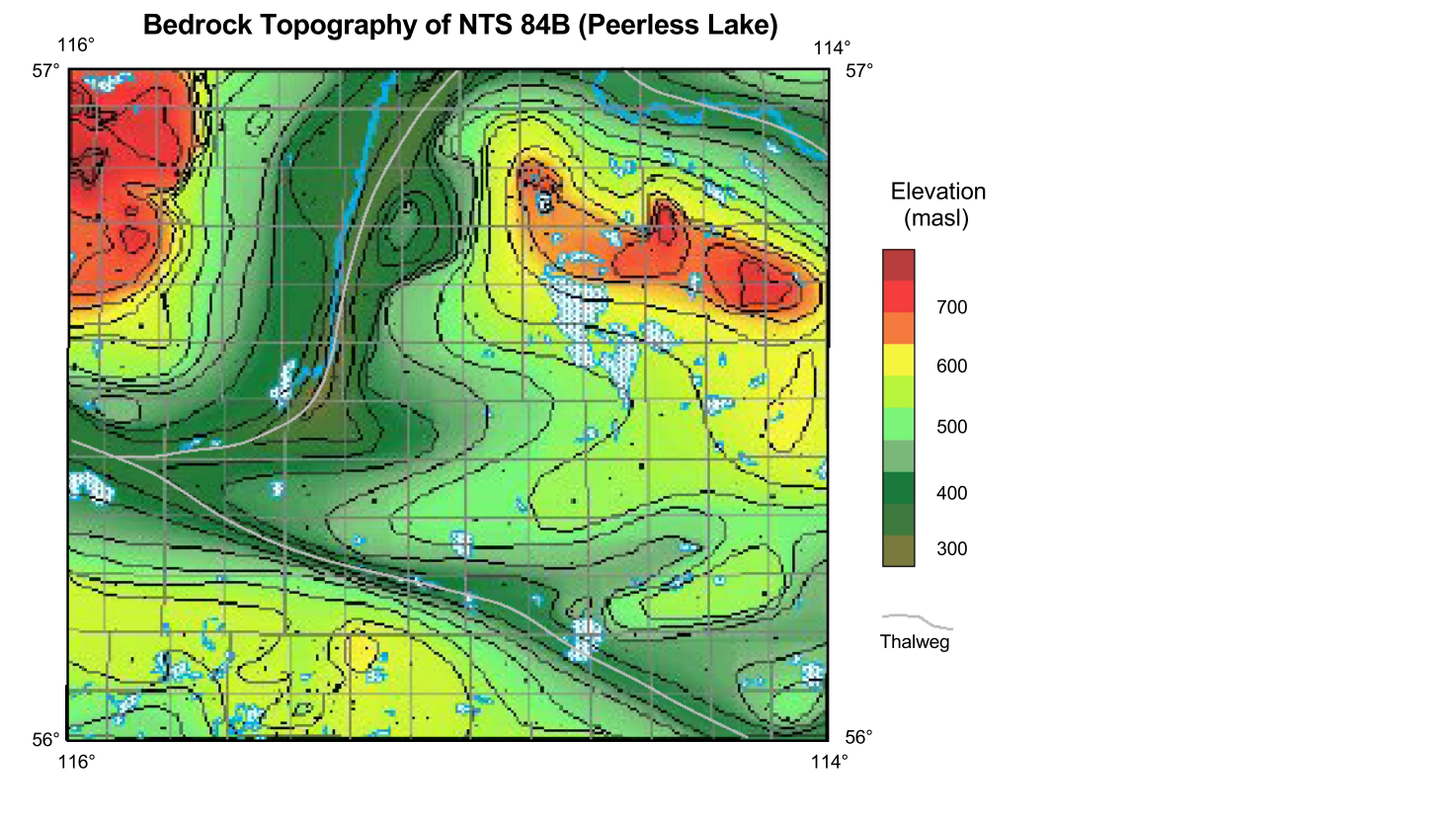
This is a common map legend for the surficial geology of northern Alberta. Coloured legend blocks indicate map units that appear on this map. Not all map symbols shown in the legend necessarily appear on this map.

UNIT SYMBOL	UNIT NAME	DESCRIPTION AND GENESIS
QUATERNARY		
HOLOCENE		
A	ANTHROPOGENIC MATERIALS:	Culturally-made or modified geological materials such that their physical properties (e.g., structure, cohesion, compaction) have been drastically altered.
O	ORGANIC DEPOSITS:	Undifferentiated black peat layers, woody to fibrous muck, occurring in undifferentiated wetlands, commonly underlain by fine-grained, poorly-sorted glaciolacustrine deposits, includes marshes, swamps, bogs and fens. Peat: Occurs in a peatland with a fluctuating water table and commonly a raised surface; peatland surface is dominated by sphagnum mosses, heath shrubs and short, stunted trees. Fen peat: Occurs in a peatland with water table at surface and slow internal drainage; peatland surface is dominated by sedges, with grasses and reeds near local pools, and sparsely treed.
OB	COLLUVIAL DEPOSITS:	Materials that have reached their present position as a result of direct, gravity-induced movement; commonly occurs as slope and slump deposits confined to valley slopes and floors; includes pre-existing bedrock, till, glaciolacustrine, glacioluvial and eolian sediments, generally poorly sorted.
F	FLUVIAL DEPOSITS:	Sediments transported and deposited by streams and rivers; synonymously with alluvial. Includes well-sorted stratified sand, gravel, silt, clay and organic sediments occurring in channel and overbank deposits (e.g., point-bar footbanks, terraces, fans and deltas).
L	LACUSTRINE DEPOSITS:	Sediments deposited in and adjacent to recent lakes; offshore sand, silt and clay, minor organic deposits; littoral (nearshore beaches and bars) sand and silt and minor gravel.
E	EOLIAN DEPOSITS:	Wind-deposited sediments; well-sorted, medium- to fine-grained sand, and minor silt (loess); generally massive to locally cross-bedded or ripple laminated; includes both active and vegetated deposits.
PLEISTOCENE		
LG	GLACIOLACUSTRINE DEPOSITS:	Fine-grained distal sediments deposited in or along the margins of glacial lakes, including sediments that were released by the melting of floating ice. Includes laminated (hythmically bedded) to massive fine sand, silt and clay, and may contain ice-melted stones. Littoral and nearshore sediments: Massive to stratified well-sorted silt, sandy sand and minor gravel; occurs as beaches, bars, silt and forest detrital deposits deposited during regression and lowering of glacial lakes.
FG	GLACIOLUVIAL DEPOSITS:	Sediments deposited by glacial meltwater streams directly in front of glacier ice as lateral or subaqueous outwash. Includes sand and gravel, often stratified, minor silt, and may show evidence of ice melting (slumped structures). Features include meltwater channels, kettle holes and terraces. Ice-contact sediments: Sediments deposited by glacial meltwater streams in direct contact with glacial ice, either in front of (stagnant ice) or within glacial ice (eskers, crevasse ridges). Includes massive to stratified, poorly to moderately sorted coarse sediments (predominantly pebble gravel and coarse sand, locally till) and may show evidence of ice melting (slumped structures).
M	MORANE:	Material deposited directly by glacial till (without modification by any other agent of transportation. Includes nonsorted deposits as lodgement till (a mixture of clay, silt, sand and minor pebbles, cobbles and boulders) at the ice margin or beneath a glacier. Locally, it may contain blocks of bedrock, pre-existing stratified drift and till. Beds and lenses of glaciolacustrine and glacioluvial sediments may occur. Stagnant ice moraine: Terrain resulting from the collapse and lateral movement of longitudinal and supraglacial sediment in response to melting of buried stagnant ice as the ice margin sediment is nearly distinct (til), but locally includes stratified sediments of glaciolacustrine or glacioluvial origin. Characterized by low- to high-relief hummocky topography. Ice-thrust moraine: Terrain resulting from glacio-tectonic transport of originally subglacial sediment and by the glacier more or less intact, deposits may include syngenetic till as well as masses of deposited pre-existing till, stratified drift and/or bedrock. Characterized by high to moderate relief and features include hill-hole pairs and glacio-tectonic moraine ridges. Fluted moraine: Glacially streamlined terrain; varies from alternating furrows and ridges to nearly equidimensional smoothed hills; all landforms parallel to the local ice flow direction; includes furrows, chertins and drumlins. Undifferentiated moraine: Moraine is of undetermined origin and texture, but usually fine-grained; silt, clay and minor sand; lacks distinctive features required to subdivide it to the unit is a composite containing three or more subdivisions inseparable at the map scale.
MT	TERRESTRIAL MORAINES:	Includes nonsorted deposits as lodgement till (a mixture of clay, silt, sand and minor pebbles, cobbles and boulders) at the ice margin or beneath a glacier. Locally, it may contain blocks of bedrock, pre-existing stratified drift and till. Beds and lenses of glaciolacustrine and glacioluvial sediments may occur.
MS	STAGNANT ICE MORAINES:	Terrain resulting from the collapse and lateral movement of longitudinal and supraglacial sediment in response to melting of buried stagnant ice as the ice margin sediment is nearly distinct (til), but locally includes stratified sediments of glaciolacustrine or glacioluvial origin. Characterized by low- to high-relief hummocky topography.
MT	ICE-THRUST MORAINES:	Terrain resulting from glacio-tectonic transport of originally subglacial sediment and by the glacier more or less intact, deposits may include syngenetic till as well as masses of deposited pre-existing till, stratified drift and/or bedrock. Characterized by high to moderate relief and features include hill-hole pairs and glacio-tectonic moraine ridges.
MF	FLUTED MORAINES:	Glacially streamlined terrain; varies from alternating furrows and ridges to nearly equidimensional smoothed hills; all landforms parallel to the local ice flow direction; includes furrows, chertins and drumlins.
MU	UNDIFFERENTIATED MORAINES:	Moraine is of undetermined origin and texture, but usually fine-grained; silt, clay and minor sand; lacks distinctive features required to subdivide it to the unit is a composite containing three or more subdivisions inseparable at the map scale.
PRE-QUATERNARY		
R	BEDROCK:	Undivided; may include crystalline (Shield), carbonate or clastic sedimentary rock, and/or coal.
RT	TERTIARY GRAVELS:	Predominantly quartzite and chert gravel and cobbles; preglacial age.

FEATURES LEGEND	
Thermokarst depression	⊖
Landslide and active layer failure scar (small)	⊖
Landslide and active layer failure scar (large)	⊖
Eolian forms, dune ridges	—
Beach or strandline	—
Wave cut beach	—
Escarpment	—
Meltwater channel (minor)	—
Meltwater channel (minor, flow indicated)	—
Meltwater channel (major)	—
Meltwater channel (major, flow indicated)	—
Crevasse filling	—
Ice contact slope	—
Kettle	⊖
Esker, direction of paleoflow unknown	—
Esker, direction of paleoflow indicated	—
Drumlinoid or streamlined landform	—
Drumlinoid, down-ice flow indicated	—
Buried drumlinoid or streamlined landform	—
Minor moraine ridge, De Quar, Rogers, ribbed, washboard (minor)	—
Major moraine ridge	—
Ice thrust ridge	—
Striation (direction unknown)	—
Striation (direction known)	—
Bedrock outcrop	—
Gravel and/or sand pt	—

ROADS LEGEND	
Paved	—
Gravel	—
Unimproved	—
Trail	—
UTM, Zone 11 Grid	—
Contour, intervals 10 metres	—

UNIT NOTATION	
Example: GLACIOLACUSTRINE plain	
Textural modifier	GLP
Genetic class	GLP
Geomorphic modifier	GLP
Textural Modifier	
Textural characteristics may be applied to the terrain classification as a prefix based on field observations or by inference from distinctive genetic and/or morphology. When two modifiers are given, the second letter is the dominant texture, with the first letter indicating the secondary texture, i.e., sc for sandy clay	
g	gravel
s	silt
c	clay
a	sand-silt-clay
GENETIC & GEOMORPHIC MODIFIERS	
c	crevasse fill
d	doughnut rings and ridges
e	eroded
f	fan
g	gullied
h	hummock
k	collapse
m	meander
p	plain
r	ridged
s	slumped
t	terrace
u	undulating
v	veneer
w	washboard
y	dissected
z	delta
Complex	
Where two or more classes of terrain are interspersed in a mosaic or repeating pattern on a scale too small to warrant meaningful differentiation, the proportion of each component in the combination is given in a two or three position designation set off by slashes denoting arbitrary percentages. For example, MplLGV means that the area is underlain by approximately 60% moraine plain and up to 40% glaciolacustrine veneer; MvLGLvFG means that at least 60% of the area is underlain by moraine veneer, with up to 40% glaciolacustrine veneer and less than 15% glacioluvial plain. LGLvM means that more than 60% of the area is underlain by a glaciolacustrine plain, with less than 15% moraine.	
Stratigraphic Sequence	
Where materials of different origin or texture are known to be superimposed or can be confidently inferred, the sequence is indicated in conventional order using vertical separators, such as: LGLvM This sandy glaciolacustrine sediment deposited on moraine plain	
Transitional Association	
Locally, two or more terrain units are juxtaposed by reason of related origin, temporal sequence, or ambiguous geomorphic suffixes are appended in the inferred order of superposition. Many means that a plain of fill has been modified into ridge forms and finally dissected by modern streams. FGvM means that a glacioluvial plain has been discontinuously covered by ice-contact hummocks and ridges.	



Initial fieldwork was carried out by the Alberta Geological Survey (AGS) during the summers of 1997, 1998 and 1999. Surficial mapping was completed in 2001 under the AGS Quaternary mapping initiative.
Jill Weiss and Charlene Bignell provided assistance with fieldwork and compilation of the digital databases. Digital cartography and GIS was completed by Monica Price, Joan Waters, Jill Weiss and Natasha Skundon.
Digital base produced by the Resource Data Division, Alberta Environment, supplied by Spatial Data Warehouse Ltd.

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