North Dakota Geological Survey

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Geologic Map of Mountrail County, North Dakota

Lee Clayton

1972

Digitized from: Clayton, L., 1972, Descriptive Geologic Map of Mountrail County, North Dakota: North Dakota Geological Survey Bulletin 55, Part IV, Map 1, 1:125,000 scale, by Levi D. Moxness, Navin Thapa and Christopher A. Maike.

2022

EXPLANATION

QUATERNARY SYSTEM

HOLOCENE

OAHE FORMATION

Qor — **River Sediment:** Very dark brown sandy clayey silt; contains several percent dispersed organic material; contains layers of sand and gravel; 3 to about 50 feet thick; river sediment deposited in valley bottoms in areas of integrated drainage; deposited during the last 9000 years.

Qop — **Pond Sediment:** Black clay; contains several percent dispersed organic material; 3 to about 30 feet thick; fills bottoms of sloughs in areas on nonintegrated drainage; deposited during the last 12,000 years.

PLEISTOCENE

COLEHARBOR GROUP

Interlayered pebbly, sandy, silty clay, sand and gravel, and silt and clay; organic material scarce or absent; 3 to more than 300 feet thick; deposited mostly during the ice ages, several hundred thousand to about 9000 years ago (late Pleistocene Epoch).

Qct — **Pebbly, Sandy, Silty Clay (Glacial Till):** A mixture of about equal parts of clay, silt, and sand plus a few percent pebbles and some cobbles and boulders as much as a few feet in diameter; makes up 87% of Coleharbor Group; largely glacial till and till-mudflow deposits (flowtill).

Qcr — **Sand and Gravel (River and Beach Sediment):** Sandy gravel, gravelly sand, and dirty sandy gravel; makes up 8% of the Coleharbor Formation; the mineralogy indicates that it was ultimately derived from the northeast in Canada; most was deposited by large rivers during glacial times, but not necessarily by meltwater rivers; some deposited on beaches of lakes.

Qcl — **Silt and Clay (Glacial Lake Sediment):** Silty clay, clayey silt, and clay that is free of pebbles; makes up about 5% of Coleharbor Group; deposited in lakes whose basins were at least in part enclosed by glacial ice.

QUATERNARY-TERTIARY, UNDIVIDED

PLEISTOCENE/EARLY PLIOCENE (?)

QTs — **Sand:** Sand (containing a few pebbles derived from the southwest in the Black Hills or Rocky Mountains) and sandy silty clay (containing some lignite fragments); as much as 400 feet thick; deposited by rivers flowing northeastward in late Tertiary or early Pleistocene time.

QTg — **Gravel:** Gravel; contains pebbles transported by rivers from the southwest (Rocky Mountains) during late Tertiary or early Pleistocene time.

TERTIARY SYSTEM

PALEOCENE

Tgv — **GOLDEN VALLEY FORMATION:** Bright-colored clayey and sandy layers, including an upper bentonite - rich unit about 80 feet thick, a middle micaceous sand unit about 70 feet thick (together comprising the Camels Butte Member), and a lower unit about 30 feet thick containing a conspicuous white or orange kaolinitic clay layer (Bear Den Member); deposited in lakes and rivers during the Paleocene and Eocene Epochs.

Tsb — **SENTINEL BUTTE FORMATION:** Dull gray layers of silt, clay, and sand, and some sandstone, lignite, scoria, and limestone; as much as 300 feet thick; deposited in lakes and rivers during the Paleocene Epoch.

Tbc — **BULLION CREEK FORMATION:** Originally mapped as Tongue River Formation. Yellowish layers of silt, clay, and sand, and some sandstone, lignite, scoria, and limestone; about 600 feet thick including the Slope Formation, if present, in the subsurface; deposited in lakes and rivers during the Paleocene Epoch.

W — Water

Geologic contact (Certain)

Geologic contact (Questionable)

Gravel and Sand Pits

Lignite Pits and mines

TOPOGRAPHY

(Figures indicate average maximum slope angles)

NONINTEGRATED DRAINAGE (Sloughs and Hills)			INTEGRATED DRAINAGE (Valleys and Divides)					
Hilly 7°-20° 12%-36%	Rolling 4°-7° 7%-12%	Undulating 1°-4° 2%-7%	Badlands 25°-90° Over 47%	Hilly 7°-25° 12%-47%	Rolling 4°-7° 7%-12%	Undulating 1°-4° 2%-12%	Flat 0°-1° 0%-2%	Apron 1°-10° 2%-18%

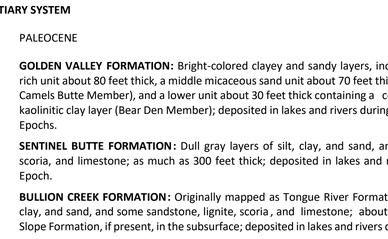
ROAD CLASSIFICATION

Expressway — Local Connector

Secondary Hwy — Local Road

Ramp — 4WD

US Route — State Route



Mountrail County, North Dakota

N W E S

Mercator Projection
North American 1983 Datum

Scale 1:125,000

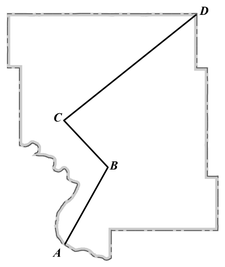
0 5 10 Miles

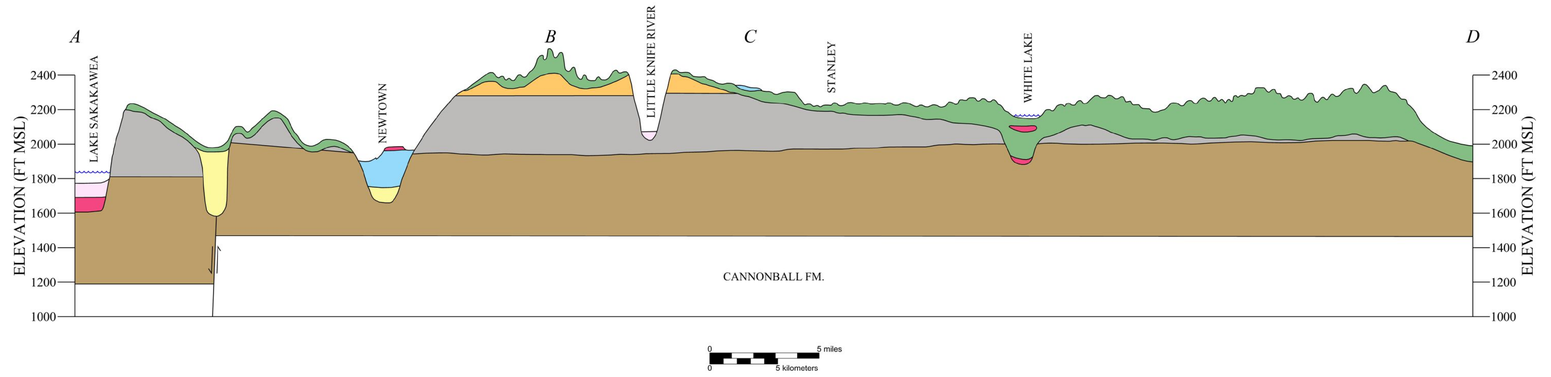
0 20,000 40,000 Feet

0 5 10 Kilometers

GENERALIZED CROSS SECTION

Location of Cross Section





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Updated cartography by Navin Thapa.
Basemap updated using from USGS 7.5 Minute Topo Base.
Modernized stratigraphic nomenclature by Levi D. Moxness.
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