

Surface Geology

Schmidt Quadrangle, North Dakota

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UNIT DESCRIPTION

QUATERNARY SYSTEM

HOLOCENE

OAHE FORMATION

Qos Alluvium

Silt and clay deposited on the flood plains of the Little Heart and Missouri Rivers. Also deposited within flood plains of tributaries and intermittent streams of the Little Heart River. Sediment is typically laminated and may contain organic detritus. Alluvium may be <10 feet thick to over 100 feet thick.

Qof Alluvium

Silt and clay of modern river valleys; backwater areas prone to flooding and high water table in the Missouri River bottom lands.

Qow Windblown Sediment

Silt and sand. Moderately to well-sorted gray/brown to tan colored sand and silt. Commonly contains one or two paleosols. The paleosols are typically 1-2 foot thick layers of dark brown silty clay. Forms both gently rounded dunes, which slightly obscure the underlying bedrock, and high relief (20- to 40-foot high dunes). The high-relief dunes are stabilized by vegetation, although blowouts can occur in places.

Qog Sand and Gravel of Holocene Age

Coarse-grained sediment deposited on terraces or as river bar sediment. Sediment is of variable thickness, but is generally the best source of sand and gravel.

Qosg Silt, Clay, Sand and Gravel of Holocene Age

Sediment deposited on terraces of the Missouri River. Sediment is of variable thickness.

HOLOCENE/PLEISTOCENE

Qoc Colluvium (Slopewash)

Mixture of soil, sediments and sedimentary rock that has slid down a hillside under its own weight. In the Schmidt quadrangle, slope failure resulting in colluvial deposits, typically occurs at or near the contact of the Hell Creek and Ludlow Formations. Slope failure occurs within the Hell Creek Formation at groundwater discharge points.

Qost Silt and Clay Deposits

Deposited on upper terraces of the Missouri River.

PLEISTOCENE

COLEHARBOR GROUP

Qct Glacial Till Deposits

Unsorted, unstratified sediment composed of sand, silt, clay, and gravel that was deposited directly by glacial ice. Scattered glacial erratics occur throughout the map area and small zones of sediment containing igneous and metamorphic clasts indicate that glacial ice once covered the area.

TERTIARY SYSTEM

PALEOCENE

Tb BULLION CREEK FORMATION

Yellow silt, sand, clay, and sandstone and lignite. The unit is typically brighter in color than the underlying Slope Formation. The Bullion Creek Formation reaches a maximum thickness of approximately 50 feet in the map areas. The contacts between the Bullion Creek, Slope, and Cannonball Formations were inferred from elevations of contacts in adjacent quadrangles.

Ts SLOPE FORMATION

Dark colored clay, silt, sand and lignite, occurring in alternating beds. A white marker bed typically marks the top of the Slope Formation. In outcrop, appearance of the Slope Formation is similar to that of the underlying Ludlow Formation.

Tc CANNONBALL FORMATION

Interbedded sand and shale. The sand is reddish olive color in outcrop, and the shale is dark brown. A distinctive feature of the Cannonball Formation is the laterally persistent sandstone benches that are readily apparent on aerial photographs and in the field. The sandstone benches are evident along the valley walls. Many areas mapped as Cannonball Formation may be covered by a thin (<five feet) layer of glacial till.

Tl LUDLOW FORMATION

Grayish brown or yellowish brown silt, sand, clay and sandstone with some lignite. The Ludlow Formation in the Schmidt quadrangle is very thin (<30 feet). Slumping and vegetation obscure most outcrops. The best exposures are on the east bank of the Missouri River, near the University of Mary.

UPPER CRETACEOUS SYSTEM

Kh HELL CREEK FORMATION

Clay, silt, fine- and medium-grained sandstone. Typically rather "dab" in color compared to the more brightly colored Ludlow Formation. The Hell Creek Formation occurs along the bluffs of the Missouri River trench, and in the Little Heart River Valley. Most of the exposures are covered by vegetation.

Geologic Symbols

- Known contact between two geologic units
- - - Approximate contact between two geologic units
- ⌋ Areas prone to landslides, slumping

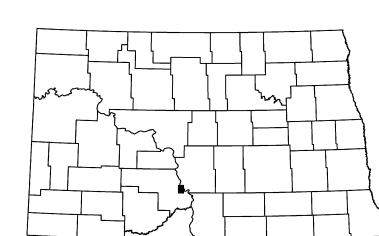
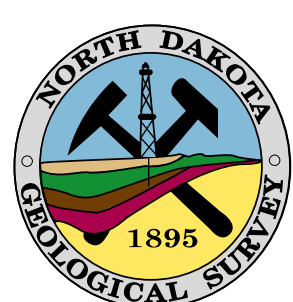
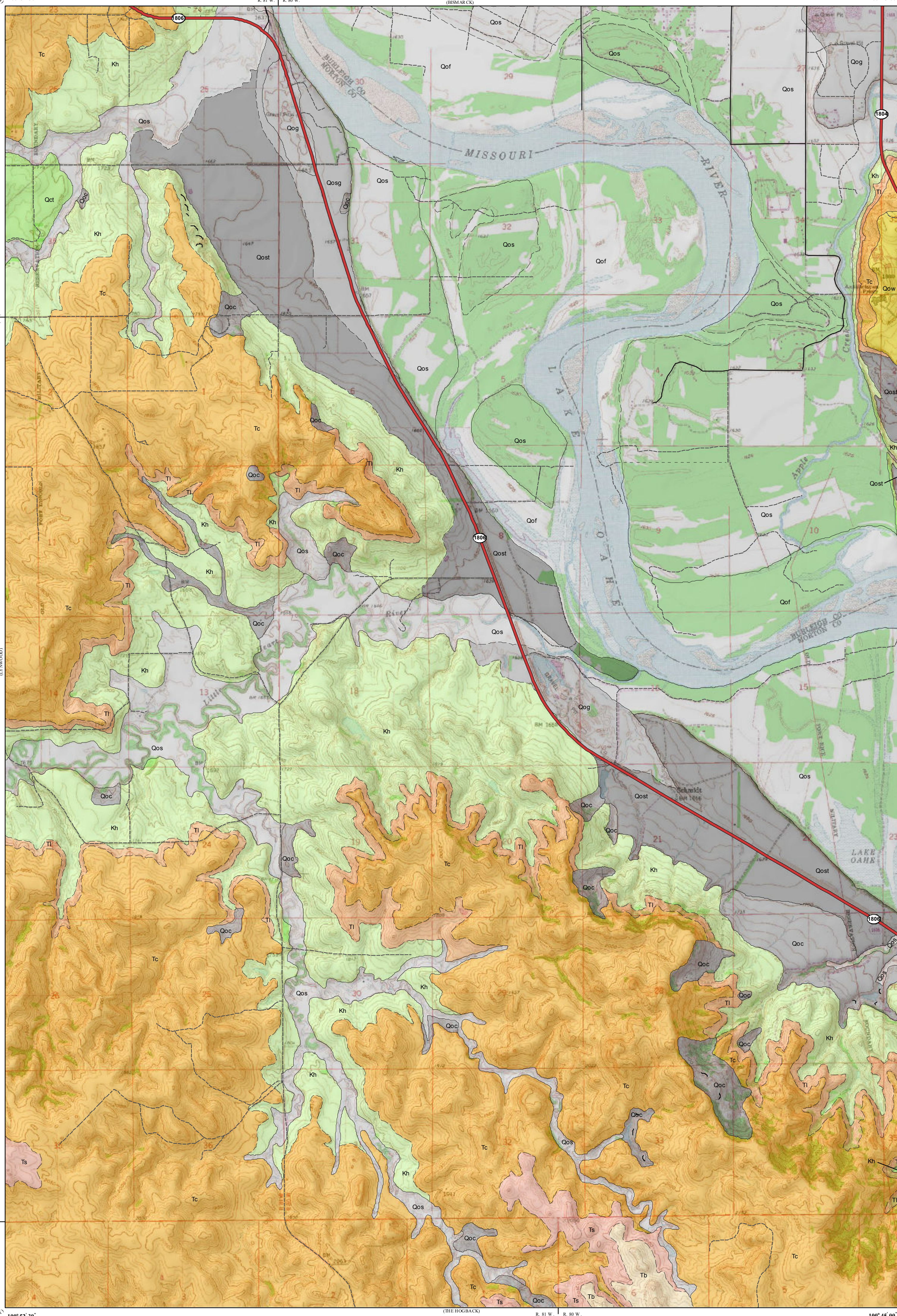
Other Symbols

- 1800 State Highway
- Paved Road
- - - Unpaved Road

Correlation of Map Units

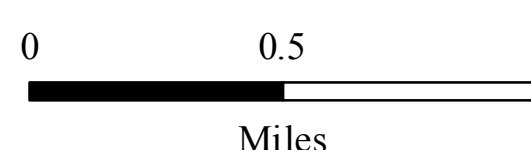
Quaternary	Holocene	Qos	Qof	Qow	Qog	Qosg
	Holocene/ Pleistocene	Qoc	Qosi	Qct		
Tertiary	Paleocene	Tb	Ts	Tc	Tl	
Cretaceous					Kh	

Note: Schmidt 24k quadrangle was not edgematched to adjacent mapped 24k quadrangles: Bismarck, Lynwood and Sugarloaf Butte.
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Cartographic Compilation: Elroy L. Kadmas



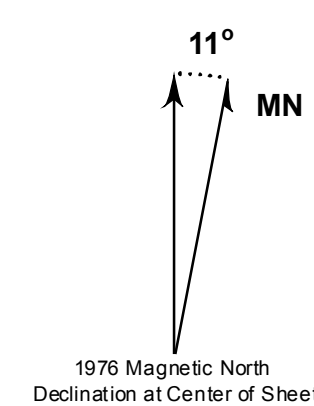
Schmidt Quadrangle, North Dakota

Scale 1:24,000



Miles

Lambert Conformal Conic Projection Standard Parallels 46° 37' 30" and 46° 45' 00"
1927 North American Datum NGVD 1929
USGS 7.5 Minute Topographic Map Contour Interval 10 Feet
Road Layer Rectified to 2003 NAIP Digital Orthophoto



1976 Magnetic North Declination at Center of Sheet