

# Surface Geology

## Mandaree SE Quadrangle, North Dakota

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### EXPLANATION

#### QUATERNARY SYSTEM

##### RECENT

##### OAHE FORMATION

**Qal** Alluvium

Brownish gray to black sand, silt, clay, and lenses of gravel; flood-plain deposits along recent drainages. Includes lower terrace deposits. Typically less than 50 feet thick.

##### RECENT/PLEISTOCENE

**Qls** Landslide Deposits

Variable mixture of strata and deposits that have slid to the base of steep slopes.

##### PLEISTOCENE

##### COLEHARBOR GROUP

**Qcg** Glacial Deposits

Grayish brown, sandy, silty, bouldery clay with lenses of sand and gravel (glacial till). May occasionally include thick deposits of glacial outwash.

**Qat** Terrace Deposits

Five- to 20-foot-thick layers of sand and gravel (consisting primarily of silerete, chert, flint, agate, petrified wood, and siltstone) found beneath flat to gently undulating slopes adjacent to many of the major creeks and rivers.

#### TERTIARY SYSTEM

##### EOCENE/PALEOCENE

**Tgv** GOLDEN VALLEY FORMATION

##### Camels Butte Member

Alternating beds of yellowish brown to brown, micaceous sandstone, siltstone, mudstone, claystone, and lignite.

##### Bear Den Member

Brightly colored, kaolinitic claystone, mudstone, and sandstone, typically overlain by a thin siliceous bed (silerete) or lignite.

##### PALEOCENE

**Tsb** SENTINEL BUTTE FORMATION

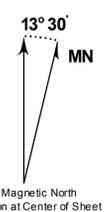
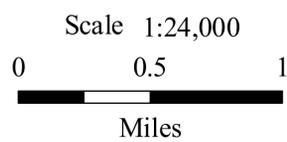
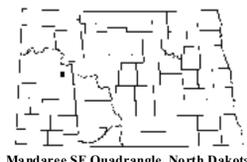
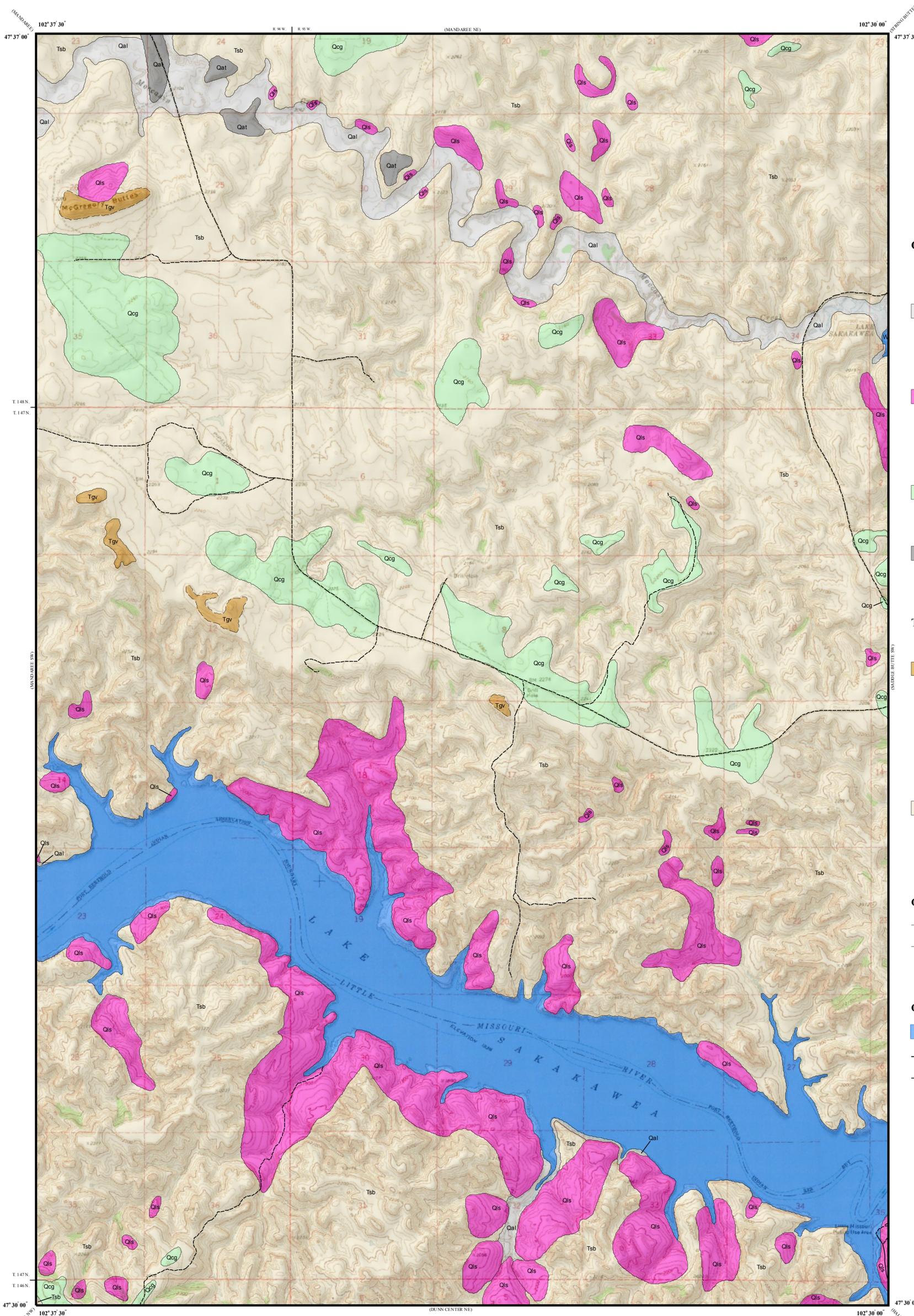
Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite.

#### Geologic Symbols

- Known contact between two geologic units.
- - - Approximate contact between two geologic units.

#### Other Features

- Water
- Paved Road
- Unpaved Road



Lambert Conformal Conic Projection Standard Parallels 47° 30' 00" and 47° 37' 30"  
1927 North American Datum NGVD 1929  
USGS 7.5 Minute Topographic Map Contour Interval 20 Feet  
Road Layer Rectified to 2003 NAIP Digital Orthophoto

1970 Magnetic North  
Declination at Center of Sheet