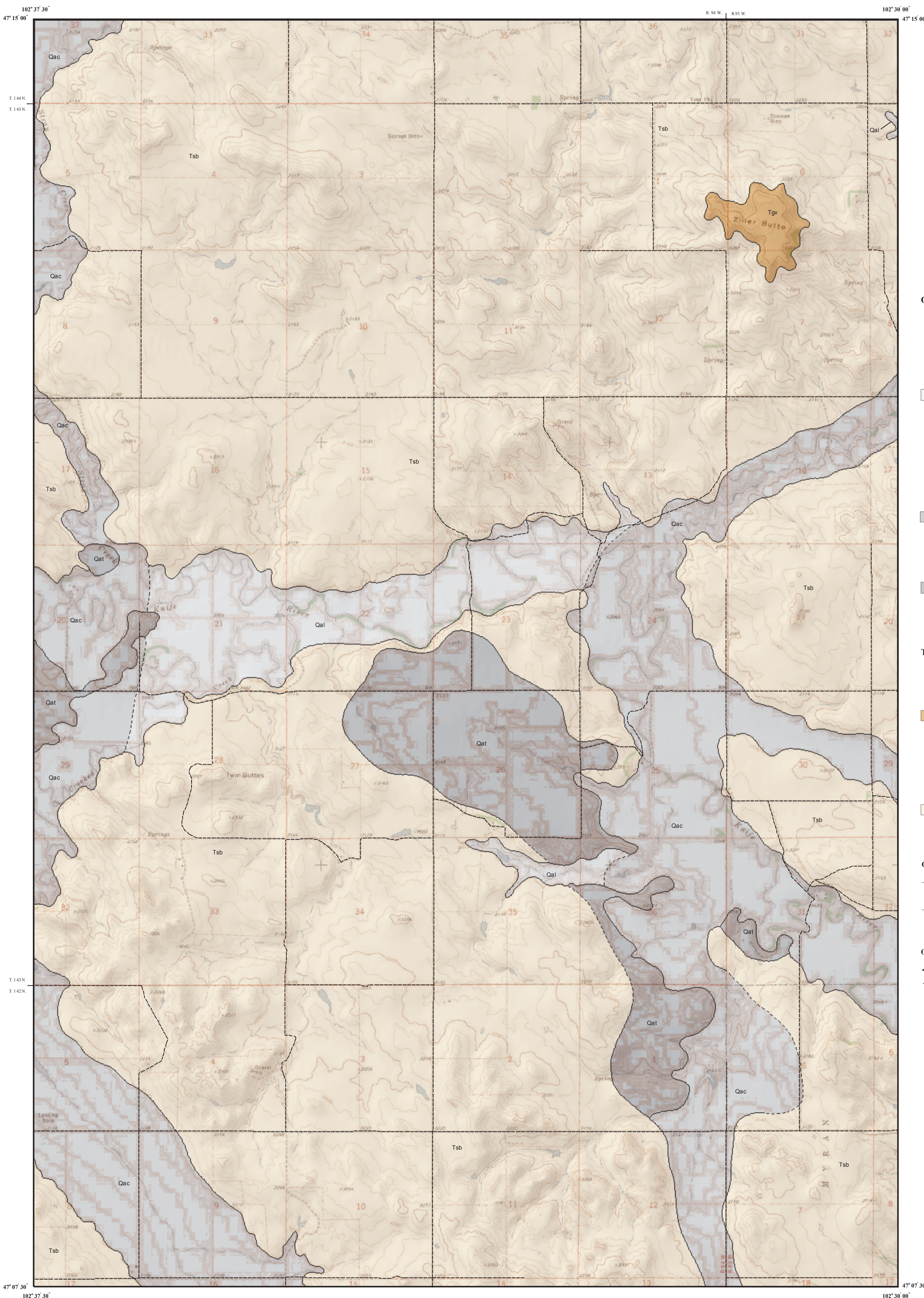


Surface Geology

Ziner Butte Quadrangle, North Dakota

Edward C. Murphy

2004



UNIT DESCRIPTIONS

QUATERNARY SYSTEM

RECENT

OLNEY FORMATION

Qal Alluvium
Brownish gray to black sand, silt, clay, and lenses of gravel; floodplain deposits (typically less than 30 feet thick) along recent drainages. Not differentiated where it overlies Qac.

PLEISTOCENE

COLEHARBOR GROUP

Qac Proglacial Channels
Generally contain 50 to 200 feet of sand and gravel, silt, clay, and till (meltwater-channel fill). Overlain by Recent alluvium (Qal) of variable thickness. This map unit was created to distinguish between these very thick channel deposits and the moderate to thin deposits mapped as Qal.

Qat Terrace Deposits
Five- to 20-foot-thick layers of sand and gravel (consisting primarily of siltcrete, chert, flint, agate, petrified wood, 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 (siltcrete) or lignite.

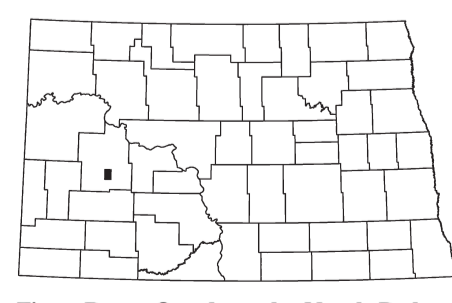
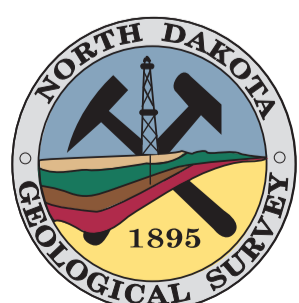
Tsb SENTINEL BUTTE FORMATION
Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite.

Geologic Symbols

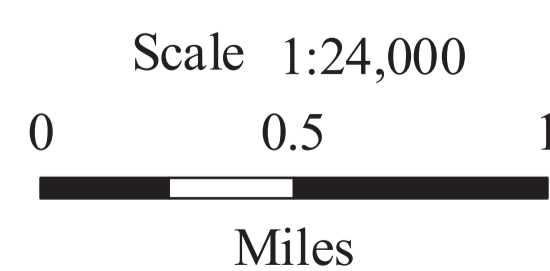
- Known contact between two geologic units
- - - Approximate contact between two geologic units

Other Features

- Paved Road
- - - Unpaved Road



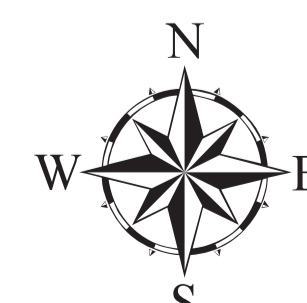
Ziner Butte Quadrangle, North Dakota



Scale 1:24,000

Miles

Lambert Conformal Conic Projection
Standard Parallels 47° 07' 30" and 47° 15' 00"



This geologic map was funded in part by the USGS National Cooperative Geologic Mapping Program.