

# Surface Geology

## Golden Valley Quadrangle, North Dakota

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### UNIT DESCRIPTIONS

#### QUATERNARY SYSTEM

##### RECENT

##### OAHE 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.

##### RECENT/PLEISTOCENE

**Qk** Landslide Deposits  
Variable mixture of strata and deposits that have slid to the base of steep slopes.

**Qml** Abandoned Mine Lands  
Surface underlain by voids created by the underground mining of lignite. Collapse of the mine voids often creates sinkholes or depressions at the surface.

##### 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. Generally preserved as a veneer in the uplands.

**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.

**Qact** Proglacial Terrace Deposits  
An isolated proglacial channel where the upper surface has remained relatively intact because modern streams cut across it but do not flow lengthwise through the old channel. As a result, the top of these deposits lies 20 to 30 feet above the surrounding Qac deposits. In most of the proglacial channels in the area, the original upper surface is preserved only in isolated terrace deposits (Qact).

**Qat** Terrace Deposits  
Five- to 20-foot-thick layers of sand and gravel (consisting primarily of silcrete, 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  
**Camek 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 (silcrete) or lignite.

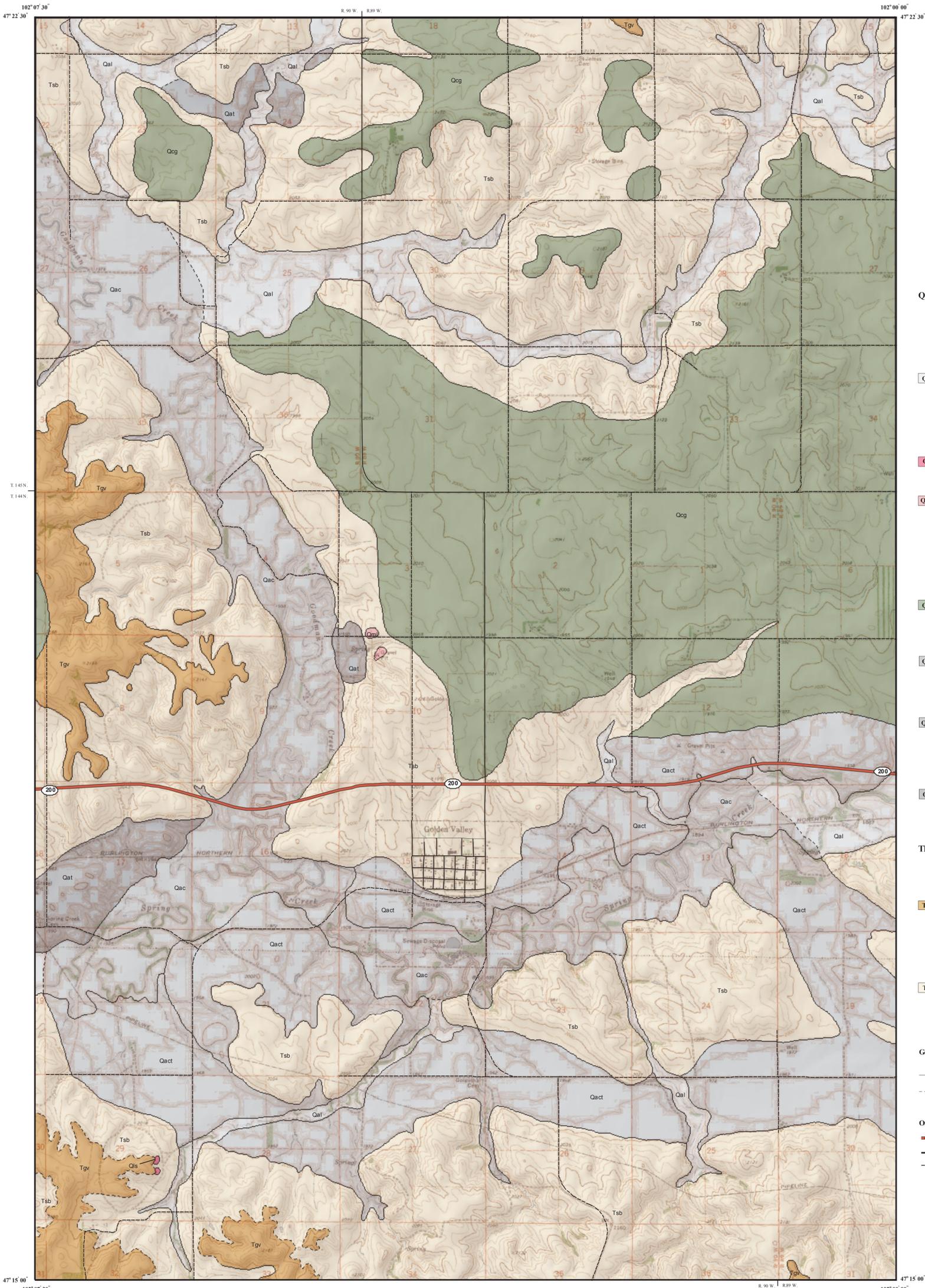
**Tsb** SENTINEL BUTTE FORMATION  
Alternating beds of grayish brown to gray sandstone, siltstone, mudstone, claystone, and lignite.

#### Geologic Symbols

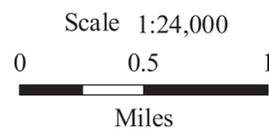
- Known contact between two geologic units.
- - - Approximate contact between two geologic units.

#### Other Features

- State Highway
- Paved Road
- Unpaved Road



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Lambert Conformal Conic Projection  
Standard Parallels 47° 15' 00" and 47° 22' 30"



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