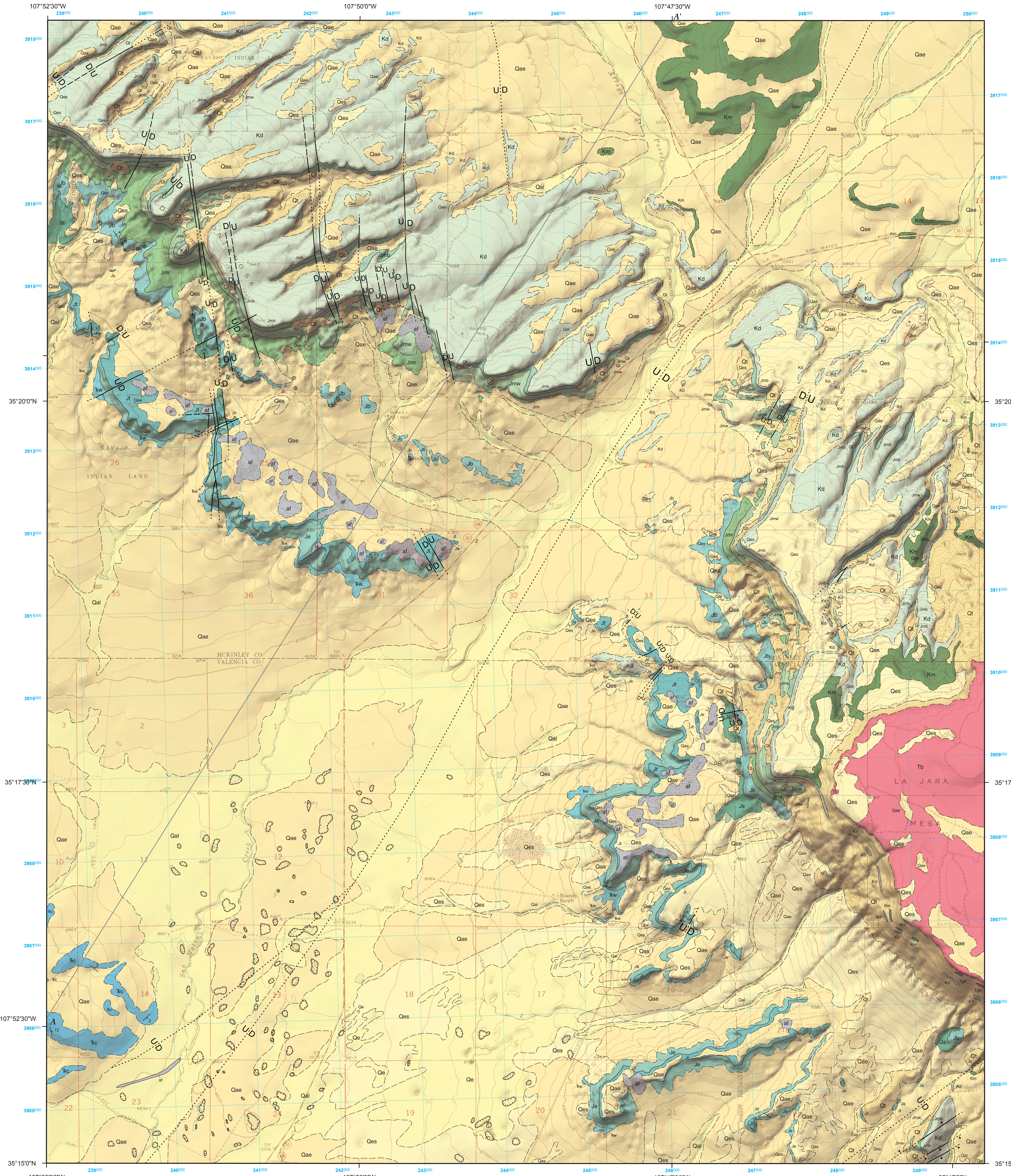
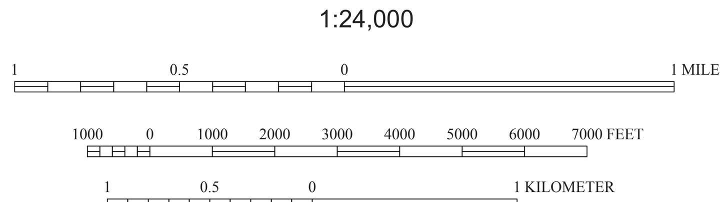


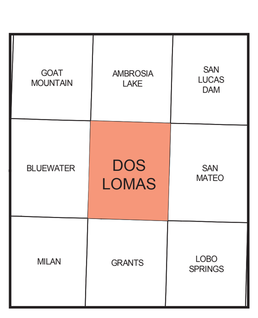
Base map from U.S. Geological Survey 1957, from photographs taken 1955, field checked in 1957, Photorevised in 1980
1927 North American datum, UTM projection -- zone 13N
1000-meter Universal Transverse Mercator grid, zone 13, shown in blue

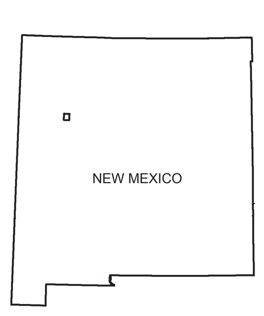
1:24,000



CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929





Magnetic Declination
October 2010
9° 49' East
At Map Center

QUADRANGLE LOCATION

Geologic map of the Dos Lomas quadrangle, Cibola and McKinley Counties, New Mexico.

June 2011

by
Steven Cather

New Mexico Bureau of Geology and Mineral Resources, Socorro, NM, 87801

New Mexico Bureau of Geology and Mineral Resources
Open-File Geologic Map 219

Mapping of this quadrangle was funded by a matching-funds grant from the STATEMAP program of the National Cooperative Geologic Mapping Act, administered by the U. S. Geological Survey, and by the New Mexico Bureau of Geology and Mineral Resources, (Dr. Peter Scholle, *Director and State Geologist*, Dr. J. Michael Timmons, *Geologic Mapping Program Manager*).

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This and other STATEMAP quadrangles are available for free download in both PDF and ArcGIS formats at:

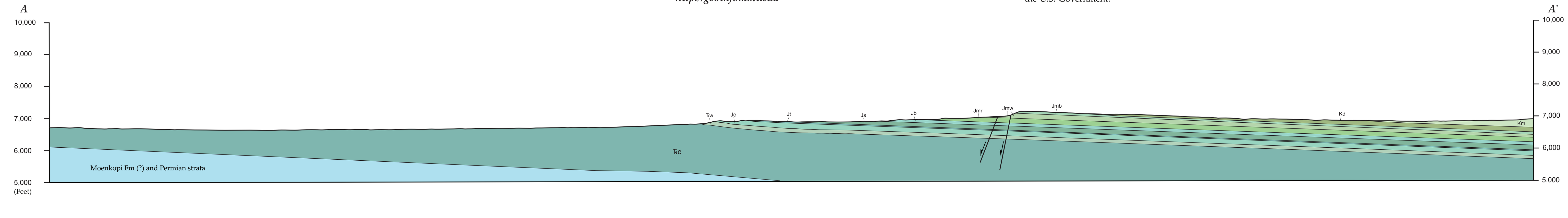
http://geoinfo.nmt.edu

COMMENTS TO MAP USERS

A geologic map displays information on the distribution, nature, orientation, and age relationships of rock and deposits and the occurrence of structural features. Geologic and fault contacts are irregular surfaces that form boundaries between different types or ages of units. Data depicted on this geologic quadrangle map may be based on any of the following: reconnaissance field geologic mapping, compilation of published and unpublished work, and photogeologic interpretation. Locations of contacts are not surveyed, but are plotted by interpretation of the position of a given contact onto a topographic base map; therefore, the accuracy of contact locations depends on the scale of mapping and the interpretation of the geologist(s). Any enlargement of this map could cause misunderstanding in the detail of mapping and may result in erroneous interpretations. Site-specific conditions should be verified by detailed surface mapping or subsurface exploration. Topographic and cultural changes associated with recent development may not be shown.

Cross sections are constructed based upon the interpretations of the author made from geologic mapping, and available geophysical, and subsurface (drillhole) data. Cross-sections should be used as an aid to understanding the general geologic framework of the map area, and not be the sole source of information for use in locating or designing wells, buildings, roads, or other man-made structures.

The map has not been reviewed according to New Mexico Bureau of Geology and Mineral Resources standards. The contents of the report and map should not be considered final and complete until reviewed and published by the New Mexico Bureau of Geology and Mineral Resources. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the State of New Mexico, or the U.S. Government.



Map Unit Descriptions

QUATERNARY

af — **Disturbed and/or artificial fill—**Areas affected by human disturbances, mapped where deposits or extractions are areally extensive.

Qal — **Alluvium (Holocene)—**Sand, gravel, and mud in and adjacent to modern arroyo channels. Alluvium is typically at or near the grade of modern channels. 0–10 m thick. Numerous shallow (< 2 m deep) pits are present in this unit and units **Qae**, **Qe**, and **Qes** near San Mateo Creek in the southwest part of the quadrangle. These pits (stippled areas on map) are largely the result of deflation, but some may be the result of soil collapse.

Qae — **Eolian and alluvial deposits (Upper Pleistocene–Holocene)—**Reddish–brown eolian sand and loessic silt locally reworked by alluvial processes. Deposits are stabilized by vegetation in most areas. Includes discontinuous eolian veneers on stable upland surfaces. 0–10 m thick.

Qe — **Eolian sand (Upper Pleistocene-Holocene)—**Sparsely–vegetated to unvegetated sand in active eolian dunes and sand sheets. 0–10 m thick

Qes — **Semi-stabilized eolian sand (Upper Pleistocene–Holocene)—**Eolian sand dunes and sand sheets stabilized by vegetation. 0–10 m thick

Qt — **Talus and colluvium (Upper Pleistocene–Holocene)—**Coarse mass-wasting deposits of sand to boulder size that mantle steep slopes adjacent to upland areas. 0–15 m thick.

Neogene

Tb — **Basalt (Pliocene or Early Pleistocene?)—**Flows of black to gray, medium–to fine–grained trachybasalt on La Jara Mesa. Flows contain sparse phenocrysts of olivine, plagioclase, and clinopyroxene. Erupted from vents on adjacent San Mateo quadrangle (McGraw et al., 2009). Unit is not dated. Maximum thickness is ~30 m. Corresponds to map units **Tyotb** and **Tymtb** of McGraw et al. (2009).

Tgrt — **Rhyolite tuff of Grants Ridge (Pliocene)—**White to pale pink, bedded pyroclastic fall, flow, and surge deposits on La Jara Mesa. Contains abundant clasts of obsidian, pumice, and lithics. Lithics consist of Precambrian granite and gneiss, chert, sandstone, and limestone. Unit is ~3.3 million years old. Maximum thickness is about 100 m.

UPPER CRETACEOUS

Km — **Mancos Shale, main body (Cenomanian–Turonian)—**Medium to dark gray marine mudstone intercalated with thin-bedded sandstone. Only the lower ~80 m is exposed in quadrangle.

Kd — **Dakota Sandstone (Cenomanian)—**Yellowish–brown to light–gray shore-zone sandstone and gray mudstone. About 25 m thick.

JURASSIC

Morrison Formation (Kimmeridgian and Tithonian)

Jmb — **Brushy Basin Member—**Grayish–green to bluish green fluvial mudstone and lenticular, light–gray sandstone. 10–40 m thick.

Jmw — **Westwater Canyon Member—**Light–yellowish to reddish–gray fluvial sandstone with subordinate greenish-gray mudstone. Includes units **Jmwl** and **Jmwu** of Thaden et al. (1967). 30–60 m thick.

Jmr — **Recapture Member—**Variegated fluvial mudstone and interbedded sandstone. 40–75 m thick.

Jb — **Bluff Sandstone (Oxfordian)—**Light–gray, yellowish–gray and pale–orange crossbedded eolian sandstone. Includes units **Jb** and **Jsa** of Thaden et al. (1967). 30–100 m thick. Numerous sinkholes (small circular areas on map) are exposed in the Bluff Sandstone in the northwest part of the quadrangle. These are presumably the result of solution collapse in the underlying Todilto Formation.

Js — **Summerville Formation (Callovian and Oxfordian)—**Variegated mudstone and tabular sandstone. 40–50 m thick.

Jt — **Todilto Formation, Luciano Mesa Member (Callovian)—**Olive–gray to pale–yellow, thin- to thick-bedded limestone deposited in a lacustrine or saline environment. About 10 m thick. Gypsum of the Tonque Arroyo Member is not present in the quadrangle.

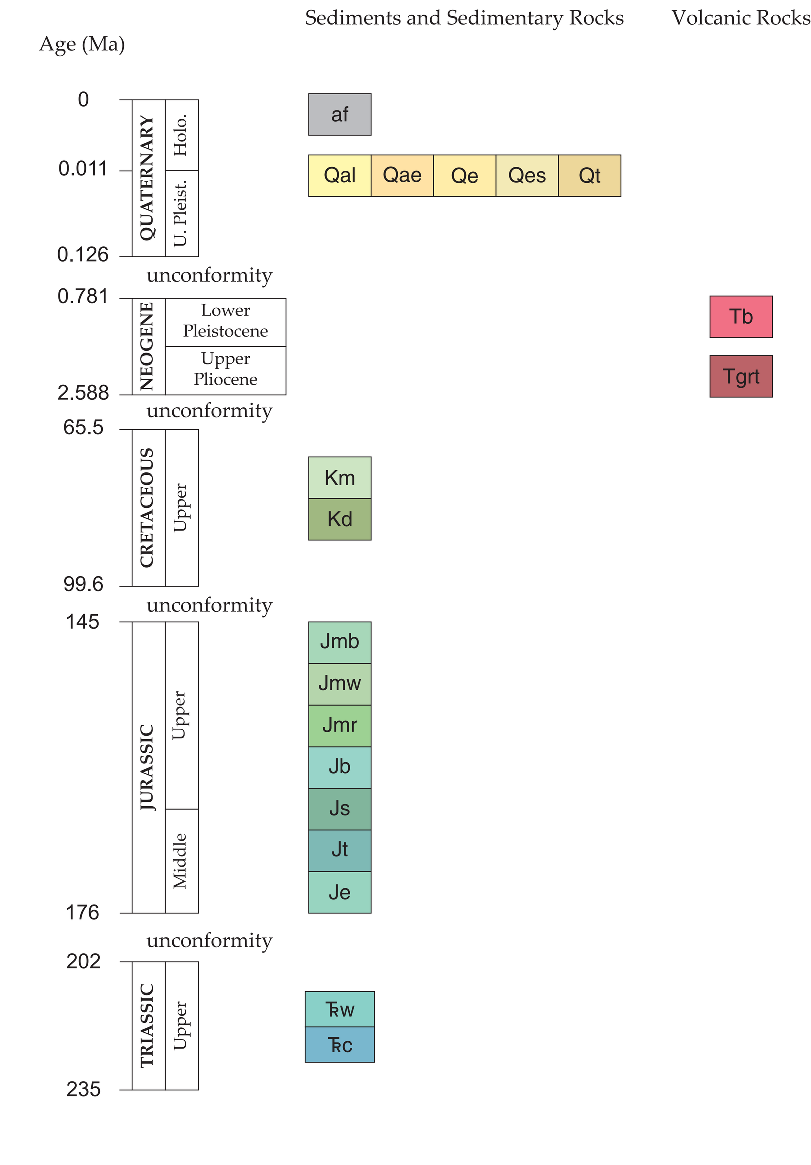
Je — **Entrada Sandstone (Callovian)—**Light–brown, cross-bedded eolian sandstone and reddish brown, tabular-bedded siltstone. About 50 m thick. Includes units **Jem** and **Jeu** of Thaden et al. (1967).

TRIASSIC

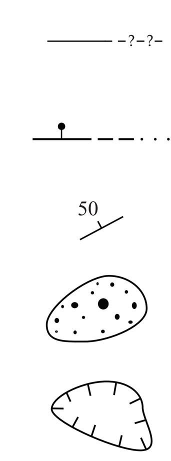
Ƭw — **Wingate Sandstone (Rhaetian?)—**Reddish–brown, cross–bedded eolian sandstone. About 30 m thick.

Ƭc — **Chinle Group (Norian)—**Dark red to bluish gray mudstone, lenticular sandstone, and thin-bedded limestone. About 400 m thick, although only the middle and uppermost parts are exposed on the quadrangle. Includes units **Trcs** and **Trcu** of Thaden et al. (1967).

Correlation Diagram



Map Symbols



Contact, dashed where approximately located

Fault, dashed where approximately located, dotted where covered, bar and ball on downthrown block, arrow showing direction and amount of dip

50 Strike and dip of bedding

Shallow pit in Quaternary sediments due to deflation or soil collapse

Sinkhole