

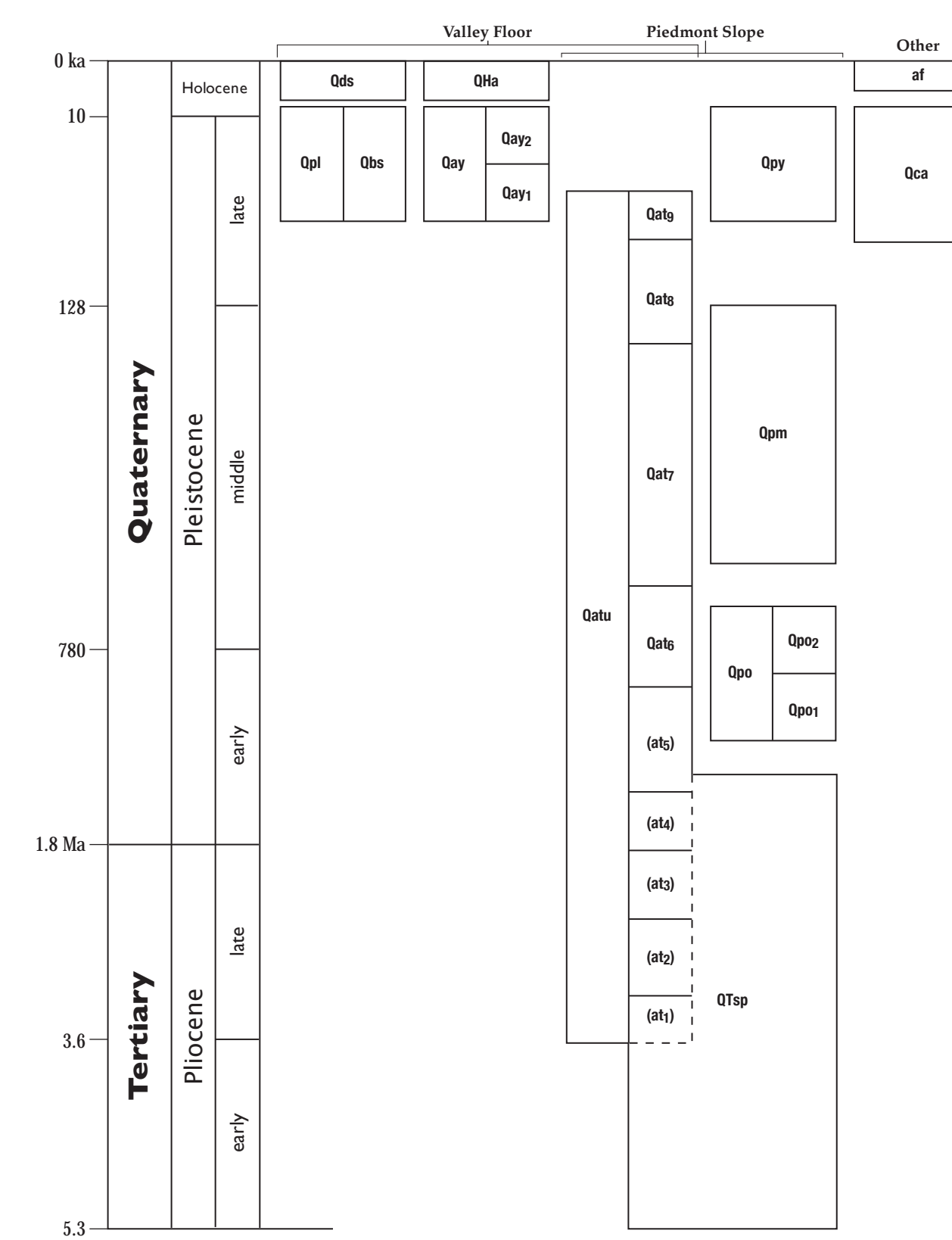
**DESCRIPTION OF MAP UNITS**

- af **Artificial fill** - areas of disturbed ground, either excavated or fill. Commonly seen as check dams for stock tanks.
- Qca **Colluvium and alluvium, undivided** (Holocene to upper-middle Pleistocene) - sands and volcanic gravels on hillslopes and adjacent to upland stream channels.
- Pleistocene Lake San Agustin Deposits**
- Qpl **Playa deposits** (Historic to uppermost Pleistocene) - clay to fine-grained sand lake bed sediments.
- Qbs **Beach-ridge sand deposits** (Holocene to uppermost Pleistocene) - well sorted, fine- to medium-grained sands, deposited along linear beach-ridges.
- Qds **Sand sheets and dune sand deposits** (Historic to Holocene) - well sorted, fine-grained sands deflated from Qpl deposits to the west, commonly stabilized by grasses and low shrubs. Where active, they often exhibit parabolic dunal forms with associated adjacent areas of deflation, seen migrating to the east-northeast.
- Stream Alluvium**
- QHa **Youngest stream alluvium** (Historic to Holocene) - sands and volcanic gravel lag deposits found in active stream channels and adjacent floodplains.
- Qay **Younger stream alluvium** (Holocene to uppermost Pleistocene) - sands and volcanic gravels found in stream channels, especially in upland streams. Subdivided by age/inset relationships where possible (Qay1, Qay2, Qay3).
- Qat **Stream terrace alluvium** (upper to lower Pleistocene) - sands and volcanic gravels found flanking larger stream channels and canyons. Oldest terraces of Alamosa Creek are seen as strath-cut surfaces in Q1sp or bedrock and are differentiated by (at.s) symbology.
- Piedmont Alluvium**
- Qpy **Youngest piedmont alluvium, undivided** (Holocene to uppermost Pleistocene) - sands and volcanic gravels found in fans and bajadas, especially in toe-slope landscape positions adjacent to playa deposits or major stream channels. Soils developed in these deposits commonly exhibit stage I to I+ pedogenic carbonate morphology in lower elevations.
- Qpm **Older piedmont alluvium, undivided** (upper to middle Pleistocene) - sands and volcanic gravels found in fans and bajadas, often occurring in mid-slope landscape positions. Soils developed in these deposits commonly exhibit stage III pedogenic carbonate morphology in lower elevations.
- Qpo **Old piedmont alluvium, undivided** (middle Pleistocene to Plio-Pleistocene) - sands and volcanic gravels found in fans and bajadas adjacent to uplands. Soils developed in these deposits commonly exhibit stage III to V+ pedogenic carbonate morphology in lower elevations. Subdivided by age/inset relationships where possible (Qpo1, Qpo2).
- Santa Fe Group**
- Q1sp **Upper Santa Fe Group piedmont alluvial deposits, undivided** (lower Pleistocene to Pliocene) - sands and volcanic gravels, often partially indurated, found in fans and bajadas adjacent to uplands. Soils developed in these deposits commonly exhibit stage IV to V+ pedogenic carbonate morphology in lower elevations.
- Tu **Tertiary bedrock, undifferentiated**

**DESCRIPTION OF GEOLOGIC MAP SYMBOLS**

- Geologic contact - solid where exposed; dashed where approximately located.
- Geologic contact between stream terrace strath-cut surfaces, found on Q1sp or bedrock
- Pleistocene Lake San Agustin shoreline - solid with bars where scarp-forming; dashed where approximately located; dash-dotted where shoreline etched a wave-cut notch in bedrock.
- Normal fault - solid where exposed; dashed where approximately located; dotted where concealed. Bar and ball on downthrown block.
- Strike-slip fault - solid where exposed; dashed where approximately located; dotted where concealed.
- Strike and dip of bedding.

**CORRELATION OF UNITS**

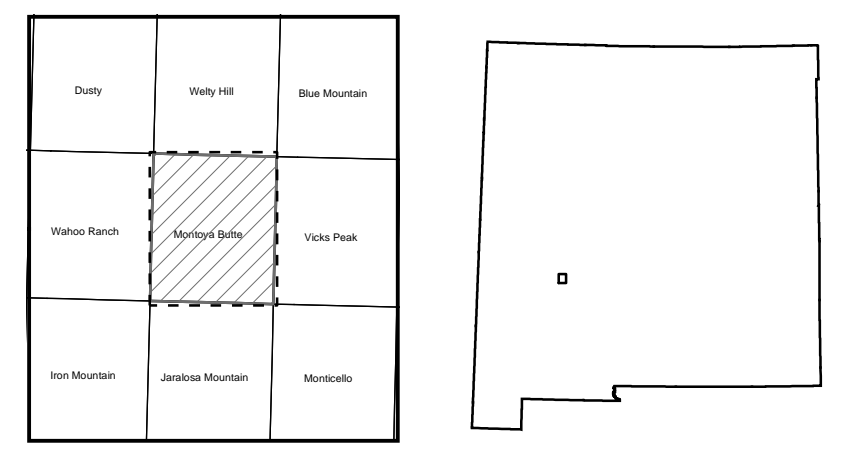
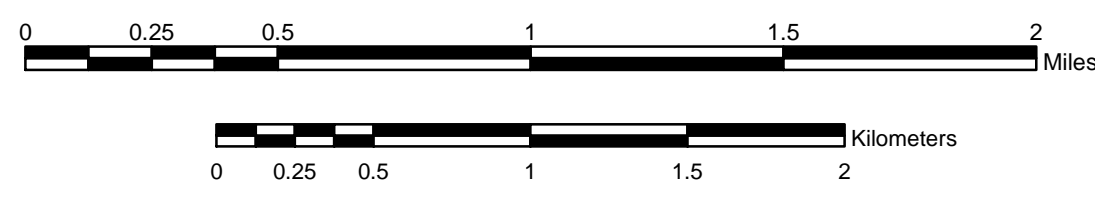


Base from U.S. Geological Survey 1984, from photographs taken 1976 and field checked in 1976. Map edited in 1994. 1987 North American datum, UTM projection - zone 13. 1000-meter Universal Transverse Mercator grid, zone 13, shown in red.

**Quaternary Geology of the Montoya Butte 7.5 - minute quadrangle**  
by  
**David J. McCraw**

May 2003

1:24,000



Magnetic Declination  
August, 2003  
10° 29' East  
At Map Center

This work was performed under the STATEMAP component of the USGS National Cooperative Geologic Mapping Program. Funding was provided by the U.S. Geological Survey and the New Mexico Bureau of Geology and Mineral Resources, a division of New Mexico Tech.

New Mexico Bureau of Geology  
New Mexico Tech  
801 Leroy Place  
Socorro, NM 87781-4796  
(505) 835-5420  
http://geoinfo.nmt.edu

This and other maps are available in PDF format from:  
http://geoinfo.nmt.edu/statemap  
or contact:  
NMBGMR Publications - (505) 835-5410  
NMBGMR Geologic Information Center - (505) 835-5145

**DRAFT**  
NMBGMR OF-GM 69-Q

This draft geologic map was produced from scans of hand-drafted originals from the author. It is being distributed in this form because of the demand for current geologic mapping in this important area. The final release of this map will be made following peer review and redrafting in color using NMBGMR cartographic standards. The final product will be made available on the internet as a PDF file and in a GIS format.

**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.