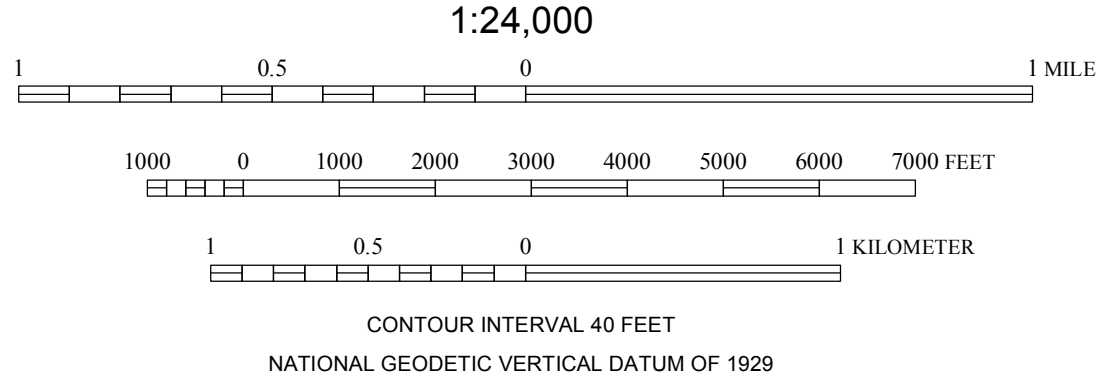
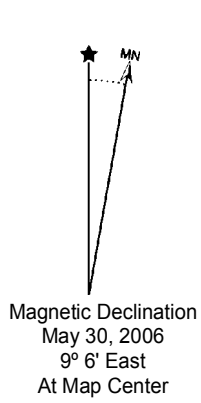
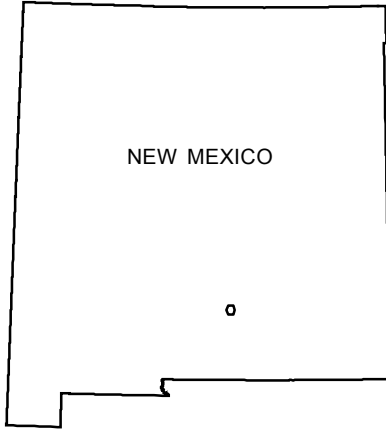


Base map from U.S. Geological Survey 1974, from photographs taken 1973, field checked in 1974.
1927 North American datum, UTM projection - zone 13N
1000-meter Universal Transverse Mercator grid, zone 13, shown in red

FERMAN CANYON	ELK SILVER	TURKEY PEAK
CLOUDCROFT	Harvey Ranch	MAYNELL
BLUFF SPRINGS	SACRAMENTO	WOODSON CANYON

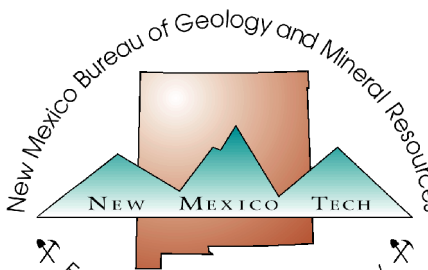


QUADRANGLE LOCATION

This draft geologic map is preliminary and will undergo revision. It was produced from either scans of hand-drafted originals or from digitally drafted original maps and figures using a wide variety of software, and is currently in cartographic production. It is being distributed in this draft form as part of the bureau's Open-file map series (OFGM), due to high demand for current geologic map data in those areas where STATEMAP quadrangles are located, and it is the bureau's policy to disseminate geologic data to the public as soon as possible.

After this map has undergone scientific peer review, editing, and final cartographic production adhering to bureau map standards, it will be released in our Geologic Map (GM) series. This final version will receive a new GM number and will supercede this preliminary open-file geologic map.

DRAFT



New Mexico Bureau of Geology and Mineral Resources
Open-file Geologic Map **154**

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 A. Scholle, Director and State Geologist, Dr. J. Michael Timmons, Geologic Mapping Program Manager).

New Mexico Bureau of Geology and Mineral Resources
New Mexico Tech
801 Leroy Place
Socorro, New Mexico
87801-4796

[505] 835-5490
<http://geoinfo.nmt.edu>

This and other STATEMAP quadrangles are (or soon will be) available for free download in both PDF and ArcGIS formats at:

<http://geoinfo.nmt.edu/publications/maps/geologic/ofgm/home.html>

Geologic map of the Harvey Ranch quadrangle, Otero County, New Mexico

March 2007

by
Benjamin Hallett

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

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.

Harvey Ranch Quadrangle Unit Descriptions:

Permian Rocks

Py: Permian Yeso Formation

A heterogeneous unit of mudstone, limestone, dolomite, and evaporates, the Yeso occurs mainly in canyon bottoms and lower slopes in the eastern part of the map area. The Yeso is best recognized by pinkish-red to yellow claystones and siltstones. Evaporite lithologies, mainly gypsum in surface exposures, are less common in the upper part of the Yeso exposed in the Harvey Ranch quadrangle. Carbonate occurs throughout the Yeso, yet is more common near the top of the Yeso, generally above a thick package of mudstones. Yeso carbonate is generally more tan in color and more thinly bedded than the gray carbonates of the San Andres formation. Measured sections of the Yeso range from ~1200 to 1500 feet in thickness (Pray, 1961)

Ps: Permian San Andres Formation

The San Andres formation is a gray to brownish gray locally fossiliferous micritic limestone and dolomite. This unit occurs on slopes and ridgetops across map area. Near the base of the San Andres Formation occur lenses of fine-medium grained rusty quartz arenite sandstone, believed to be equivalent to the Glorieta sandstone (Kelly, 1978). The Glorieta sandstone is not entirely continuous, but it can generally be found along strike within 500 feet of where it pinches out. As this is the only documented and recognized non-carbonate lithology within the San Andres formation, it was generally utilized to map the contact between San Andres and carbonate-bearing Yeso formation. The Glorieta sandstone commonly occurs 60-120 feet above the base of the San Andres formation (Pray, 1961). As little or no outcrop occurs in much of the map area, the location of this contact was generally estimated relative to the highest float blocks of Glorieta sandstone. The entire section of the San Andres formation is not exposed in the Harvey ranch quadrangle, yet its thickness is estimated at ~700 feet (Kelley, 1978).

Cenozoic Surficial Deposits

Qal: Quaternary Alluvium

Holocene and older stream and minor terrace deposits. This unit fills valley floors and is characterized as a sandy gravel composed of mainly carbonate clasts and minor quartz sandstone (Glorieta).

QTA: Older Alluvium

Terrace and alluvial fan deposits. This unit occurs mainly at the mouths of smaller side canyons where they run into James Canyon. Composed of fine to coarse subrounded carbonate pebbles, most with calcic rinds, in a reddish silty sand matrix. Layers often alternate between more fine and more coarse, and commonly show clast imbrication. QTA is moderately consolidated and generally at a higher level than Qal.



Photo of fault breccia near UTM NAD27 zone13S 449532E, 3643653N
Photographer: Benjamin Hallett



Photo of Py-Ps contact in Dolins Canyon near UTM NAD27 zone 13S 448912E, 3639226S
Photographer: Benjamin Hallett