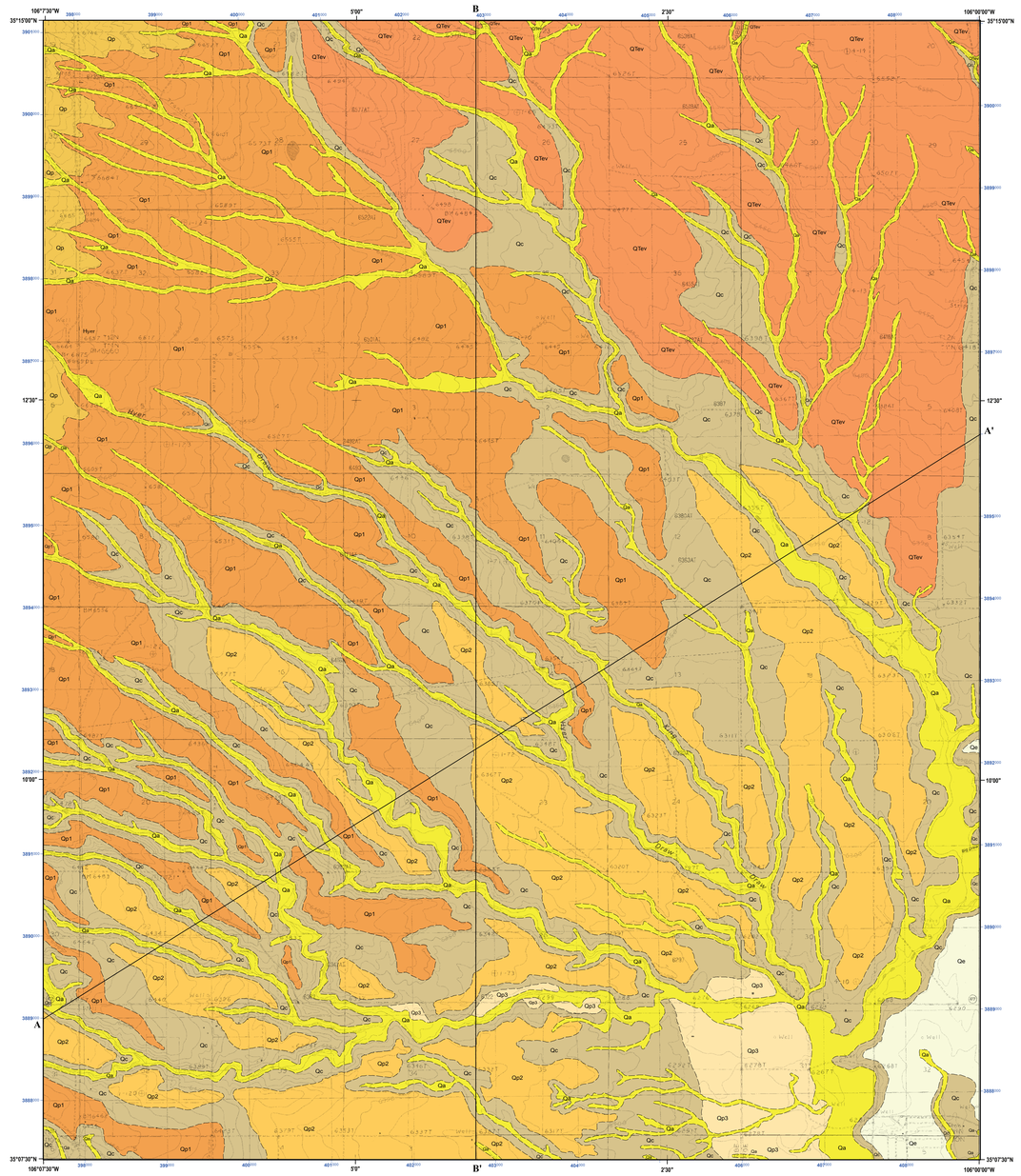

Base from U.S Geological Survey 1984, from photographs taken 1976 and field checked in 1976.
Map edited in 1984. Base projected from NAD83 to NAD27
1927 North American datum, UTM projection – zone 13
1000- meter Universal Transverse Mercator grid, zone 13, shown in red

1:24,000

1 0.5 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0.5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET

NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

Magnetic Declination
May 2004
10° 15' East
At Map Center

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
Open-file Geologic Map 117

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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

Geologic map of the King Draw quadrangle, Santa Fe County, New Mexico.

May 2006

by
Bruce Allen

New Mexico Bureau of Geology and Mineral Resources, 2808 Central Ave. SE, Albuquerque, NM 87106

DESCRIPTION OF MAP UNITS

Neogene Deposits

Qa **Valley-floor alluvium (Holocene)** — Silt, sand, clay, and gravel underlying modern drainages and floodplains. Deposits are inset into older alluvial deposits (units *QTev* and *Qp*), and interfinger with recent deposits of units *Qc* and *Qe* along drainage foot slopes. Generally less than 3 m thick.

Qc **Alluvial, colluvial, and eolian deposits mantling side slopes of drainages and terraces (Holocene to upper Pleistocene?)** — Derived from erosion of piedmont surface deposits (*Qp*) and older alluvium (*QTev*), and from sources of eolian silt and sand. Includes unmapped deposits of units *Qp* and *QTev*, and interfingers with valley-floor alluvium (*Qa*) along drainage foot slopes. Estimated thickness is 5 m or less.

Qe **Eolian, alluvial, and colluvial deposits, southeast portion of the map area (Holocene to upper Pleistocene ?)** — Wind-deposited silt and sand, locally modified by alluvial processes. Includes unmapped patches of older alluvium that are present at or very near the surface. Southeast of the map area, these deposits are up to ~4 m thick; accumulations are thinner within the map area.

Qp **Piedmont-slope alluvium and colluvium (Holocene to middle Pleistocene?)** — Includes alluvial aprons bordering the western uplands of the Estancia basin and younger, inset alluvial fills. Bedrock sources include Tertiary porphyries and Pennsylvanian to Permian age shale, limestone, and sandstone. Probably includes significant contributions of eolian sediment in some areas. Predominantly sand and silt, with coarser grained deposits dominated by sand and gravel present along high-order drainages and increasing toward the uplands to the west. Unit ranges in thickness from a few meters or less where it forms a thin mantle over bedrock (west of the map area), to perhaps 30 m or more in lower parts of the quadrangle, where it overlies older, generally coarser grained deposits of unit *QTev* in the subsurface. The deposits were previously subdivided into four map units (Qp_{1-4}) on the adjacent San Pedro quadrangle to the west. This division has been simplified to include a single, undivided map unit (*Qp*) along the upper piedmont slopes, and 3 levels of inset fills (units Qp_{1-3}):

Qp_1 **Piedmont alluvium, inset into older deposits of unit *Qp* (Holocene? to upper Pleistocene)** — Estimated thickness is 3 m or less.

Qp_2 **Piedmont alluvium, inset into older deposits of *Qp* and *QTev* (upper to middle Pleistocene?)** — Estimated thickness is 3 m or more; some areas mapped as Qp_3 may be straths, with little accumulation of associated fill.

Qp_3 **Piedmont alluvium, underlies highest interfluvial summits along the middle piedmont slope of the western Estancia basin (upper to middle Pleistocene?)** — Unit has been extensively incised in the vicinity of major drainages, and is underlain by older deposits of unit *QTev* toward the topographic axis of the basin.

QTev **Alluvium of the ancestral Estancia valley (lower Pleistocene? to Pliocene?)** — Sand, gravel, silt, and clay derived largely from fluvial systems that headed in uplands to the west and north. Deposits unconformably overlie bedrock in the subsurface. Unit is present at or very near the surface over large areas along the northern and eastern margins of the northern Estancia topographic basin, and is buried elsewhere by younger, generally finer-grained deposits. Within the map area, coarse-grained clasts are dominantly igneous porphyries and Paleozoic-Cenozoic sedimentary rocks derived from uplands to the west and northwest (Ortiz-San Pedro-South Mountain igneous intrusive complex). Pink granitic clasts derived from the western side of the southern Sangre de Cristo Mountains to the north become increasingly abundant east of the map area, and are present in subordinate amounts at least as far west as state Highway 41. The deposits are generally unconsolidated; however, groundwater-related calcite cementation has been observed locally in nearby (off of the map area) exposures of the basal part of the unit. Soils on the deposits exhibit well-developed pedogenic carbonate horizons. Quaternary incision and stripping of the unit has resulted in the development of progressively lower terraces and the probable deposition of local inset fills, which are included in the map unit. Thickness ranges from a few meters in eroded remnants along the northern edge of the Estancia Basin, to perhaps 100 meters in the southern part of the map area where it is buried by younger deposits.

Cross Sections

Neogene

QT Neogene deposits on the cross sections, because they are relatively thin in comparison to the bedrock units underlying the area, are undifferentiated and are therefore collectively referred to as "QT."

Bedrock Units

Bedrock units on the cross sections are differentiated by geologic system. Lithologic characteristics, thicknesses, and the structural distribution of bedrock units, as well as the thickness of overlying fill, are highly generalized and based on limited subsurface information. Overall geologic structure and thickness of bedrock units are extrapolated from recent mapping on adjacent quadrangles to the north and west of the map area. The overall geologic structure is based on the report by Broadhead (1997), which contains no subsurface data for the map area. Paleogene igneous intrusive bodies that may be present in the subsurface are not depicted. More detailed discussion of the rock units briefly described below are provided by Kelley and Northrop (1975), Lucas and others (1999a, 1999b), and Myers (1973). These reports are based on studies in neighboring areas to the south, west, and north of the King Draw quadrangle.

K **Cretaceous rocks** in the area consist of a thick sequence of marine to marginal marine shale, sandstone, and minor limestone. Cretaceous rocks are the youngest bedrock units exposed along the northern margin of the Galisteo valley, a few kilometers to the north of the map area.

J **Jurassic rocks** include, in ascending order, the Entrada Sandstone, laminated limestone and gypsum of the Todilto Formation (only a few meters thick in the northern Galisteo valley), sandstone, siltstone, and gypsum of the Summerville Formation, and terrestrial deposits dominated by mudstone and sandstone of the Morrison Formation. A total thickness for the Jurassic system of 800 feet (244 m) was used to construct the cross sections.

Tr **Triassic rocks** in the area consist of terrestrial red beds dominated by mudstone and sandstone. Assumed total thickness 1400 feet (427 m).

P **Permian rocks** in the area include, in ascending order, red-bed mudstone and sandstone of the Abo Formation and marine and marginal marine sandstone, mudstone, limestone, and evaporites of the Yeso, Glorieta, and San Andres Formations and rocks assigned to the Artesia Group. Assumed total thickness 2000 feet (610 m).

IP **Pennsylvanian strata** in the area consist of marine and marginal marine carbonates and siliciclastics of the Sandia Formation and overlying Madera Group. A thin (up to 10s of meters) sequence of limestone and shale deposited during the Mississippian (?) may be present between the Sandia Formation and Proterozoic crystalline rocks. Assumed total thickness 1600 feet (488 m) in western part of map area, thinning toward the east and a northern extension of the Ancestral Rocky Mountain-Pedernal landmass.

X **Proterozoic crystalline rocks.**

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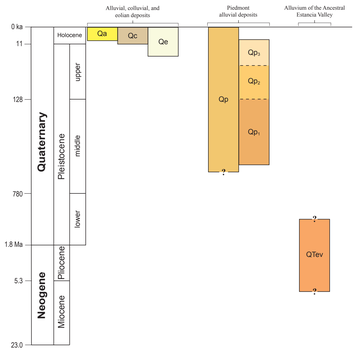
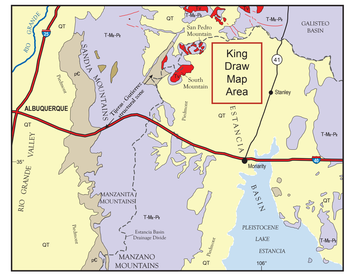
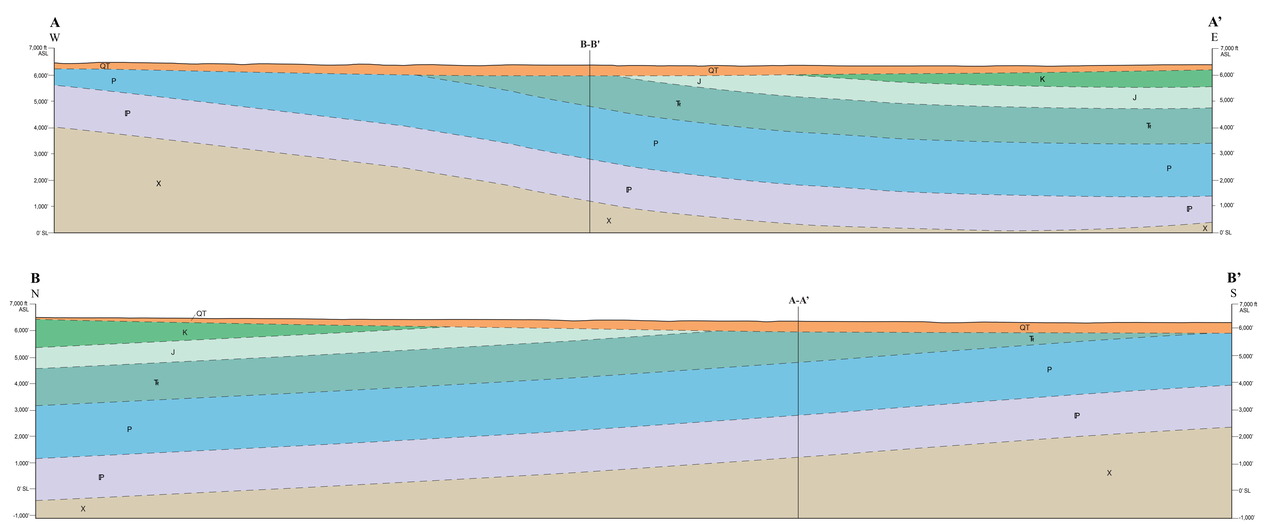
CORRELATION OF MAP UNITS





Regional generalized geology and physiography surrounding the King Draw 7.5-minute quadrangle.

GEOLOGIC CROSS SECTIONS



EXPLANATION OF MAP SYMBOLS

A — A' Location of geologic cross section.

Geologic contact. Solid where exposed or known, dashed where approximately known, dotted where concealed or inferred.

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.