Geologic Map of the Tome SE Quadrangle, Valencia County, New Mexico

By

Geoffrey Rawling

May, 2005

New Mexico Bureau of Geology and Mineral Resources Open-file Digital Geologic Map OF-GM 109

Scale 1:24,000

This work was supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program (STATEMAP) under USGS Cooperative Agreement 06HQPA0003 and the New Mexico Bureau of Geology and Mineral Resources.



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

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Mapped and compiled by Geoffrey Rawling

EXPLANATION OF MAP UNITS

Anthropogenic Deposits

af Artificial fill for stock tanks.

Quaternary Surficial Deposits

Mapping of surficial deposits was based largely on air photo interpretation and geomorphic position, and locally field checked.

QHa - Arroyo alluvium, undivided (Holocene to Historic) - Gravel and poorly to moderately sorted fine- to coarse-grained sand in active drainages. Bar and swale topography is well developed. Soils are very weakly developed. Thickness: <1 m to 4 m.

- Qe Eolian sand sheets with subdued or no dune forms (Holocene) Dominantly sand sheets. Deposit consists of light brown to light reddish brown, fine to very finegrained, rounded to subrounded sand composed largely of quartz. Locally pebbly due to bioturbation (?). Forms a broad undulating surface with little or no development of drainage incision or dune microtopography around shrubs. Unit typically has one or more episodes of soil development beneath the surface. Thickness: ≤ 2 m (?).
- **Qed Eolian deposits with recent dune form development (Holocene)** Deposits are pink, light brown to very pale brown to brownish yellow, unconsolidated, very fineto medium-grained, moderately well-rounded to well-rounded sand composed largely of quartz. Contains scattered pebbles. Dunes are less than one meter to several meters in height. Thickness: < 1 m to 5 m (?).
- **Qbf Eolian and playa deposits on floors of small blowouts (Holocene) -** Deposits are sand, silty clay, and clay. Thickness: ≤ 2 m.
- Qedo Eolian deposits with stabilized and subdued dune forms (early (?) Holocene)
 Deposits are composed of pink, light brown to very pale brown to brownish yellow, unconsolidated, very fine- to medium-grained, moderately well-rounded to well-rounded dominantly quartz sand. Contains scattered pebbles. Dunes are less than one meter to several meters in height. Thickness: <1 m to 5 m (?).</p>

Quaternary and Tertiary Piedmont Deposits

Sequence of piedmont-slope alluvial deposits marking local base level for mountain front drainages. Deposits differentiated by topographic position and degree of constructional surface preservation. Deposits are dominated by sandy gravel with variable sorting and imbrication.

- Qpy Piedmont alluvium (upper Pleistocene to Holocene) Poorly to moderately sorted, poorly to moderately lithified pebble and cobble gravel and pebbly sand.
 Consist of pebbles to cobbles of limestone and Precambrian metamorphic and igneous rocks such as granite, quartzite, metarhyolite, and amphibolite.
 Constructional surface is present and has bar and swale topography. Unit is locally mantled by eolian sand sheets. Thickness: 4 5 m (?).
- **Qpm (locally includes Qpo?) Piedmont alluvium (middle Pleistocene)** Poorly to moderately sorted, moderately lithified pebble and cobble gravel and pebbly sand. Consist of pebbles to boulders of limestone and Precambrian metamorphic and igneous rocks such as granite, quartzite, and metarhyolite. Boulders on surface locally exceed 2 m in diameter. Soil development is variable and multiple buried soils with stage II to III calcium-carbonate morphology are present. Parts may be equivalent to unit Qpo of the Tome NE (Rawling and McCraw, 2004) and Manzano Peak

quadrangles (Baer et al., 2003), and as old as lower Pleistocene. Thickness: 4 - 5 m (?).

QTpu – Piedmont alluvium, undivided (upper Pliocene (?) to Pleistocene) – Pebble to cobble gravel, sand, and clay encountered in water wells. Total thickness unknown, at least 205 m thick in well RG-71148. May interfinger with or be in part equivalent to QTsu. Cross section only.

Quaternary and Tertiary Sedimentary Rocks

QTsu – Santa Fe Group deposits, undivided (Miocene (?) to Pleistocene (?)) –

piedmont and axial river (?) deposits, undivided. Interval described as "very hard tan sand and clay" in well RG-71124 is interpreted to be Santa Fe group sediment and is 73 m thick. Total thickness is unknown, but probably at least several hundred meters. Cross section only.

QTpbu – lower Tertiary sedimentary rocks, undivided (Eocene (?) to Miocene (?)) –
Interval in well RG-71124 described as "sand lavender in color, some limestone,
limestone stringers red in color, sand, some clay" is interpreted as Popatosa and/or
Baca Formation, based on color and presence of limestone. Interval is 55 m thick,
total thickness unknown but combined thickness of the two units is up to 3000 m in
the Albuquerque and Socorro basins (Cather et al., 1994; Hudson and Grauch, 2003;
B. Brister, personal communication, 2004). Cross section only.

Paleozoic Sedimentary Rocks

PPI – San Andres Limestone (middle to upper Permian) and/or Madera group limestone (middle and upper Pennsylvanian) – Limestone encountered in wells RG-71211 and RG-61338. Well RG-71211 appears to penetrate a dissolution breccia of fractured limestone and soft yellow rock. Thickness is unknown, but San Andres Limestone unit is 95 meters thick in the Ringle Tome #1 well within the Tome NE quadrangle to the north (Rawling and McCraw, 2004) and Madera Group limestones are ~385 m thick in the Scholle quadrangle to the southeast (Myers, 1977). Cross section only.

Proterozoic Igneous and Metamorphic Rocks

- Xml Monte Largo Pluton (Paleoproterozoic) Pinkish gray to brown to dark bluish-gray, moderately to strongly foliated granodiorite to quartz monzonite. Age is 1656 ± 10 Ma (Bauer et al., 1993).
- Xbq Blue Springs Quartzite (Paleoproterozoic) Thin bedded medium grained quartzites interbedded with chlorite-muscovite schist and quartz-muscovite schist. Occurs as lenticular pods within Blue Springs Schist and along contact between Blue Springs schist and the Monte Largo pluton.
- **Xbs Blue Springs Schist (Paleoproterozoic)** Rusty red to brown quartz-chloritegarnet schist. Fishhook-shaped and lenticular lenses and pods of deformed vein quartz, from mm to cm in width, and up to 10s of cm in length, are abundant and

locally may comprise up to 50% of the rock. Contains two well developed foliations. S1 is a transposition layering defined by quartz lenses, and S2 is the dominant, northeast trending schistosity.

- Xa Amphibolite (Paleoproterozoic) Black to very dark green fine- to coarsegrained amphibolite with variable amounts of fine- to medium- grained white plagioclase. Rock is massive to strongly foliated.
- Xsr Sevilleta Metarhyolite (Paleoproterozoic) Strongly lineated and weakly to moderately foliated metavolcanic rock. Contains 10% phenocrysts of plagioclase and clear to pale blue quartz deformed into sigma and delta porphyroclasts and abundant finely crystalline muscovite in an aphanitic matrix. Rock is pinkish gray on weathered surfaces and dark gray on fresh surfaces.

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MAP AND CROSS SECTION SYMBOLS

Location of geologic cross section

Geologic contact, solid where exposed, dashed where approximately

located, queried where inferred

Trace of aeromagnetic lineament inferred to represent trace of buried fault; data from Sweeney et al. (2002)

Dip and dip direction of bedding

Dip and dip direction of S1 foliation in Proterozoic rocks; double-sided symbol indicates vertical dip

Dip and dip direction of S2 foliation in Proterozoic rocks

Azimuth and plunge of mineral elongation lineation in Proterozoic rocks

Dip and dip direction of joints

Water well with NM State Engineer office identification number

Water well projected into cross section