

# Geologic Map of the Woodson Canyon Quadrangle, Otero County, New Mexico

By

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*Open-file Digital Geologic Map OF-GM 157***

**Scale 1:24,000**

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# Preliminary Geologic Map of the Woodson Canyon Quadrangle OF-GM-157

Mapped and compiled by Geoffrey Rawling

## EXPLANATION OF MAP UNITS

### Quaternary and Tertiary Surficial Deposits

**QHa - Alluvium (Holocene to Historic)** - Unlithified gravel and poorly to moderately sorted clay, silt, and sand in active stream channels. Generally present in gullies incised into **Qvf**. Only mapped where extensive and obvious on aerial photographs; unit is otherwise mapped with **Qvf**. Thickness: 0 to 4 (?) meters.

**Qvf - Valley fill (upper Pleistocene to Holocene)** - Unlithified valley fill composed of poorly sorted clay, silt, and sand, commonly with angular to subrounded cobbles of local bedrock. Matrix material is light to dark brown, reflecting soil development processes. Grades into minor alluvial and colluvial fans on toes of hillslopes. Often incised by active drainages, floored by sand and cobble to boulder gravel of **QHa**. In sinkholes on MacDonald Flat, clasts are spongy and variably friable dissolution remnants of the Bonney Canyon member of the San Andres formation. Anthropogenic disturbance is common in developed areas. Largely mapped from aerial photographs. Thickness: 0 to 12 (?) meters.

**Qaf - Alluvial fan deposits (middle to upper Pleistocene)** - Alluvial fans composed of poorly sorted cobbles, boulders, sand, silt, and clay. Fans head in short, steep tributary canyons and interfinger with and/or spread out onto valley bottom deposits. Stabilized by vegetation and apparently no longer active, and locally incised by drainages floored with **QHa**. Only mapped along major drainages where geomorphic expression is clear on aerial photos. Thickness: 0 to 10 (?) meters.

**Qg - Stream gravel deposits (lower to middle (?) Pleistocene)** - Poorly to well-lithified pebble to boulder gravel. Deposit forms eroded and locally incised terraces and bluffs in Rio Penasco Canyon. Clasts are well-rounded and are composed of carbonates derived from the San Andres and Yeso Formations. Grades laterally into alluvial fan deposits and colluvium, which have much cruder bedding and more angular clasts. Postdates incision of modern drainages. Thickness: 0 to 40 (?) meters.

### Paleozoic Sedimentary Rocks

**Psr, Psb - San Andres Formation (middle to upper Permian)** - Light to dark gray and bluish gray limestone and dolomite. Limestones and dolomites range from thin to very thick bedded, and are carbonate mudstones, wackestones, and grainstones.

Freshly broken surfaces are darker gray than weathered surfaces and often fetid. Silty and sandy beds are common. Float is nearly everywhere present but good outcrop is sparse and the unit is generally poorly exposed where tree cover is dense. Subdivision of the San Andres into the lower dominantly thick-bedded Rio Bonito Member ( **Psr**) and upper dominantly medium- to thin-bedded Bonney Canyon member ( **Psb**, Kelley, 1971) was based on aerial photograph interpretation. The two members cannot be reliably distinguished in the field within this quadrangle. On aerial photographs they can be distinguished based on average bed thickness and continuity, which is revealed by vegetation patterns that give the Bonney Canyon member a distinctly striped appearance. Thickness: Rio Bonito member: base not exposed, ~ 183 meters thick in the Sacramento quadrangle to the west; Bonney Canyon member: top not exposed, at least 46 meters exposed.

**Py – Yeso Formation (middle Permian)** - Yellow to tan siltstone and fine sandstone, red to pink muddy siltstone and fine sandstone, gray to tan silty limestone and dolomite. Siltstone and sandstones are thin to medium bedded and friable. Muddy siltstones and sandstones are laminated to very thin bedded. Limestones are very thin to thin bedded, rarely medium to thick bedded. In general, they are thinner bedded than overlying basal San Andres beds. Meter scale interbedding of carbonate, siltstone, and sandstone is common (Description from the Sacramento quadrangle). Units is only present along the Rio Penasco Canyon in the northwestern corner of the quadrangle and is almost totally obscured by colluvium from the overlying San Andres Formation. Contacts were projected from the adjacent Sacramento and Mayhill quadrangles. Thickness: Base not exposed; ~550 meters based on unit thickness in the Cloudcroft Unit #1 oil test well in the Bluff Springs quadrangle to the west.

**PpCu - Permian to Proterozoic rocks** - Paleozoic sedimentary rocks and Proterozoic igneous and metamorphic rocks, undivided (cross section only). Thickness of Sub-Yeso approximately 740 meters in the Cloudcroft Unit #1 oil test well in the Bluff Spring quadrangle to the west.