Geologic Map of the Lake McMillan South Quadrangle, Eddy County, New Mexico

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June, 2005

New Mexico Bureau of Geology and Mineral Resources
Open-file Digital Geologic Map OF-GM 097

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.

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Unit descriptions, Lake McMillan South Quadrangle

(Dehler, Pederson, Wagner, year 2 of 2)—May 2005

Hd-human disturbed areas (Holocene)— Disturbance area of drained Lake McMillan Reservior where the local geology is obscured.

Qal-alluvium (Holocene)--Brown (7.5 YR 6/4), silt to sand, well sorted, subangular to subrounded, dominantly quartz with rare lithics, occupies draws and river channels and associated active floodplains. Little to no vegetation. Overlies or inset into all older units. Thickness 0-2m.

Qaes-alluvial and eolian deposits (Pleistocene (?) to Holocene)-Brown (7.5 YR 6/4), silty clay to silt to sand, well sorted, subangular to subrounded grains composed of 70% quartz and 30% carbonate and chert. Unit locally weathers into badlands and exhibits piping. Common veneer on nearly all Quaternary deposits in the map area and commonly overlies Psg and Pymg. Thickness ≤10 m.

Qasm1-alluvial sand mainstem (Pleistocene (?) to Holocene)- Light brown (7.5 YR 6/4), silt to fine-lower sand, subrounded to subangular, well sorted, massive, quartzose and lithic grains, scattered pebbles and rare cobbles dispersed within matrix, rare calcic nodules and laminated drapes of dark red mud. Surface nearly always reworked into coppice dunes. Top of unit forms a terraces(T1) five meters above modern Pecos River and deposit is equivalent to flume sand in Carlsbad. May overlie or be inset into Qagm2. Thickness ≤10 m.

Qagm2-alluvial gravel mainstem (Pleiostocene) Pink (5 YR 7/4) to red to tan, medium sand to pebble and small cobbles (<12 cm dia.) in sand and gravel lenses, subangular to well rounded, poorly to well sorted. Pebbles of chert, gray and maroon quartzite, metamorphic clast(?),smaller cobbles are carbonates, chert, quartzite, dolomite, limestone, metamorphic, schist, bull quartz, and basalt, and large pebbles and small cobbles are carbonate lithics. Gravel becomes sandy conglomerate where well cemented by calcite. Capped by calcrete layer (0-< 2 m thick)**.** Commonly overlies Permian units. Thickness 0-75 m.

Qagp2-alluvial sand and gravel piedmont (Pleistocene) Gray to yellow gravel, poorly sorted, angular to subrounded dolomite clasts. Sand composed of quartz and locally carbonate cemented. Thickness 0->~75 m.

Qagpm2-alluvial gravel piedmont and mainstem (Pleistocene) Transitional deposit of Qagp2 and Qagm2.

TQg Gatuna Formation (late Tertiary to early Pleistocene?) Moderate orange pink (5 YR 8/4) to reddish orange (10 R 6/6) to red (2.5 YR 5/6), well sorted, subrounded to well rounded siltstone to sandstone (silt to fine upper sand), calcite cemented, locally gypsiferous. Slope former. Capped by mudstone- and gravel-bearing calcrete: plug is 0.5-1.0 m thick, pillar structures penetrate down into bedrock about 2 m. Overlies Permian bedrock units. Highly variable thickness 0->~130 m (from cross section).

Prlsu—Permian Lower Rustler and Salado Fm, undifferentiated (Ochoan) - Irregular masses of gypsum, dolomite (Prc), and salt in large blocks scattered on surface and outcrops with chaotic bedding orientations. Exposed in eastern and southern part of quadrangle. Associated

with yellow ripple-cross-laminated sandy dolomite blocks and massive gypsum blocks at surface in Gypsum Bend area. May include upper Salado Formation. Thickness unknown.

Ptmsg---Tansill Formation—mixed silty gypsiferous facies (Guadalupian)--
Mixed dolomite, sandy siltstone, and gypsum. White to light gray dolomite, thinly to medium bedded, vesicular, associated with yellow sandy dolomite and dolomitic sandstones in float. Well sorted, sublitharenite, chert grains, orange-red, interbedded with gypsum and white to light gray dolomite. Poorly exposed. Likely equivalent to Ocotillo Member of DeFord and Riggs (1941). Thickness XX m.

Pymg---Yates Formation—mixed gypsiferous facies (Guadalupian)--
Gypsum with minor dolomite, siltstone, and sandstone. green to white to red gypsiferous siltsone to silty gypsum to pure gypsum in 2-m-thick intervals interbedded with orange-red siltstone or dolomite. Gypsum is typically massive or has fibrous radiating crystals up to cms in dia. Locally brecciated. Gypsum is also interbedded with dolomite in thin beds. Gypsum veins also present. Dolomite is pink to salmon to very light gray, massive to vesicular, , thinly bedded, and exhibits local chickenwire textures, rippenstein weathering, and crinkly laminations. Sandstone is yellow, locally silica cemented. Gypsum interbedded with dol and siltsone on a m-scale. Folded into domes and basins. This facies makes up the strike valley and low hills paralleling, and SE of, the Lake McMillan escarpment. Forms caverns. Contact with overlying gravels is sharp or covered. Thickness XX m.

(Pyms or) Psd---(Yates Formation—mixed facies or) Azotea Tongue dolomite (of Kelley 1971) (Guadalupian)--Dolomite with interbedded siltstone, sandstone, and gypsum. Dolomite is thinly to thickly bedded, massive, yellow to light gray to pink to orange, vesicular, silty, clayey, very finely crystalline to sugary, undulose bedding, paper lams, crinkly lams, interbedded with thin to medium beds of pink dolomitic siltstone or green shale or yellow sandstone. Some very thin beds of gypsum. Gradational contact with overlying Pymg.

Psg---Seven Rivers Formation—gypsiferous facies (Guadalupian)---thin- to medium-bedded, dolomite, commonly vesicular, tan-grey weathered, light grey fresh, rippenstein and elephant skin weathering, interbedded with m-scale intervals of red gypsiferous siltstone and green to yellow silty gypsum, in cycles (m-scale), very fine sand to silt, with ripple-cross lamination and local soft sed deformation (some due to gypsum mobilization) interbedded with white to yellow to green to gray to red, punky to crystalline massive gypsum, can be up to 2 m thick, crystals cm scale, some gypsum intervals lack siltstone and are interbedded with very thin dolomite beds, laminated to stromatolitic, gypsum nodules in siltstone intervals, many small folds (scale) and caverns characterize this unit, folds are commonly trough shaped, small-scale deformation is common in this unit, yet, large scale stratographic deformation is minimal—beds can be traced laterally for kms in the seven rivers hills area, several scales of folding—mpscale, 10-m scale, and km scale, all low amplitude, 5-10 m scale cycles of interbedded gyp and siltstone and dol are characteristic of this unit. Thickness XX m.

Pq—Queen Formation (Guadalupian)-- In cross section only.

Pg—Gray Formation (Guadalupian)— In cross section only.

Psa—San Andres Formation—(Leonardian to Guadalupian)—In cross section only.

Map symbols:

Bedding contact-dashed where approximately located or where interpreted from air photo

Basin- arrows on axis denote plunge direction

Dome—arrows on axes denote plunge directions

Fissure--

c—cave in gypsum or carbonate unit

Oil/gas well location
(suggested type logs for subsurface stratigraphic picks are logfile numbers 47113 or 24319)

Water well location