

## **APPENDIX G**

**Lithologic Descriptions of Cross-Section (Figure 17)**

**Modified from Hawley (1984)**

## Valley-Fill and Basin-Fill (QTa) Subdivisions

### Valley-fill unit

- I. Sand and gravel, with local silt-clay lenses. Upper Quaternary Rio Grande Valley fill. Forms upper part of "shallow aquifer" of Leggat et al. (1962) and "flood-plain alluvium of Wilson et al. (1981).

### Younger basin-fill units (basin-floor fluvial to deltaic facies)

- II. Sand, with pebble gravel, clay-silt, and sandstone lenses; partly cemented with calcite. Plio-Pleistocene ancestral river facies; includes upper Santa Fe Gp-Camp Rice Fm fluvial facies. Unit mainly unsaturated; where saturated forms part of major Mesilla Bolson aquifers.
- III. Sand and some fine pebble gravel, interbedded with clay-silt; broadly lenticular to sheet-like strata; partly cemented with calcite (sand > clay-silt-sandstone; sand bodies estimated to make up about 50-60% of section). Pliocene-lower Pleistocene transitional facies; fluvial-deltaic deposits of upper Santa Fe Gp, including parts of Camp Rice and Fort Hancock Fms. Includes parts of "medial aquifer" of Leggat et al. (1962).
- IIIa. Zones where sand bodies are the major constituent (sand > clay-silt-sandstone; sand bodies estimated to make up about 60-80% of section).

### Younger basin-fill units (piedmont-slope and basin-floor facies)

- IV. Sand, with discontinuous thin clay layers. Pliocene-upper Miocene? eolian facies; unnamed upper Santa Fe Gp unit. Includes major part of "deep aquifer of Leggat et al. (1962).
- V. Pebbly sand to clay mixtures, interbedded with clean pebbly sand, and clay-silt; broadly lenticular bodies of clean sand and pebble gravel (20-30%). Plio-Pleistocene distal piedmont facies, mainly coalescent fan (bajada) deposits, and local basin-floor alluvium that intertongue with units II to IV and VII. Upper Santa Fe Gp--Camp Rice and Fort Hancock Fms. Includes "NASA well I-J aquifer" of Doty (1963) in southern Jornada Basin.

- VI. Coarse gravelly sand to clay mixtures, with thin lenticular bodies of clean sand and gravel (10-20%), and discontinuous zones of calcite cementation. Pleistocene proximal piedmont facies, mainly alluvial fan deposits. Upper Santa Fe Gp-Camp Rice and Fort Hancock Fms. 4
- VII. Clay-silt, with interbedded sand and sandstone lenses; broadly lenticular to sheet-like strata (clay-silt-sandstone>sand; sand lenses less than 10% of section); locally with calcium and sodium sulphates. Pliocene-lower Pleistocene deltaic-lacustrine and playa facies that intertongue with units III, IV, and V. In central basin areas transitional downward with unit X. Upper Santa Fe Gp-Fort Hancock Fm.

Older basin-fill units (piedmont-slope and basin-floor facies)

- VIII. Conglomeratic sandstone and mudstone and conglomerate; with discontinuous zones of gravelly sand and clay-silt. Miocene to lower Pleistocene conglomerate facies; Santa Fe Gp--mainly correlative with Rincon Valley and Hayner Ranch Fms., but also include basal Camp Rice fan deposits.
- IX. Fine conglomeratic sandstone and mudstone, interbedded with sandstone to mudstone. Miocene to lower Pleistocene distal piedmont facies, coalescent fan (bajada) deposits that intertongue with units VIII and X). Mainly lower Santa Fe-Rincon Valley Fm.
- X. Clay-silt, mudstone, and shale, with local sandstone and conglomeratic lenses; locally with calcium and sodium sulphates. Miocene to lower Pliocene playa-lake facies; mainly lower Santa Fe Group-Rincon Valley Fm.

Bedrock Units\*

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| Qb  | Basaltic volcanics, mostly flows, with local cinder-cone and conduit material. Quaternary                                      |
| Tb  | Basaltic plugs. Miocene and Pliocene   |
| Tr  | Rhyolitic volcanics, with some interbedded sandstone and conglomerate mostly ash-flow tuff and lava. Oligocene                 |
| Tri | Rhyolitic intrusive complexes; mostly sills, plugs and associated lava domes. Oligocene  |
| Ti  | Silicic to intermediate plutonic rocks. Oligocene and Eocene   |
| Tv  | Andesitic and other intermediate volcanic and volcanoclastic rocks, including lavas and laharic breccias. Oligocene and Eocene |
| Trv | Undivided Tr and Tv  |
| Tl  | Mudstone, sandstone, and conglomerate with local gypsum beds. Lower tertiary, mainly Eocene                                    |
| Tvl | Undivided Tv and Tl  |
| M   | Mesozoic rocks--undivided; includes limestone, sandstone, shale and marine limestone. Cretaceous                               |
| TM  | Undivided Ti, Tv, Tl, M  |
| Pu  | Upper Paleozoic rocks; includes limestone, shale, sandstone and mudstone, with local gypsum beds.                              |
| MP  | Undivided M and Pu   |
| Pl  | Lower Paleozoic rocks--undivided; includes limestone, shale, and minor sandstone.  |
| P   | Undivided Pu and Pl  |
| PE  | Precambrian metasedimentary rocks, metavolcanics, and granite.   |
| PPE | Undivided Pu, Pl, and PE   |

\* Primarily hydrogeologic boundary units with very low transmissivities. However, limestones may locally be highly transmissive in zones with solution-enlarged joints and fractures; and sandstone, conglomerate, and fractured tuffs and lavas may also form aquifers in a few areas.