Geologic Map of the Alivio Quadrangle, Sierra and Doña Ana Counties, New Mexico

By

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Open-file Digital Geologic Map OF-GM 204

Scale 1:24,000

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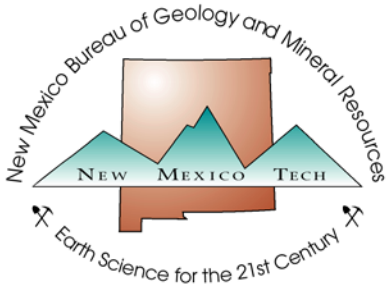

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Alivio Unit Descriptions

Q: Quaternary sediments— Cross-section only.

Qpy: Younger piedmont-slope alluvium —Gravel, sand, and silt of shallow drainageways cut below older fans, as well as sand, silt, and clay of alluvial fans at the mouths of such drainageways that are graded to the Jornada del Muerto basin floor, as much 20 ft (6m) thick.

Qpo: Older piedmont-slope alluvium—Gravel to loamy fan deposits, piedmont-valley fills, and erosion-surface veneers, associated with surfaces graded to the basin floor of the Jornada del Muerto, uppermost beds commonly contain stage II or III pedogenic carbonate, as much 30ft (9m) thick.

Qls: Landslide debris— Debris slide consisting of unconsolidated, chaotic blocks of limestone overlying, and derived from, dip slopes of Pennsylvanian strata; blocks range from pebble-size to more than 20ft (6m) in length.

Qpa: Younger (**Qpy**) and older (**Qpo**) piedmont-slope alluvium.

Qcp: Camp Rice Formation, upper piedmont-slope deposits—Boulder to pebble gravel with zones of stage IV pedogenic carbonate in the upper part, distal parts of deposits contain more gravelly sand as well as silt and clay, at least 20ft (6m) thick.

QTcf : Camp Rice Formation, fluvial facies—Gray, calcareous sandstone and pebbly sandstone and red to green claystone and shale that represent fluvial-channel and overbank environments of deposition, at least 20ft (6m) thick.

QTca: Camp Rice Formation, alluvial-flat facies—Red siltstone and mudstone deposited on alluvial flats.

Qa: Undifferentiated Camp Rice and younger deposits—shown only in cross sections.

Tu: Uvas Basaltic Andesite—Flows of vesicular, dark-gray to dark-brown basaltic andesite interbedded with minor cinder deposits, at least 500 ft (152 m) thick.

Tba: Dikes—Altered basaltic-andesite dikes. 3.4 to 10ft (1 to 3m) thick.

Tr: Dike—Cream-colored, aphyric-rhyolite dike.

Tbt_7: Bell Top Formation, ash-flow tuff 7—Gray, fine-grained, vitric ash-flow tuff, approximately 9ft (3m) thick.

Tbs: Bell Top Formation, conglomerate and sandstone member—White, thin-bedded volcaniclastic sandstone and interbedded brown boulder conglomerate and conglomeritic

sandstone, interbedded, brown, boulder conglomerate, and conglomeritic sandstone. Clasts include reworked Palm Park detritus as well as Kneeling Nun Tuff, flow-banded rhyolite, and Precambrian granite, unit contains ash-flow tuff 6 near the middle and an Uvas Basaltic Andesite flow near the top, approximately 401ft (122.2 m) thick.

Tbt_6: Bell Top Formation, ash-flow tuff 6—Gray to pink, moderately- to densely - welded, crystal-rich, ash-flow tuff interbedded with **Tbc**, approximately 45ft (13.5m) thick.

Tbt_5: Bell Top Formation, ash-flow tuff 5—Light gray, moderately welded, crystal-rich, ash-flow tuff containing conspicuous white pumice lumps and dipyramidal quartz. Approximately 70ft (21m) thick.

Tpp: Palm Park Formation—Only upper few feet of gray, volcanic mudstone and white, tuffaceous sandstone exposed in Alivio quadrangle, may be approximately 1,800ft (550m) thick in subsurface.

Tlr: Love Ranch Formation—Only a few tens of feet (20m) exposed in Alivio quadrangle, consists of red, arkosic sandstone and conglomeritic sandstone, clasts include all Paleozoic formations as well as Precambrian granite, may be approximately 2,000-2,500ft (610-76m) thick in subsurface.

K: Gallup Sandstone, D-Cross Tongue of Mancos Shale, and Crevasse Canyon Formation—Not exposed but presumably present in subsurface, probably fluvial and marine sandstone and shale as much as 1,000ft (30m) thick.

Km: Mancos Shale and Tres Hermanos Formation—Only lower few feet (few m) of Mancos shale exposed in Alivio quadrangle. In the subsurface, Km probably consists of marine shale and siltstone with interbedded-fluvial, beach, and near-shore sandstone bodies. May be approximately a 1,000ft (305m) thick.

Kd: Dakota Sandstone—Upper, massive, crossbedded marine sandstone overlies lower, crossbedded fluvial sandstone, approximately 95ft (29m) thick.

Pyu: Upper Yeso Formation—Upper sandstone-limestone member consists of 330ft (100m) of interbedded, gray limestone, yellow dolomite, and red to yellow sandstone with local gypsum lenses, lower limestone member is 80ft (24m) of medium bedded, fossiliferous, gray limestone.

Pyl: Lower Yeso Formation—Upper red siltstone-dolomite member consists of 640ft (195m) of interbedded limestone, dolomite, red beds, and massive gypsum, basal Meseta Blanca Member consists of 250ft (76m) of thin-bedded, orange to brick-red sandstone and siltstone.

Pa: Abo Formation—Red fluvial sandstone and siltstone interbedded with grayish-red to red overbank shale and claystone, approximately 1,150ft (350m) thick.

IP: Magdalena Group—Upper Bar B Formation, approximately 1,345ft (410m) thick is 65-70% shale but also includes thin limestone beds as well as limestone-pebble conglomerate and red beds in upper 330ft (100m), medial Nakaye Formation includes at least 765ft (233m) of thick-bedded, burrowed, fossiliferous, cherty limestone and interbedded shale, basal Red House Formation consists of interbedded shale, sandstone, and thin-to-medium-bedded marine limestone approximately 109ft (3m) thick, white to gray chert breccia is locally present at the base.

M: Lake Valley Formation—Upper Tierra Blanca Member is medium-bedded limestone and white chert as much as 25ft (8m) thick, but thickness varies because of pre-Magdalena erosion, Nunn Member is 28ft (8.5m) of soft, fossiliferous limestone and calcareous shale, followed downward by 30ft (9m) of cliff-forming, cherty limestone of and interbedded shale, approximately ft (1m) thick.

Dp: Percha Shale—Greenish-gray to black micaceous shale in the lower part grading upward to 30ft (9m) of brown siltstone at top, a single bed of crossbedded oolitic limestone also is present in upper half of the formation, approximately 236ft (72m) thick.

Sf: Fusselman Dolomite—Brown, cherty dolomite in thick to medium beds, approximately 100ft (30m) thick

Om: Montoya Formation—Only upper 50 ft (15m) of upper Cutter Member exposed, which consists of light-gray, medium-bedded dolomite, formation is probably approximately 400ft (122m) thick, mostly dolomite.

Oe: El Paso Formation—Not exposed in Alivio quadrangle, probably is near 500ft (152m) thick in subsurface and consists of limestone and dolomite; shown only in cross sections.

ЄOb: Bliss Formation—Not exposed in Alivio quadrangle, probably is near 115ft (35m) thick in subsurface and consists of black to dark-brown, hematitic sandstone and shale and gray quartzite, shown only in cross sections.

pЄg: Granite—Not exposed in Alivio quadrangle, probably red, coarse-grained granite as in adjacent McLeod Tank quadrangle; shown only in cross sections.