

Geologic Map of the Selden Canyon 7.5-Minute Quadrangle, Doña Ana County, New Mexico

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*Open-file Digital Geologic Map OF-GM 290***

Scale 1:24,000

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Selden Canyon Quadrangle Executive Summary

The Selden Canyon 7.5-minute quadrangle is located in north-central Doña Ana County between the towns of Rincon and Radium Springs, New Mexico. The map area is accessible by I-25, New Mexico Route 185, and numerous county-maintained tertiary gravel roads. The central portion of the map area west of I-25 is largely comprised of Bureau of Land Management land, but access requires travel through land held by private and state entities. It is the responsibility of the map user to research and request access permissions as needed.

Geologic mapping of the quadrangle's western and southern two-thirds was originally published in New Mexico Bureau of Geology Bulletin 97 (Seager et al., 1971) and GM-35 (Seager, 1975). Continued mapping and updates to the geology were conducted by William R. Seager 1975–2021. Jacob O. Thacker conducted mapping in the northeast one-third of the quadrangle Fall 2020, and was aided by William Seager, Shari A. Kelley, and Daniel Koning.

Bedrock units on the quadrangle span Precambrian through Paleozoic. Precambrian rock at San Diego Mountain is dominantly granite that is unconformably overlain by Cambro–Ordovician Bliss Formation through Ordovician El Paso Formation. Silurian Fusselman Dolomite and Devonian Percha Shale crop out in the East Selden Hills south of San Diego Mountain. Permian Abo Formation crops out at the southeast corner. At San Diego Mountain, Paleogene Love Ranch Formation is observed in a fault window on Precambrian basement and in unconformable contact with silicified El Paso Formation. In the western part of the quadrangle, Eocene Palm Park, Oligocene Bell Top formation, and Oligo–Miocene Uvas Basaltic Andesite crop out, as well as deposits of the Miocene Hayner Ranch and Rincon Valley formations and a rhyolite breccia.

Ancestral Rio Grande River deposits and surficial units are exposed in large portions of the map area. Plio–Pleistocene Camp Rice Formation and Pleistocene–Holocene alluvial units are exposed throughout the quadrangle. Holocene units in the quadrangle include colluvium deposits, eolian and sheetwash deposits, playa lakes, small travertine outcrops, and younger and active alluvial channels of the modern Rio Grande River. The eolian and sheetwash deposits make a thin veneer atop the Camp Rice Formation throughout the northeastern map area.

The geology of the Selden Canyon quadrangle records three major events. Evidence for major Laramide uplift is shown by Precambrian basement thrust over silicified Ordovician El Paso Formation, which was followed by deep erosion (exhibited by Paleogene Love Ranch deposits on basement) and burial by mid-Tertiary volcanics. The Hayner Ranch and Rincon Valley formations record the formation of a deep “early rift” basin that was followed by major latest Miocene uplift accompanied by deep erosion. This latter deep erosion exposed older geologic relationships. Finally, Ancestral Rio Grande River deposits buried the quadrangle area, which was again exhumed a final time by the modern Rio Grande River and its tributaries.

References

- Seager, W.R., Hawley, J.H., Clemons, R.E., 1971, Geology of San Diego Mountain area Doña Ana County, New Mexico: New Mexico Bureau of Mines and Mineral Resources [now New Mexico Bureau of Geology and Mineral Resources] Bulletin 97, 38 p., 2 sheets.
- Seager, W.R., 1975, Geology of South Half San Diego Mountain Quadrangle, New Mexico: New Mexico Bureau of Mines and Mineral Resources [now New Mexico Bureau of Geology and Mineral Resources] GM-35, 2 sheets, scale 1:24,000.