

# Geologic Map of the Herrera 7.5-Minute Quadrangle, Bernalillo and Sandoval Counties, New Mexico

By  
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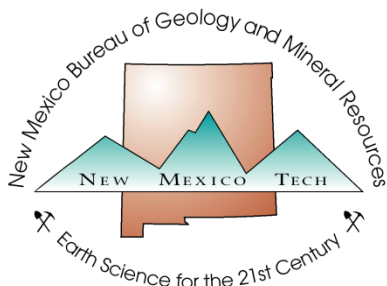
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*Open-file Digital Geologic Map OF-GM 273***

**Scale 1:24,000**

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## Herrera Quadrangle Executive Summary

The Herrera quadrangle is 25 miles west of Albuquerque and 8 miles north of Interstate 40 on the west flank of the Rio Puerco Valley in central New Mexico. The community of Canoncito lies 1 mile south of the southwest corner of the quadrangle. The quadrangle encompasses lands of Laguna Pueblo and the To'Hajiilee Navajo Chapter, along with BLM land and minor private inholdings. Development and population are very sparse, consisting only of rural residents on Navajo lands.

The bedrock geology of the quadrangle consists of shallowly east- and southeast-dipping Jurassic and Cretaceous sedimentary rocks, with a few minor fault-bounded exposures of Miocene Santa Fe Group sediments in the southeast corner. The Jurassic rocks, the Bluff Sandstone, and overlying Brushy Basin and Jackpile Members of the Morrison Formation are exposed along the eastern slopes of Herrera Mesa on the western side of the quadrangle. The Cretaceous rocks include multiple intertonguing intervals of Dakota Sandstone and Mancos Shale, overlain by the Gallup Sandstone, the Dilco, Dalton Sandstone, and Gibson coal-bearing members of the Crevasse Canyon Formation, and the Point Lookout Sandstone and Menefee Formation Members of the Mesaverde Group. The Santa Fe group sediments comprise the Piedra Parada and overlying Chamisa Mesa members of the Zia Formation.

The Cretaceous and Jurassic rocks are pervasively cut by dip-slip and oblique-slip faults striking  $\sim 20^\circ$  east of north, with subsidiary faults striking more easterly. Sense of motion and amount of displacement vary along many of the longer faults, with both east- and west-side down motion present. Some component of strike-slip motion is likely along many of these faults based on map patterns, the aforementioned apparent offset variations, and limited slickenline data. The east side of Herrera Mesa along the west margin of the quadrangle is an east-side down, faulted monocline. Very complex fault networks and steep easterly dips are present in Mesa Quebrada in the southwest corner of the quadrangle and in isolated "flatiron" remnants of Cretaceous rocks to the north. Movement along the faults is probably of Laramide-age, with local reactivation during the formation of the Rio Grande rift, during which time the Santa Fe Group sediments were deposited.

Quaternary deposits are abundant, with most upland areas mantled to some degree with loose sand comprising sheets, subdued dunes, and sheetwash deposits. Major southeast and northeast trending drainages have broad, flat floors of dominantly fine-grained alluvial sediment that is incised several meters along the main stream course. Older, higher, and locally coarser alluvium along the margins of larger drainages is present sporadically across the southern third of the quadrangle.