

New Mexico Geological Society

Downloaded from: <https://nmgs.nmt.edu/publications/guidebooks/23>



Urban geology of Fort Sumner

Vincent C. Kelley

1972, pp. 216. <https://doi.org/10.56577/FFC-23.216>

in:

East-Central New Mexico, Kelley, V. C.; Trauger, F. D.; [eds.], New Mexico Geological Society 23rd Annual Fall Field Conference Guidebook, 236 p. <https://doi.org/10.56577/FFC-23>

This is one of many related papers that were included in the 1972 NMGS Fall Field Conference Guidebook.

Annual NMGS Fall Field Conference Guidebooks

Every fall since 1950, the New Mexico Geological Society (NMGS) has held an annual [Fall Field Conference](#) that explores some region of New Mexico (or surrounding states). Always well attended, these conferences provide a guidebook to participants. Besides detailed road logs, the guidebooks contain many well written, edited, and peer-reviewed geoscience papers. These books have set the national standard for geologic guidebooks and are an essential geologic reference for anyone working in or around New Mexico.

Free Downloads

NMGS has decided to make peer-reviewed papers from our Fall Field Conference guidebooks available for free download. This is in keeping with our mission of promoting interest, research, and cooperation regarding geology in New Mexico. However, guidebook sales represent a significant proportion of our operating budget. Therefore, only *research papers* are available for download. *Road logs*, *mini-papers*, and other selected content are available only in print for recent guidebooks.

Copyright Information

Publications of the New Mexico Geological Society, printed and electronic, are protected by the copyright laws of the United States. No material from the NMGS website, or printed and electronic publications, may be reprinted or redistributed without NMGS permission. Contact us for permission to reprint portions of any of our publications.

One printed copy of any materials from the NMGS website or our print and electronic publications may be made for individual use without our permission. Teachers and students may make unlimited copies for educational use. Any other use of these materials requires explicit permission.

This page is intentionally left blank to maintain order of facing pages.

URBAN GEOLOGY OF FORT SUMNER

by

VINCENT C. KELLEY
Department of Geology
University of New Mexico

PHYSICAL SETTING

Fort Sumner, the seat of DeBaca County, lies on the east bank of the Pecos River at an altitude of 4,060 ft. It is the junction point of U.S. Highway 60 with U.S. Highway 84 north to Santa Rosa and State Road 20 south to Roswell. It is also on the main line of the Santa Fe Railway. The town had its source in Fort Sumner established about 1862 to aid in the control of the Plains Indians. The fort was abandoned in 1868 and with the coming of the railroad in the 1870's the town became a trading center for the surrounding ranch country and the small farms along the river. With the completion of the Alamogordo Reservoir in 1937 Fort Sumner became a supply center for recreation at the reservoir.

Fort Sumner is situated on the only extensive low river valley along the Pecos River north of Roswell. The Fort Sumner Valley is partly on the river floodplain and partly on a low river terrace only 10 to 40 feet above the river. This terrace is only on the east side of the river, and the meandering Pecos is mostly close to the west side of the valley where bluffs rise abruptly to a higher first terrace at about 60 to 70 feet above the river. The area of the floodplain including the low irrigated terrace east of the river is about 20 square miles.

The principal rocks in the Fort Sumner Valley are sand and gravel. The underlying bedrock is red mudstone and sandstone of the Chinle Formation, but aside from small outcrops near the bridge abutment west of town and near the mouth of Truchas Creek just north of town no bedrock is exposed along the sides of the valley south of town for 20 miles to where the first exposures of Chinle reappear. Thus, the gravel fill beneath the river terraces and in the pediments east of the valley is at least several tens of feet thick in a wide swath along the valley. The existence of weak Chinle beds as bedrock has given rise to the wide valley and to a considerable infill of gravel. At first it might appear that younger Chinle bedrock at Fort Sumner is the result of a local basin. It mostly arises, however, from the fact that the valley at Fort Sumner is farther east than to the north and south and thus is farther down the regional dip.

There may nevertheless be some sagging of the Chinle and underlying Santa Rosa beds by solution collapse in the San Andres. The lack of abrupt canyon walls and sink holes at Fort Sumner stands in marked contrast with Santa Rosa.

MINERAL AND WATER RESOURCES

The only mineral resource of value at Fort Sumner is sand and gravel. Unlimited supplies of these materials occur in the valley bottom and on the low terraces along the valley.

The city has two wells which are capable of furnishing ample supplies of water for the foreseeable future. The principal well is along Truchas Creek in the NW $\frac{1}{4}$ sec. 27 T. 4 N., R. 26 E. about 5 miles northeast of town. This well was purchased from the U.S. Fort Sumner Air Base along with a water system and storage capacity of about 100,000 gallons (Larsen, 1970).

GEOLOGIC HAZARDS

Fort Sumner is built on a river terrace and on a high-level floodplain of the Pecos River. The main part of the town is 30 to 40 feet above the river. Some houses at the southern edge of town are as little as 20 feet above the river, and some ranch houses down the valley are as little as 10 feet above the river. It is reported that Old Fort Sumner, about 5 miles south of town and about 15 feet above the river, has been flooded. With the construction of Alamogordo Reservoir, about 13 miles up the Pecos River the likelihood of damage by flooding has been greatly diminished. Well compacted terrace gravel and alluvium form amply stable foundations for the buildings at Fort Sumner. No other geologic hazard such as landslides, earthquakes, or ground subsidence exists for Fort Sumner.

REFERENCE

- Larsen, K. W., 1970, Comprehensive place of Fort Sumner, New Mexico: Kenneth W. Larsen and Associates, Albuquerque, N.M., 62 p.