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Quaternary Fault and Fold Database of the United States

As of January 12, 2017, the USGS maintains a limited number of metadata fields that characterize the Quaternary faults and folds of the United States. For the most up-to-date information, please refer to the interactive fault map.

Valle Vidal fault (Class B) No. 2018

Last Review Date: 2016-05-16

Compiled in cooperation with the New Mexico Bureau of Geology & Mineral Resources

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Synopsis	Linear topographic features interpreted as fault scarps are present for about 9 km along the eastern margin of the Valle Vidal in eastern Taos County, New Mexico. Geomorphic analysis of the scarps suggests recurrent late movement, with the most recent possibly having occurred in the Holocene. The scarps are probably formed by recurrent faulting, but they may be a result of slope-failure or solifluction processes. If related to coseismic surface rupture, the scarps may represent normal-slip reactivation of the Little Costilla fault, a Laramide-age thrust (Bauer and others, 1990 #1171). Because of questions about the scarp's origins, we consider them to be Class B structures.

Name comments	The Valle Vidal fault was first identified by J. Walker (personal commun. to compiler, 1986) and later investigated by Menges and Walker (1990 #1173). Scarps along a 9 km portion of the eastern margin of the Valle Vidal in eastern Taos County were mapped as possible fault features by Menges and Walker (1990 #1173). The scarps are present from near the head of Ponil Creek on the north to about the southern end of Valle Vidal on the south.
County(s) and State(s)	TAOS COUNTY, NEW MEXICO
Physiographic province(s)	SOUTHERN ROCKY MOUNTAINS
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault trace mapped using previous mapping coupled with accurate placement using photogrammetric methods. Previously, the northern 5 km of the fault was mapped by Walker (Bauer and others, 1990 #1171) at a scale of 1:33,333. The northern 4 km were also mapped by Menges and Walker (1990 #1173) at a scale of about 1:15,580 on the basis of field reconnaissance and analysis of aerial photography. Menges and Walker (1990 #1173) presented a regional map showing the Laramide-age Little Costilla thrust at a scale of about 1:555,555.
Geologic setting	The Valle Vidal fault borders the eastern margin of Valle Vidal in the eastern Sangre de Cristo Mountains of northern New Mexico. The Valle Vidal separates the Taos Range of the Sangre de Cristo Mountains from the Raton basin to the east, and is part of a north-south alignment of grabens that include the Mora and Moreno Valleys to the south and the Costilla Valley to the north (Bauer and others, 1990 #1171). The topographic scarps in Valle Vidal are interpreted to represent down-to-the-west normal-slip reactivation of the Little Costilla fault, a west-dipping Laramide age thrust fault (Bauer and others, 1990 #1171).
Length (km)	7 km.
Average strike	N4°E
Sense of movement	Normal *Comments:* West-facing topographic scarps suggest down-to-the-west normal displacement of late Quaternary surficial deposits.

Dip Direction	W *Comments:* There are no published subsurface data on the structural geometry of the Valle Vidal basin.
Paleoseismology studies	
Geomorphic expression	The Valle Vidal fault has prominent geomorphic expression for about 9 km along the eastern margin of the Valle Vidal as a complex zone of multiple scarps that vary in height from 2.9 to 22.5 m (Menges and Walker, 1990 #1173).
Age of faulted surficial deposits	Menges and Walker (1990 #1173) used soils analysis to estimate late Pleistocene to late (?) Holocene ages for faulted alluvial fans along the eastern margin of Valle Vidal.
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Menges and Walker (1990 #1173) used scarp-morphologic and soils analyses to estimate a middle to late Holocene age for the most recent event on the Valle Vidal fault.
Recurrence interval	5–20 k.y. *Comments:* Menges and Walker (1990 #1173) used scarp ages estimated from linear regression analysis and diffusion modeling of multiple-event scarps to estimate recurrence intervals of 5–20 k.y. for the Valle Vidal fault.
Slip-rate category	Less than 0.2 mm/yr *Comments:* Menges and Walker (1990 #1173) estimated surface offsets of as little as 2 m in middle to late (?) Holocene deposits and as much as 9 m in late Pleistocene deposits. They estimated ages of 5 ka for the youngest faulted deposits and 130 ka for the oldest faulted deposits.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Keith I. Kelson, William Lettis & Associates, Inc. Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources

References	#1171 Bauer, P.W., Pillmore, C.L., Mawer, C.K., Hayden, S., Lucas, S.G., Meyer, J., Czamanske, G.K., Grambling, J.A., Barker, J.M., Cather, S.M., Walker, J., and Young, J.N., 1990, First-day road log, from Red River to Questa, Costilla, Valle Vidal, Cimarron and Philmont, *in* Bauer, P.W., Lucas, S.G., Mawer, C.K., and McIntosh, W.C., eds., Tectonic development of the southern Sangre de Cristo Mountains, New Mexico: New Mexico Geological Society, 41st Field Conference, September 12-15, 1990, Guidebook, p. 1-43. #1173 Menges, C.M., and Walker, J., 1990, Geomorphic analyses of scarps along the eastern border of the Valle Vidal, north-central New Mexico, *in* Bauer, P.W., Lucas, S.G., Mawer, C.K., and McIntosh, W.C., eds., Tectonic development of the southern Sangre de Cristo Mountains, New Mexico: New Mexico Geological Society, 41st Field Conference, September 12-15, 1990, Guidebook, p. 431-438.