

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](#).

Bernalillo fault (Class A) No. 2034

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

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Synopsis	The Bernalillo fault lies on the piedmont about 5 km west of the Rincon fault [2036] that controls the steep western margin of Rincon Ridge. The exposed length of the Bernalillo fault is about 2 km, and is readily recognized by offset of a white diatomite bed in middle to late Pleistocene alluvium of the Rio Grande. At its northern end, the Bernalillo fault projects beneath the modern floodplain of the Rio Grande. Its southern extent is less clear, but high-resolution aeromagnetic data indicate that the Bernalillo fault curves southward and probably extends to the vicinity of Sandia Wash.
Name	The Bernalillo fault was originally described by Lambert (1978

comments	#1737), and later named the Bernalillo fault and mapped in detail by Connell (1995 #1291; 1998 #7502).
County(s) and State(s)	SANDOVAL COUNTY, NEW MEXICO
Physiographic province(s)	BASIN AND RANGE
Reliability of location	Good Compiled at 1:24,000 scale. <i>Comments:</i> Fault trace from 1:24,000-scale mapping of Connell (1995 #1291; 1998 #7502) and aeromagnetic data (U.S. Geological Survey and SIAL Geosciences Inc., 1997 #1722; Grauch and Millegan, 1998 #1721).
Geologic setting	The Bernalillo fault is one of several down-to-the-west faults that are sympathetic to the Rincon fault [2036], which forms the eastern boundary of the Albuquerque basin and the Rio Grande rift at this latitude.
Length (km)	9 km.
Average strike	N6°E
Sense of movement	Normal
Dip	80°–83° W. <i>Comments:</i> Dip measurements are from Lambert (1978 #1737) and Connell (1995 #1291, 1998 #7502).
Paleoseismology studies	
Geomorphic expression	The Bernalillo fault is marked by offsets of a distinctive diatomite bed in main stem Rio Grande alluvium (Connell, 1995 #1291); the fault is mostly located in eroded topography, where no fault scarps are preserved. Connell (1995 #1291) measured 6–7 m of displacement in the alluvium of Edith Boulevard and more than 2 m of displacement in the alluvium of Menaul Boulevard, i.e. the Edith Formation and Menaul Member, respectively.
Age of faulted surficial	The Bernalillo fault offsets middle Pleistocene alluvium of the Edith Formation and middle or late Pleistocene alluvium of the

deposits	Menaul Member (Connell, 1995 #1291, 1998 #7502). Connell and others (2007 #7514) note that the Edith Formation must be younger than about 300 ka based on biostratigraphic evidence (Morgan and Lucas, 2005 #7515). The Menaul Member has been considered part of the Los Duranes Formation, which has a minimum age of 100–160 ka based on biostratigraphic and radiometric ages (Peate and others, 1996 #1411; Maldonado and others, 1999 #7217; Morgan and Lucas, 2005 #7515; Connell and others, 2007 #7514). However, Cole and others (2007 #7513) give somewhat different age estimates and geomorphic interpretations for these deposits based on luminescence chronology, suggesting that the Edith Formation and Menaul Member belong to the same allostratigraphic unit that yielded ages of 60–160 ka.
Historic earthquake	
Most recent prehistoric deformation	late Quaternary (<130 ka) <i>Comments:</i> Although the deposits offset by the Bernalillo fault have yielded a variety of age estimates (see above), previous workers generally agree on a late Quaternary (<160 ka) minimum age for the top of the faulted sediments.
Recurrence interval	
Slip-rate category	Less than 0.2 mm/yr <i>Comments:</i> A low late Quaternary slip rate is indicated by at least 2 m of offset of the top of the Menaul Member, which may be as old as 160 ka.
Date and Compiler(s)	2016 Stephen F. Personius, U.S. Geological Survey Andrew P. Jochems, New Mexico Bureau of Geology & Mineral Resources
References	#7513 Cole, J.C., Mahan, S.A., Stone, B.D., and Shroba, R.R., 2007, Ages of Quaternary Rio Grande terrace-fill deposits, Albuquerque area, New Mexico: <i>New Mexico Geology</i> , v. 29, no. 4, p. 122–132. #1291 Connell, S.D., 1995, Quaternary geology and geomorphology of the Sandia Mountains piedmont, Bernalillo and Sandoval Counties, central New Mexico: Riverside, University of California, unpublished M.S. thesis, 414 p., 3 pls.

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1997, Description of digital aeromagnetic data collected north and
west of Albuquerque, New Mexico: U.S. Geological Survey
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