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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.

Quien Sabe fault (Class A) No. 64

Last Review Date: 1998-04-09

citation for this record: **Bryant, W.A., compiler, 1998, Fault number 64, Quien Sabe fault, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, https://earthquakes.usgs.gov/hazards/qfaults, accessed 12/14/2020 03:03 PM.**

Synopsis	Holocene active dextral strike-slip fault with local up-on-east reverse component of displacement. Detailed reconnaissance level of mapping for fault, based on groundwater data (Kilburn, 1972 #6167), geologic mapping (Taliaferro, 1945 #6169; Leith, 1949 #6168; Dibblee and Rogers, 1975 #6166; Dibblee, 1979 #6165), and geomorphic expression (Bryant, 1985 #6163). No detailed site studies have been conducted.
Name comments	Fault first mapped by Taliaferro (1945 #6169) and Leith (1949 #6168). Dibblee and Rogers (1975 #6166) and Dibblee (1979 #6165; 1981 #6164) named the fault. Fault also known as Ansaymas fault (Kilburn, 1972 #6167); branch faults named Santa Ana fault (Kilburn, 1972 #6167) and Bradley fault (Dibblee, 1979 #6165). **Fault ID:** Refers to number 225 (Quien Sabe fault) of Jennings (1994 #2878) and number L06 (Quien Sabe fault) of Working

	Group on Northern California Earthquake Potential (1996 #1216).
County(s) and State(s)	SAN BENITO COUNTY, CALIFORNIA
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Good Compiled at 1:24,000 and 1:62,500 scale. *Comments:* Location of fault from Qt_flt_ver_3-0_Final_WGS84_polyline.shp (Bryant, W.A., written communication to K.Haller, August 15, 2017) attributed to 1:24,000-scale maps by Bryant (1985 #6163) and Dibblee (1979 #6165), and 1:62,500-scale map by Dibblee and Rogers (1975 #6166).
Geologic setting	Complex, near vertically dipping dextral fault zone with down to west vertical component. May be a splay of Calaveras fault zone [54] (Dibblee, 1981 #6164). Fault, which bounds the southwestern Diablo Range, vertically offsets Cretaceous sedimentary rocks a minimum of 760 m (Kilburn, 1972 #6167). Amount of lateral offset is unknown.
Length (km)	24 km.
Average strike	N35°W
Sense of movement	Right lateral *Comments:* Focal mechanism of 01/26/1986 ML 5.8 earthquake (Hill and others, 1990 #4957) suggests about 6:1 ratio for D:R. Rupture did not extend to surface. Northern end of fault splays into DN fault zone.
Dip	70° E *Comments:* No known exposures of fault. Hill and others (1990 #4957) reported dominant dextral focal mechanism for 01/26/1986 ML 5.8 earthquake. Dip 70? to east.
Paleoseismology studies	
Geomorphic	Complex fault zone predominantly delineated by geomorphic

expression	features characteristic of dextral offset, including dextrally offset and beheaded drainages, linear ridges, closed depressions, and scarps in late Pleistocene alluvial fans. Northern end of fault splays into dextral normal faults with scarp profiles indicative of at least two surface-rupture events.
Age of faulted surficial deposits	Latest Pleistocene to Holocene. Dibblee (1981 #6164) reported that fault offsets Quaternary gravels. Age of offset latest Pleistocene to Holocene alluvial fans based on soil profile development (Bryant, 1985 #6163).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Timing of most recent paleoevent is unknown, but assumed to be Holocene, based on geomorphic expression of fault and amount of offset of latest Pleistocene alluvial fans reported in Bryant (1985 #6163).
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* Bryant (1985 #6163) speculated that vertical slip rate component ranged from 0.22-0.67 mm/yr, based on 4.6-m scarp height observed on displaced alluvial fans. Lateral component of displacement unknown, but could be between 6 and 15 times vertical component, based on 01/26/1986 ML 5.8 earthquake focal mechanism (Hill and others, 1990 #4957). Soil profile development on alluvial fans is equivalent to Rincon soil series and is assumed to be 20-90 ka, based on inferred correlation with Tres Pinos Creek terraces described by Harms and others (1987 #5512). Slip rate assigned to the Quien Sabe fault by Petersen and others (1996 #4860) for probabilistic seismic hazard assessment for the State of California was 1 mm/yr (with minimum and maximum assigned slip rates of 0 mm/yr and 2 mm/yr, respectively.
Date and Compiler(s)	1998 William A. Bryant, California Geological Survey
References	#6163 Bryant, W.A., 1985, Faults in the southern Hollister area, San Benito County California: California Division of Mines and

Geology Fault Evaluation Report 164.

#5510 Dibblee, T.W., Jr., 1979, Preliminary geologic map of the Tres Pinos quadrangle, San Benito County, California: U.S. Geological Survey Open-File Report 79-702, 1 sheet, scale 1:24,000.

#6164 Dibblee, T.W., Jr., 1981, Regional geology of the central Diablo Range between Hollister and New Idria, *in* Frizzell, V., ed., Geology of the central and northern Diablo Range, California: Society of Economic Paleontologists and Mineralogists, Pacific Section, Annual Meeting Field Trip, Guidebook, v. 2, p. 5-11.

#6166 Dibblee, T.W., Jr., and Rogers, T.H., 1975, Geologic map of the Hollister quadrangle, California: U.S. Geological Survey Open-File Report 75-394, scale 1:62,500.

#5512 Harms, K.K., Harden, J.W., and Clark, M.M., 1987, Use of quantified soil development to determine slip rates on the Paicines fault, northern California: Geological Society of America Abstracts with Programs, v. 19, p. 384.

#4957 Hill, D.P., Eaton, J.P., and Jones, L.M., 1990, Seismicity—1980-1986, *in* Wallace, R.E., ed., The San Andreas fault system: U.S. Geological Survey Professional Paper 1515, p. 115-151.

#2878 Jennings, C.W., 1994, Fault activity map of California and adjacent areas, with locations of recent volcanic eruptions: California Division of Mines and Geology Geologic Data Map 6, 92 p., 2 pls., scale 1:750,000.

#6167 Kilburn, C., 1972, Ground-water hydrology of the Hollister and San Juan Valleys, San Benito County, California: U.S. Geological Survey Open-File Report 73-144, 44 p.

#6168 Leith, C.R., 1949, Geology of the Quien Sabe quadrangle, California: California Division of Mines Bulletin 147, 60 p.

#4860 Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.P., 1996, Probabilistic seismic hazard assessment for the State of California: California Department of Conservation, Division of Mines and Geology Open-File Report

	96-08 (also U.S. Geological Open-File Report 96-706), 33 p. #6169 Taliaferro, N.L., 1945, Geologic map of the Hollister quadrangle, California: California Division of Mines and Geology Bulletin 143, scale 1:62,500. #1216 Working Group on Northern California Earthquake Potential (WGNCEP), 1996, Database of potential sources for earthquakes larger than magnitude 6 in northern California: U.S. Geological Survey Open-File Report 96-705, 40 p.