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Quaternary Fault and Fold Database of the United States

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Simi-Santa Rosa fault zone, Camarillo-Santa Rosa Valley section (Class A) No. 98b

Last Review Date: 2000-05-01

citation for this record: **Treiman, J.A., compiler, 2000, Fault number 98b, Simi-Santa Rosa fault zone, Camarillo-Santa Rosa Valley section, 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 03:11 PM.**

Synopsis	**General:** The Simi fault zone is best known from oil exploration; ground water studies have also helped locate the faults, especially western sections. Surface traces are known principally from thesis mapping, later compilations, and recent geotechnical studies, but some sections of the fault zone are still only moderately well located at the surface. Age control for most-recent surface rupture and Holocene fault history is limited to the Springville fault and one site in the middle of the Simi fault. Camarillo and Santa Rosa Valley faults are interpreted principally from geomorphology and subsurface data, with sparse confirmation as surface faults. It is not known if the various faults comprising the zone rupture together or as semi-independent elements and sections or segments have not been previously defined in the literature. **Sections:** This fault has 3 sections. Sections have not been

	specifically discussed in the literature. The Springville and Camarillo faults were initially discussed as separate faults (Bailey, 1951 #5998; State Water Resources Board, 1956 #6017), but later discussed as part of the Simi-Santa Rosa fault zone (for example, Weber and others, 1976 #5992). Sections, which are distinguished here based on deformational style and step-overs, include the Springville section [98a], Camarillo-Santa Rosa section [98b], and Simi-Santa Rosa section [98c].
Name comments	**General:** **Section:** Camarillo fault (#349 of Jennings, 1994 #2878) first mapped by Bailey (1951 #5998) and named by State Water Resources Board (1956 #6017). Santa Rosa Valley fault was named by Treiman (1997 #6018; 1998 #6019), but elements of this fault were previously shown by Bailey (1951 #5998), Pasta (1958 #6016) and Weber and others (1976 #5992). These two faults are considered part of the same section based on similarity of expression and inferred style of faulting (Treiman, 1997 #6018; 1998 #6019). The section extends eastward from the City of Camarillo through the Santa Rosa Valley, with an approximately 900-m-wide left step between the two fault strands. This section overlaps and is roughly 1 km south of the Simi-Santa Rosa section [98c]. **Fault ID:** Refers to numbers 346 (Simi/Santa Rosa fault), 348 (Springville fault) and 349 (Camarillo fault) of Jennings (1994 #2878) and numbers 65 (Springville fault), 66 (Camarillo fault), and 67 (Simi fault) of Ziony and Yerkes (1985 #5931).
County(s) and State(s)	VENTURA COUNTY, CALIFORNIA
Physiographic province(s)	PACIFIC BORDER
Reliability of location	Good Compiled at 1:24,000 scale. *Comments:* Fault traces are taken from 1:24,000 compilation by Treiman (1997 #6018; 1998 #6019) and Division of Mines and Geology (1998 #6003; 1999 #6005).
Geologic setting	The Simi-Santa Rosa fault zone is dominated by moderate to high-angle north-dipping reverse faults that probably also have a left-lateral component of displacement (Treiman, 1998 #6019).

	The fault zone extends for 40 km in an east-northeast direction within the southern California Transverse Ranges. Simi fault is a Tertiary fault with up to 1,600 m vertical separation (Oligocene Sespe) and continued Quaternary activity (Hanson, 1981 #6010). In a westward direction late-Quaternary activity steps left from the Simi across the Santa Rosa, Santa Rosa Valley and Camarillo fault elements of the zone, and also northwest (right-step) to the Springville fault.
Length (km)	This section is 17 km of a total fault length of 47 km.
Average strike	N83°E (for section) versus N77°E (for whole fault)
Sense of movement	Reverse *Comments:* Sense of movement inferred from adjacent sections, geomorphology and limited consulting studies (Treiman, 1997 #6018; 1998 #6019).
Dip	40–80° N. *Comments:* 80° dip for Camarillo fault inferred from oil and water well data (Gardner, 1982 #6008); 40–74° dip found in geotechnical investigation of Santa Rosa Valley fault summarized by Treiman (1998 #6019).
Paleoseismology studies	
Geomorphic expression	Large-scale expression includes narrow anticlinal ridge through Camarillo and uplift of floor of Santa Rosa Valley with associated anticlinal ridges; small-scale expression includes scarps, incised drainages, offset drainages and saddles (Treiman, 1997 #6018; 1998 #6019).
Age of faulted surficial deposits	Holocene flood-plain deposits; Holocene to late-Pleistocene fluvial terraces and colluvium; Pleistocene Saugus formation (Dibblee and Ehrenspeck, 1990 #6002) and data from unpublished consulting reports summarized in Treiman (Treiman, 1997 #6018; 1998 #6019).
Historic earthquake	
Most recent prehistoric	latest Quaternary (<15 ka)

deformation	*Comments:* Timing of most recent paleoevent is poorly constrained, based on scarp across inferred Holocene floodplain and youthful geomorphic expression (Treiman, 1997 #6018; 1998 #6019).
Recurrence interval	
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* Assigned slip-rate category based on 0.5–0.9 mm/yr deformation rate from Springville fault (Gonzalez and Rockwell, 1991 #6009) and similarity of geomorphic expression (Treiman, 1998 #6019 based on Slemmons and dePolo, 1986 #3409). Slip rate assigned by Petersen and others (1996 #4860) for probabilistic seismic hazard assessment for the State of California was 1.0 mm/yr (with minimum and maximum assigned slip rates of 0.5mm/yr and 1.5 mm/yr, respectively).
Date and Compiler(s)	2000 Jerome A. Treiman, California Geological Survey
References	#5998 Bailey, T.L., 1951, Geology of a portion of Ventura basin, Los Angeles and Ventura Counties, California: scale 1:48,000. #5999 Dibblee, T.W., Jr., 1992, Geologic map of the Santa Susana quadrangle, Ventura and Los Angeles Counties, California: Dibblee Geological Foundation Map DF-38, scale 1:24,000. #6000 Dibblee, T.W., Jr., 1992, Geologic map of the Simi quadrangle, Ventura County, California: Dibblee Geological Foundation Map DF-39, scale 1:24,000. #6001 Dibblee, T.W., Jr., 1992, Geologic map of the Moorpark quadrangle, Ventura County, California: Dibblee Geological Foundation Map DF-40, scale 1:24,000. #6002 Dibblee, T.W., Jr., and Ehrenspeck, H.E., 1990, Geologic map of the Camarillo and Newbury Park quadrangles, Ventura County, California: Dibblee Geological Foundation Map DF-28, scale 1:24,000. #6003 Division of Mines and Geology, 1998, State of California earthquake fault zones, Camarillo quadrangle, official map, effective May 1, 1998:California Department of Conservation,

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#6009 Gonzalez, T., and Rockwell, T.K., 1991, Holocene activity of the Springville fault in Camarillo, Transverse Ranges, southern California—Preliminary observations, *in* Blake, T.F., and Larson, R.A., eds., Engineering geology along the Simi-Santa Rosa fault system and adjacent areas, Simi Valley to Camarillo, Ventura County, California: Southern California Section, Association of Engineering Geologists, 1991 Annual Field Trip, August 24, 1991, field trip guidebook, p. 369-383.

#6010 Hanson, D.W., 1981, Surface and subsurface geology of the Simi Valley area, Ventura County, California: Oregon State University, unpublished M.S. thesis, 112 p., scale 1:24,000.

#6011 Hitchcock, C.S., Treiman, J.A., Lettis, W.R., and Simpson, G.D., 1998, Paleoseismic investigation of the Simi fault at Arroyo Simi, Simi Valley, Ventura County, California: Geological Society of America Abstracts with Programs, v. 30, no. 5, p. 19-20.

#6012 Jakes, M.C., 1979, Surface and subsurface geology of the Camarillo and Las Posas Hills area, Ventura County, California: Oregon State University, unpublished M.S. thesis, 105 p., scale

1:24,000.

#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.

#6013 Kew, W.S.W., 1919, Structure and oil resources of the Simi Valley, southern California: U.S. Geological Survey Bulletin 691-M, 323-347 p.

#6014 Kew, W.S.W., 1924, Geology and oil resources of a part of Los Angeles and Ventura Counties, California: U.S. Geological Survey Bulletin 753, 202 p.

#6015 Leighton and Associates, 1993, Structure, evolution and fault activity of the western portion of the Las Posas Hills, Ventura County, California: consultant's report, Project No. 3901427-03, July 30, 1993, volumes I-III.

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