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Simi-Santa Rosa fault zone, Springville section (Class A) No. 98a

Last Review Date: 2000-05-01

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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:** This is fault #348 of Jennings (1994 #2878). Springville fault was first mapped by Bailey (1951 #5998) and named by State Water Resources Board (1956 #6017). The section consists of the northern and southern traces of the Springville fault and is separated from other sections of the fault zone by a right step. The section extends along the base of the Camarillo Hills from Highway 101 northeast to about 1 km west of Highway 34. **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:* Location of fault traces are taken from 1:24,000 compilation by Treiman (Treiman, 1997 #6018)(1997) and Division of Mines and Geology (1998 #6003).
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 9 km of a total fault length of 47 km.
Average strike	N68°E (for section) versus N77°E (for whole fault)
Sense of movement	Reverse *Comments:* Gonzalez and Rockwell (1991 #6009) describe regional and site-specific evidence of thrust displacement, but steepening dips from oil well data suggest reverse rather than thrust geometry.
Dip	16°-78° *Comments:* Dips of 55? and 78? found at elevations (MSL) of -2530' and -5150', respectively (Jakes, 1979 #6012), with shallower dips found in near-surface geotechnical exploration (Gonzalez and Rockwell, 1991 #6009).
Paleoseismology studies	Site 98a-1, Springville: trench studies across Springville fault found evidence for several paleo-events; faulted stratigraphy along with radiocarbon age control (MRT) provide moderately constrained indication of recency, slip rate, recurrence and slip per event (Gonzalez and Rockwell, 1991 #6009; Leighton & Associates, 1993 #6015).
Geomorphic expression	Large-scale expression includes the adjacent anticlinal Camarillo Hills; small-scale expression includes faceted spurs, scarps, side-hill benches, linear troughs and aligned saddles (Treiman, 1997 #6018).
Age of faulted surficial deposits	Holocene and late Quaternary fluvial and colluvial deposits (Gonzalez and Rockwell, 1991 #6009; Treiman, 1997 #6018)
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Most recent displacement on Springville fault estimated at 600?500 yr BP (14C-MRT, Leighton & Associates, 1993 #6015).

Recurrence interval	900 years *Comments:* Recurrence interval is poorly constrained. Leighton & Assoc. (1993 #6015)(1993) estimated 900 14C years for Springville fault based on MRT-radiocarbon age control of faulted sediments.
Slip-rate category	Between 0.2 and 1.0 mm/yr *Comments:* 0.5-0.9 mm/yr (reverse) reported by Gonzalez and Rockwell (1991 #6009). Slip rate assigned to the entire fault zone 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, Division of Mines and Geology, scale 1:24,000. #6004 Division of Mines and Geology, 1999, State of California

earthquake fault zones, Moorpark quadrangle, official map, effective May 1, 1999:California Department of Conservation, Division of Mines and Geology, scale 1:24,000.

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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.

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Questions or comments?