

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](#).

Palos Verdes fault zone, Santa Monica Basin section (Class A) No. 128a

Last Review Date: 1998-10-01

citation for this record: Treiman, J.A., and Lundberg, M., compilers, 1998, Fault number 128a, Palos Verdes fault zone, Santa Monica Basin 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 02:16 PM.

Synopsis

General: Holocene activity along the southern offshore San Pedro Shelf section of the fault zone [128c] is recognized, but Holocene activity has not been demonstrated for the northern sections.

General style of faulting is fairly well understood and recency and slip-rate (1–5 mm/yr) are fairly well established for boundary area between southern and middle sections, but timing, magnitude and distribution of most recent displacement is still not well characterized for remainder of fault zone.

Sections: This fault has 3 sections. The shown here were designated by Hecker and others (1998 #6118). Working Group on California Earthquake Probabilities (1995 #6123) define two segments; one north and one south of the Redondo Canyon fault. McNeilan and others (1996 #6121) argue for three segments based on change in trend and differences in nature of the three sections. Fischer and

	<p>others (1987 #6117) define three segments based on degree of activity and recency, but data to support segmentation is not sufficient. Three "segments" used loosely by Los Angeles County (Leighton and Associates, 1990 #6120). Section designation is preferred due to lack of detailed studies on all sections. More sections could be counted if fault is continuous with Coronado Bank fault zone [131].</p>
Name comments	<p>General:</p> <p>Section: Fault ID 2 of Hecker and others (1998 #6118)</p> <p>Fault ID: Refers to number 437 (Palos Verdes fault) of Jennings (1994 #2878); Fault ID 1, 2 & 3 of Hecker and others (1998 #6118); number 35 (Palos Verdes Hills fault) of Ziony and Yerkes (1985 #5931).</p>
County(s) and State(s)	LOS ANGELES COUNTY, CALIFORNIA (offshore)
Physiographic province(s)	PACIFIC BORDER (offshore)
Reliability of location	<p>Poor</p> <p>Compiled at 1:100,000 scale.</p> <p><i>Comments:</i> Location of fault is generally inferred based on 1:250,000-scale map of Vedder and others (1986 #5971).</p>
Geologic setting	High-angle southwest-dipping dextral oblique fault (reverse component) forms southwestern boundary of Los Angeles basin with Palos Verdes uplift (Wright, 1991 #5950; McNeilan and others, 1996 #6121).
Length (km)	This section is 32 km of a total fault length of 73 km.
Average strike	N52°W (for section) versus N48°W (for whole fault)
Sense of movement	<p>Right lateral</p> <p><i>Comments:</i> Sense of movement dominantly strike-slip (Hecker and others, 1998 #6118).</p>
Dip Direction	<p>SW</p> <p><i>Comments:</i> Dip of fault described as high-angle by Hecker and others (1998 #6118), however vertical exaggeration of marine</p>

	geophysical imaging precludes definition of dip greater than 35° (Kennedy and others, 1987 #6119).
Paleoseismology studies	
Geomorphic expression	unknown
Age of faulted surficial deposits	unconsolidated late Pleistocene to Holocene marine shelf and slope sediments (Vedder and others, 1986 #5971).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) <i>Comments:</i> Timing of most recent based on marine geophysical interpretation (Vedder and others, 1986 #5971).
Recurrence interval	
Slip-rate category	Between 1.0 and 5.0 mm/yr <i>Comments:</i> 2–4 mm/yr; 3 mm/yr preferred (Hecker and others, 1998 #6118). Inferred rate based on 3 mm/yr identified to the south—Santa Monica Basin section [128a] may have somewhat lower slip-rate due to transfer of some slip to Redondo Canyon fault [130]. Slip rate assigned to the entire fault by Petersen and others (1996 #4860) for probabilistic seismic hazard assessment for the State of California was 3.0 mm/yr (with minimum and maximum assigned slip rates of 2.0 mm/yr and 4.0 mm/yr, respectively).
Date and Compiler(s)	1998 Jerome A. Treiman, California Geological Survey Matthew Lundberg, California Geological Survey
References	#6117 Fischer, P.J., Patterson, R.H., Darrow, A.C., Rudat, J.H., and Simila, G., 1987, The Palos Verdes fault zone—Onshore to offshore, <i>in</i> Fischer, P.J., ed., <i>Geology of the Palos Verdes peninsula and San Pedro bay: Pacific Section, Society of Economic Paleontologists and Mineralogists and American Association of Petroleum Geologists Guidebook</i> , v. 55, p. 91-133. #6118 Hecker, S., Kendrick, K.J., Ponti, D.J., and Hamilton, J.C.,

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