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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.

J Fault (Class A) No. 788

Last Review Date: 2002-05-17

citation for this record: **Personius, S.F., compiler, 2002, Fault number 788, J 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 03:16 PM.**

Synopsis	The northwest-striking fault "J" offsets sediments that underlie the upper slope and continental shelf in the forearc of the Cascadia subduction zone [781]. The fault is mapped as a pair of parallel fault strands that appear to form a horst in sediments of unknown age on the upper slope and shelf. Similarities with other faults suggest most-recent movement in the latest Pleistocene and Holocene. However, as with other folds and faults located in the Cascadia forearc, it is unknown if coseismic displacements on this fault are always related to great megathrust earthquakes on the subduction zone, or whether some independent displacements are related to smaller earthquakes in the overriding North American Plate.
Name comments	The fault zone was originally mapped by Goldfinger and others (1992 #446; 1992 #464) and named fault "J" by Geomatrix Consultants, Inc. (1995 #3593).

	Fault ID: This structure is included in fault number 21 of Pezzopane (1993 #3544) and is fault number 10 of Geomatrix Consultants, Inc. (1995 #3593).
County(s) and State(s)	PACIFIC COUNTY, WASHINGTON (offshore) CLATSOP COUNTY, OREGON (offshore)
Physiographic province(s)	PACIFIC BORDER (offshore)
Reliability of location	Poor Compiled at 1:500,000 scale. *Comments:* The fault trace is from 1:500,000-scale mapping of Goldfinger and others (1992 #464).
Geologic setting	The northwest-striking fault "J" offsets sediment that underlies the upper slope and continental shelf in the forearc of the Cascadia subduction zone [781] (Goldfinger and others, 1992 #446; Goldfinger and others, 1992 #464; Geomatrix Consultants Inc., 1995 #3593). As with other folds and faults located in the Cascadia forearc, it is unknown if coseismic displacements on this fault are always related to great megathrust earthquakes on the subduction zone, or whether some independent displacements are related to smaller earthquakes in the overriding North American Plate (Goldfinger and others, 1992 #446; Goldfinger, 1994 #3972; Goldfinger and others, 1997 #4090; McNeill and others, 1998 #4089).
Length (km)	8 km.
Average strike	N69°W
Sense of movement	Normal, Left lateral *Comments:* Fault "J" is mapped as a pair of normal faults by Goldfinger and others (1992 #446; 1992 #464). Geomatrix Consultants, Inc. (1995 #3593) inferred left-lateral strike-slip displacement, based on similarity with other northwest-striking faults in the Cascadia forearc.
Dip Direction	N; S
Paleoseismology studies	
Geomorphic	The pair of parallel fault strands that comprise fault "J" appear to

expression	form a horst in sediment on the upper slope and continental shelf (Goldfinger and others, 1992 #446; Goldfinger and others, 1992 #464; Geomatrix Consultants Inc., 1995 #3593). No details of their geomorphic expression has been described.
Age of faulted surficial deposits	Fault "J" offsets sediment of unknown age on the upper slope and continental shelf (Goldfinger and others, 1992 #446; Goldfinger and others, 1992 #464; Geomatrix Consultants Inc., 1995 #3593).
Historic earthquake	
Most recent prehistoric deformation	latest Quaternary (<15 ka) *Comments:* Fault "J" offsets sediment of unknown age on the upper slope and continental shelf (Goldfinger and others, 1992 #446; Goldfinger and others, 1992 #464; Geomatrix Consultants Inc., 1995 #3593). However, its similarity to other active faults in the accretionary wedge suggests that the most-recent movement is in the latest Quaternary. The fault is mapped as active in the Holocene or late Pleistocene by Goldfinger and others (1992 #464), Pezzopane (1993 #3544), Geomatrix Consultants, Inc. (1995 #3593), and Madin and Mabey (1996 #3575).
Recurrence interval	
Slip-rate category	Between 1.0 and 5.0 mm/yr *Comments:* No detailed slip data has been described, but Geomatrix Consultants, Inc. (1995 #3593) and Wong and others (1999 #4073; 2000 #5137) used estimated slip rates of 1.0-8.0 mm/yr and a preferred rate of 5 mm/yr in their analyses of earthquake hazards associated with fault "J".
Date and Compiler(s)	2002 Stephen F. Personius, U.S. Geological Survey
References	#3593 Geomatrix Consultants, Inc., 1995, Seismic design mapping, State of Oregon: Technical report to Oregon Department of Transportation, Salem, Oregon, under Contract 11688, January 1995, unpaginated, 5 pls., scale 1:1,250,000. #3972 Goldfinger, C., 1994, Active deformation of the Cascadia Forearc—Implications for great earthquake potential in Oregon and Washington: Oregon State University, unpublished Ph.D.

dissertation, 246 p., http://hdl.handle.net/1957/36664.

#446 Goldfinger, C., Kulm, L.D., Yeats, R.S., Appelgate, B., MacKay, M.E., and Moore, G.F., 1992, Transverse structural trends along the Oregon convergent margin—Implications for Cascadia earthquake potential and crustal rotations: Geology, v. 20, p. 141-144.

#4090 Goldfinger, C., Kulm, L.D., Yeats, R.S., McNeill, L., and Hummon, C., 1997, Oblique strike-slip faulting of the central Cascadia submarine forearc: Journal of Geophysical Research, v. 102, no. B4, p. 8217-8243.

#464 Goldfinger, C., Kulm, L.D., Yeats, R.S., Mitchell, C., Weldon, R., II, Peterson, C., Darienzo, M., Grant, W., and Priest, G.R., 1992, Neotectonic map of the Oregon continental margin and adjacent abyssal plain: State of Oregon, Department of Geology and Mineral Industries Open-File Report 0-92-4, 17 p., 2 pls.

#3575 Madin, I.P., and Mabey, M.A., 1996, Earthquake hazard maps for Oregon: State of Oregon, Department of Geology and Mineral Industries Geological Map Series GMS-100, 1 sheet.

#4089 McNeill, L.C., Goldfinger, C., Yeats, R.S., and Kulm, L.D., 1998, The effects of upper pl. deformation on records of prehistoric Cascadia subduction zone earthquakes, *in* Stewart, I.S., and Vita-Finzi, C., eds., Coastal tectonics: Geological Society Special Publication No. 146, p. 321-342.

#3544 Pezzopane, S.K., 1993, Active faults and earthquake ground motions in Oregon: Eugene, Oregon, University of Oregon, unpublished Ph.D. dissertation, 208 p.

#4073 Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., 1999, Earthquake scenario and probabilistic ground shaking maps for the Portland, Oregon metropolitan area: Technical report to U.S. Geological Survey, under Contract 1434-HQ-96-GR-02727, 16 p., 12 pls.

#5137 Wong, I., Silva, W., Bott, J., Wright, D., Thomas, P., Gregor, N., Li, S., Mabey, M., Sojourner, A., and Wang, Y., 2000, Earthquake scenario and probabilistic ground shaking maps for

	the Portland, Oregon, metropolitan area: State of Oregon, Department of Geology and Mineral Industries Interpretive Map Series IMS-16, 16 p. pamphlet, scale 1:62,500.