Fault line found near Kendall; quake expectation rises

Second fault discovered near Port Angeles

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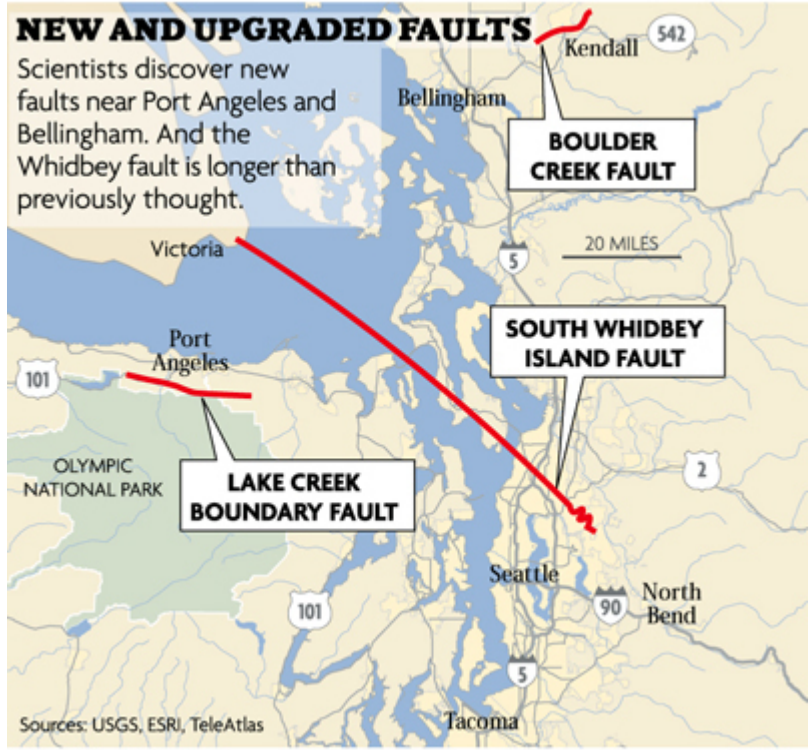
WASHINGTON, D.C. — The expectation of a destructive earthquake in Washington state has increased slightly because of the discovery of two new major faults and revised calculations for the Cascadia Subduction Zone off the coast, where two tectonic plates grind against each other. One of those faults in the newly released seismic hazard maps from the U.S. Geological Survey is about 25 miles from Bellingham, not far from the Canadian border.

Just a year ago, geologists from the USGS said the Boulder Creek Fault had been active for the past several thousand years instead of dormant for 30 million years, as previously thought. The fault is thought capable of producing a magnitude 6.8 earthquake. The main danger is to Abbotsford, B.C., a city of about 175,000, said Craig Weaver, the Pacific Northwest earthquake coordinator for USGS. “It wouldn’t have a lot of impact in Bellingham, but would have a lot of consequence for our friends in B.C.,” Weaver said. It also could cause damage in the Sumas and Kendall areas.

The new maps also show that what might be the state’s most dangerous fault actually extends from south of Whidbey Island through Seattle’s heavily populated northern suburbs to Woodinville and perhaps as far as North Bend. The faults on the new maps provide further evidence of the high earthquake hazard in Washington state, among the highest in the nation. Western Washington and Oregon are laced with 100 or so known faults, and no one is sure how many more crisscross the region. More than 1,000 earthquakes occur in the state every year. Monday, a magnitude 3.4 quake occurred in Snohomish as the updated maps were released.



FRED MATAMOROS/The News Tribune

“These areas have a high earthquake hazard and these new maps reinforce that,” said Art Frankel, a geophysicist at the USGS National Earthquake Information Center in Golden, Colo. The other new fault is east of Port Angeles along the Strait of Juan de Fuca and Olympic National Park. The Lake Creek- Boundary Creek fault is capable of producing a magnitude 7.4 earthquake and has been active over the past several thousand years.

By way of comparison, the February 2001 Nisqually earthquake, which struck northeast of Olympia, was a magnitude 6.8 and caused more that $100 million in property damage and actually shifted the dome over the state Capitol. “We are starting to shrink some of the uncertainties,” said Weaver, though he added that many remain. Weaver said the South Whidbey Island Fault has the highest hazard of any fault in the state and could produce a magnitude 7.5 earthquake. There have been at least four quakes along this fault in the past 16,000 years. The new maps show the fault extending another 15 or so miles in the Snoqualmie Valley. “It cuts right through one of the most populated areas along Puget Sound,” Weaver said.

As for the Cascadia Subduction Zone, where the Juan de Fuca and North America tectonic plates collide in an area off the coast stretching from Northern California to Vancouver Island, scientists now believe it is more likely it will be fractured in a magnitude 9.0 or larger quake rather than in a series of smaller magnitude 8.0 quakes. The subduction zone experienced a major earthquake in 1700. Such a quake could produce a catastrophic tsunami along the Northwest coast. Using new models produced by the Japanese, Mark Petersen, chief of the USGS National Seismic Mapping Project, said a major subduction zone earthquake also could produce more ground motion than originally thought.

“This is very complicated, but the risks are slightly higher than before,” he said. Scientists have been reviewing data on the new faults, the South Whidbey Island Fault and the Cascadia Subduction Zone for several years, including new studies involving the use of lasers carried in airplanes and actual hand-digging of trenches along the fault lines. “There are no surprises,” said Weaver. “These things have been well-reviewed.” The updated maps are used in revising building codes, by insurance companies setting premiums and by the Federal Emergency Management Agency in earthquake preparedness.

“There is no cause for alarm,” said Petersen. “People just need to be aware because these things have happened in the past.”