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Study figures local tsunami cost

USC report pegs landslide damages at \$450 million for the area, \$43 billion in the region.

By Nick Green

Daily Breeze

A USC study that will be released today concludes Southern California would experience "grave economic consequences" with losses reaching \$43 billion from a tsunami-caused landslide off the Palos Verdes Peninsula.

Losses in the Harbor Area, Carson, Rancho Palos Verdes and Palos Verdes Estates alone could exceed \$450 million.

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"We're not talking about the replacement cost (of homes, roads and other infrastructure) that would come about as a result of this catastrophe," said James Moore II, professor and chair of the Daniel J. Epstein Department of Industrial and Systems Engineering at USC. "We're talking about the cost of not being able to produce because of damage to facilities."

The costs also do not include damage caused by the earthquake.

Moreover, Moore cautioned that just because cities such as Redondo Beach are not mentioned in the report doesn't mean they are immune. A localized tsunami in an underwater canyon off that area of the coast could also cause widespread damage.

The study, which appears in the April issue of *Civil Engineering* magazine, is the first effort by scientists to try to quantify economic losses from a tsunami.

"The purpose of this is to alert policy-makers to the fact that the same mechanism responsible for the Papua New Guinea earthquake in 1998 could well be acting in the Santa Barbara Channel," Moore said.

"Our basic understanding of tsunamis has changed quite a bit in the past five years or so. We're used to tsunamis that are generated the way the Christmas tsunami (off the Indonesian coast) was generated -- by undersea earthquakes. More localized events can occur as a result of undersea landslides. And it's just our luck there's an escarpment out in the Santa Barbara Channel where slides have occurred before and will occur again."

The localized Papua New Guinea earthquake killed more than 2,000 people.

An 1812 tsunami is believed to have generated a tidal surge about 6 feet high in Santa Barbara and Ventura.

The USC study estimates a submarine landslide off the Peninsula could generate a wave ranging from about 15 feet to 60 feet in height that would reach land in less than a minute.

The study examines four different scenarios of increasing severity. Depending on the scenario, economic losses ranged from \$7 billion to \$43.5 billion.

In the worst case, both the ports of Los Angeles and Long Beach would be out of commission for a year.

"The ports are of national importance," Moore said. "They're of enormous importance to the economy of the region and they're of substantial importance to the economy of the nation."

A port official could not be reached for comment.

"Physical damage to wharves, piers and loading facilities would be expected to force some, but not all, export flows to be shifted to other modes of transportation," according to the study.

"Finally, the potential economic losses associated with damages to the ports outweigh the totals from the remainder of the inundated region by a factor of five. This figure alone demonstrates the vulnerability of the port infrastructure and the pressing need for a comprehensive tsunami hazard assessment at all major U.S. ports."

However, scientists estimated that the total tsunami damage would account for only 1 percent of the total economic output of the five-county Southern California region.

While Long Beach would be worst hit, Carson could lose 1.5 percent of its pre-tsunami economic production, Rancho Palos Verdes 5.3 percent and Palos Verdes Estates 7.7 percent.

Palos Verdes Estates officials concluded in a recent report that the city was at minimal risk from a tsunami.

"I don't know if there's an engineering fix to this problem," Moore said. "I think it's worth examining. One of the goals of the paper is to give us an idea of how much are we willing to pay to avoid the problem."

Especially a relatively rare one.

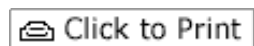
Local scientists, including Costas Synolakis, one of the co-authors of the USC report, have differed on how to deliver effective tsunami warnings.

A city of Los Angeles tsunami task force concluded earlier this month that relatively inexpensive undersea hydrophones that could hear an underwater landslide were an "unproven technology."

That caused a heated and public academic debate between scientists on the task force.

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