

Sheet 3. Zones Susceptible to Seismically Induced Liquefaction Associated with a M9+ Cascadia Subduction Zone Earthquake for the Long Beach Peninsula, Pacific County, Washington

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Susceptibility to earthquake-induced soil liquefaction from ground shaking associated with a M9+ Cascadia subduction zone earthquake includes much of the lowlands and mapped tsunami inundation zones of the Long Beach peninsula. The groundwater condition modeled is at the surface (0 ft) and is assumed homogenous throughout the area. Beach and dune sands are the dominant soil underlying the report area and all of it is susceptible to liquefaction. However, analysis of the limited borehole data categorized the initiation of liquefaction hazard as low to moderate. The relatively low initiation of liquefaction values are likely due to compaction of sand from wave action of the Pacific Ocean. Wave action compacted the sand on beaches such that the seismic energy necessary to initiate liquefaction may not be strong enough to initiate widespread liquefaction. Peat is a significant deposit on the peninsula and covers more than 11 percent of the lowlands. Peat, which is not liquefiable, is considered a risk for deformation and sand boils from underlying liquefiable sediments. Wetlands cover approximately 38 percent of the peninsula and coincide with much of the mapped peat. Wetland areas should be recognized as areas where saturated soils are present in the subsurface and the increased likelihood of initiation of liquefaction should be considered, as well as potential hazards from unmapped peat deposits. Though the liquefaction susceptibility is generally lower in the study area, deformation from peat is a potential risk, especially where evacuation routes cross peat deposits.

Liquefaction hazard rating

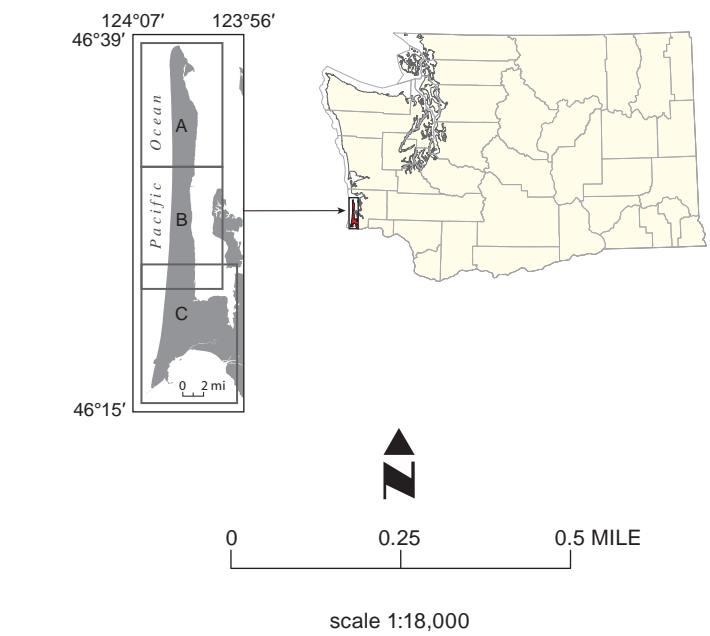
- Peat
- Very low
- Very low to low
- Low to moderate
- Moderate to high
- High
- All others not evaluated

Borehole liquefaction initiation, groundwater assumed at ground surface (0 ft)

- Very low
- Low
- Boreholes not used for quantitative analysis

Map Symbolology

- Wetland or cranberry bog
- Evacuation route
- Hiking trail
- 20-foot contour
- Post-tsunami assembly area
- Medical facility
- Seismic survey site
- Airport
- Lighthouse
- Recreational vehicle park
- Hiking trail
- Campground



Lambert conformal conic projection
North American Datum of 1983
Shaded relief generated from a 1-kilometer bare-earth digital elevation model (available from
Puget Sound Lidar Consortium, <http://pugetlidar.org/ess/washington/ess/>),
sun azimuth 315°, sun angle 45°
Digital cartography and GIS by Stephen L. Slaughter, Ian J. Hubert, and Anne C. Olson
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Tsunami evacuation routes and post-tsunami assembly areas are not
intended for emergency use and are included for reference purposes only.
The objective of these mapping products is to assist city and emergency
management officials in evaluating the suitability of existing evacuation
routes and assembly areas for potential vulnerability to ground failure
from a M9+ CSE earthquake. Results of this report could necessitate
modifying, adding, or removing current tsunami evacuation routes and/or
post-tsunami assembly areas.