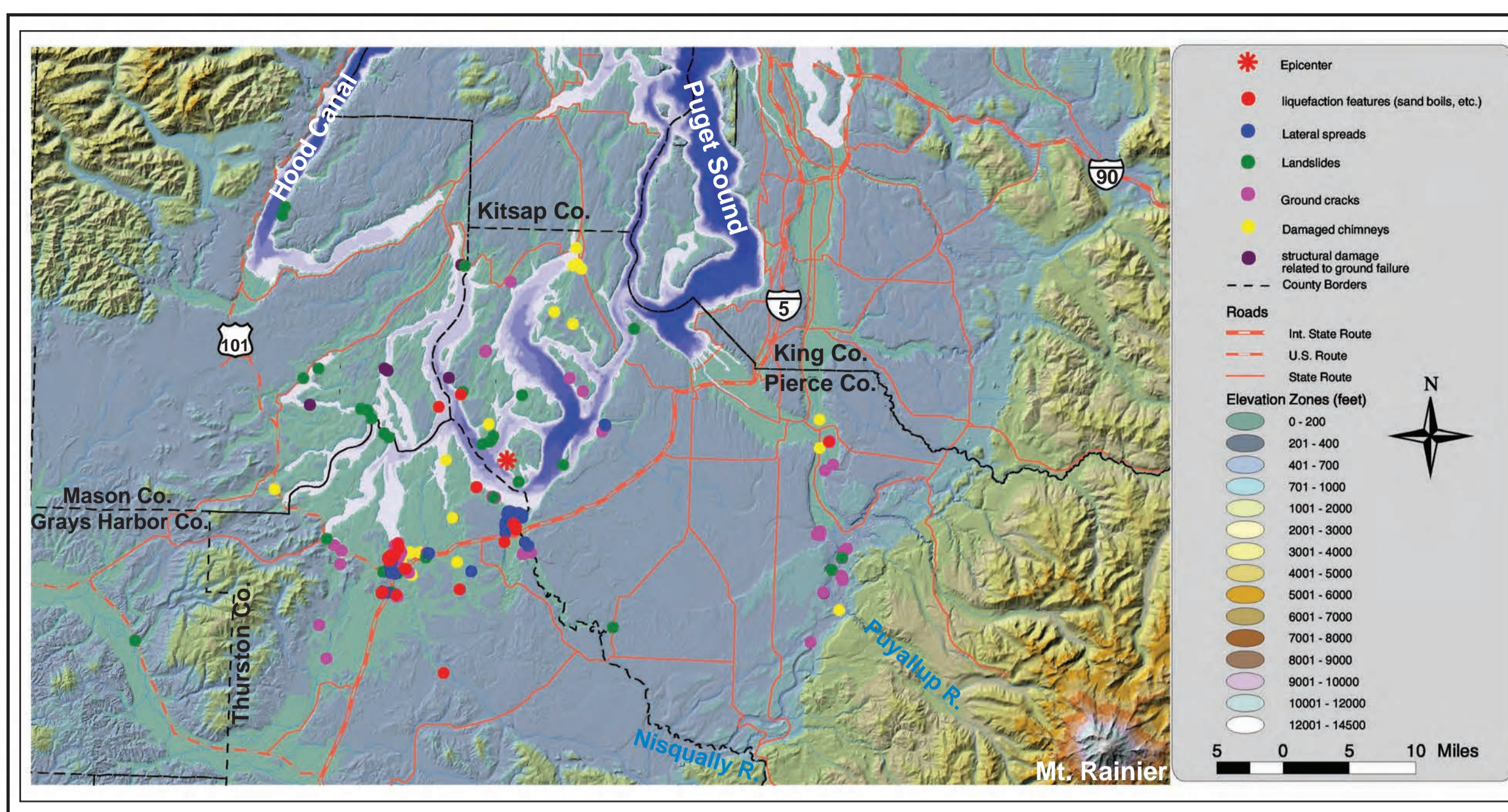


Ground Failures in the Southern Puget Sound Lowlands Caused by the Nisqually Earthquake

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Abstract

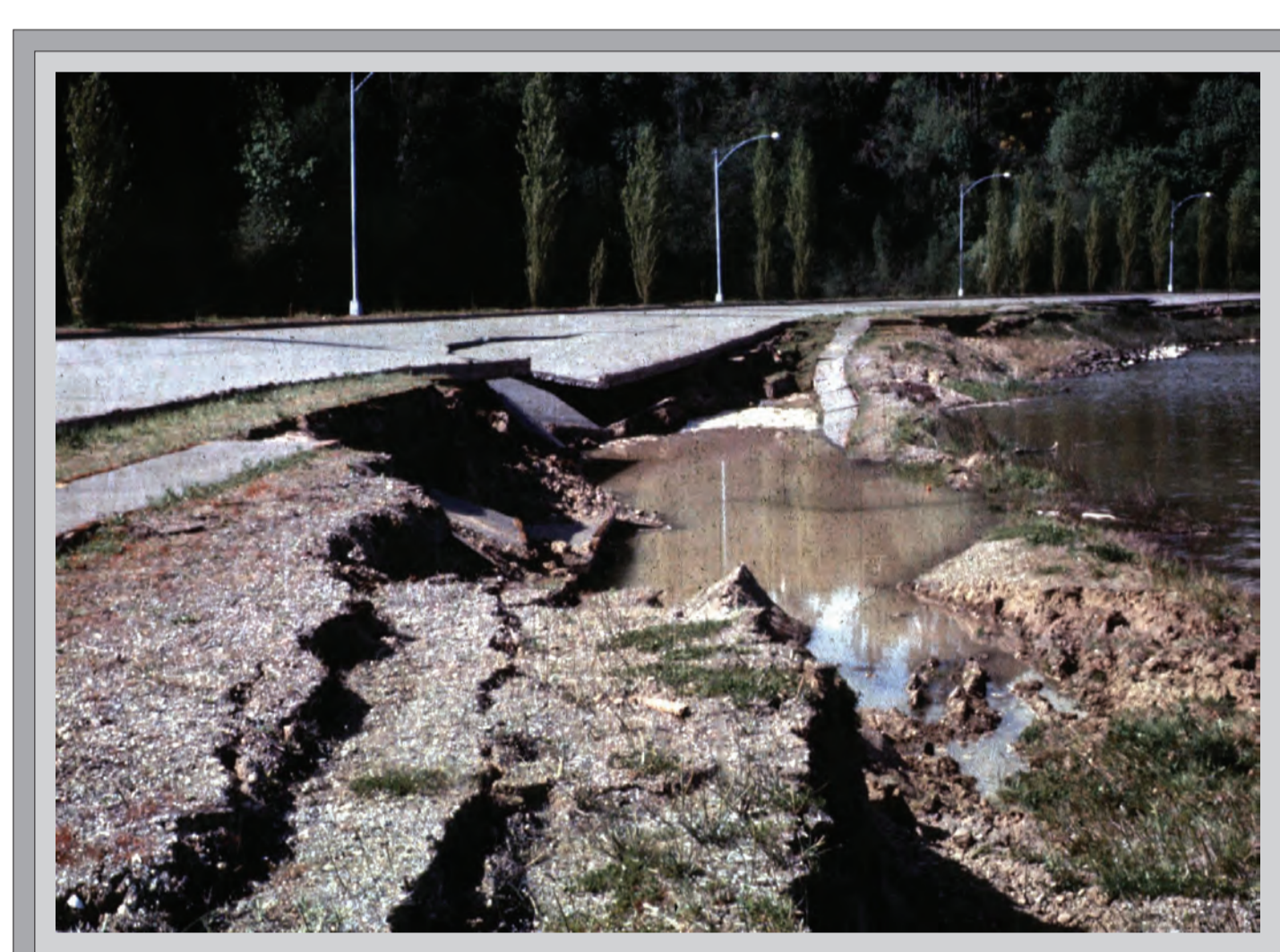
In response to the February 28, 2001 Nisqually earthquake, the staff of the Washington Division of Geology and Earth Resources did a reconnaissance of ground failures in the southern Puget Lowland. We coordinated with investigators from the U.S. Geological Survey and the University of Washington, who mapped ground failures to the north. Our efforts were guided by previously prepared liquefaction susceptibility maps (LSM) and maps of ground failures from previous large earthquakes in the Puget Sound region. There were two large, damaging, liquefaction-induced lateral spreads numerous smaller lateral spreads, ground cracks, and sand blows in the Olympia area. Our comparison of LSM hazard zones showed a good correlation with observed liquefaction features. In general there was less severe ground failure than in 1949 and the area in which we found ground failures was significantly smaller. The distance to ground failures was also less than in 1949 with the exception of a slump in northeast Portland at an epicentral distance of about 100 miles. Notable also was the nearly complete lack of debris flows, most likely due to the unusually dry winter.



Distribution of Ground Failures in the Southern Puget Sound Region as Mapped by WADNR Geologists



Washington State Location Map



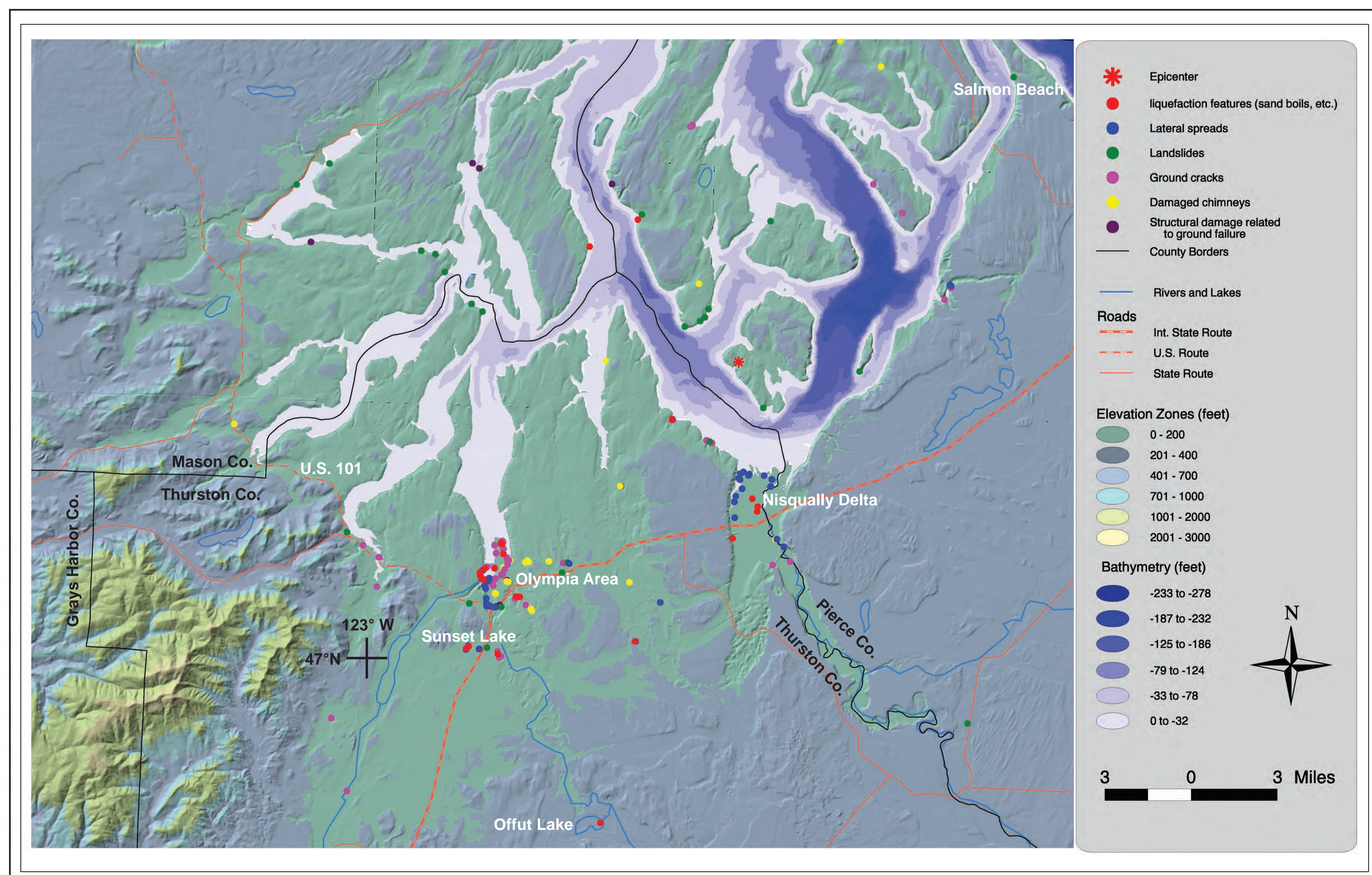
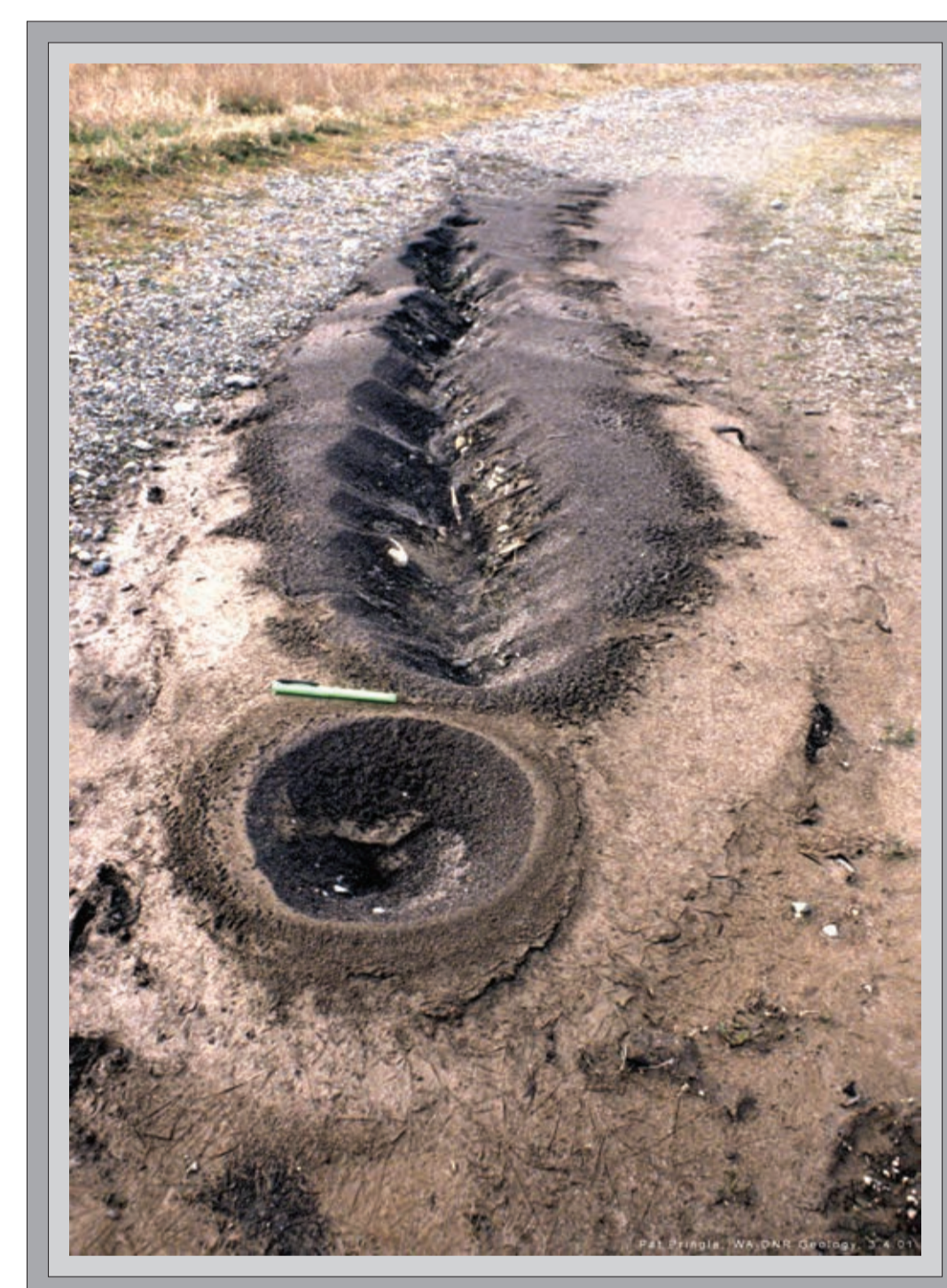
1999 Satsop Earthquake



2001 Nisqually Earthquake

Sunset Lake embankment failure

A road embankment at Sunset Lake that partially failed in the M5.8 Satsop earthquake in 1999 failed again during the Nisqually earthquake



Closeup of Distribution of Ground Failures in the Southern Puget Sound Region as Mapped by WADNR Geologists

