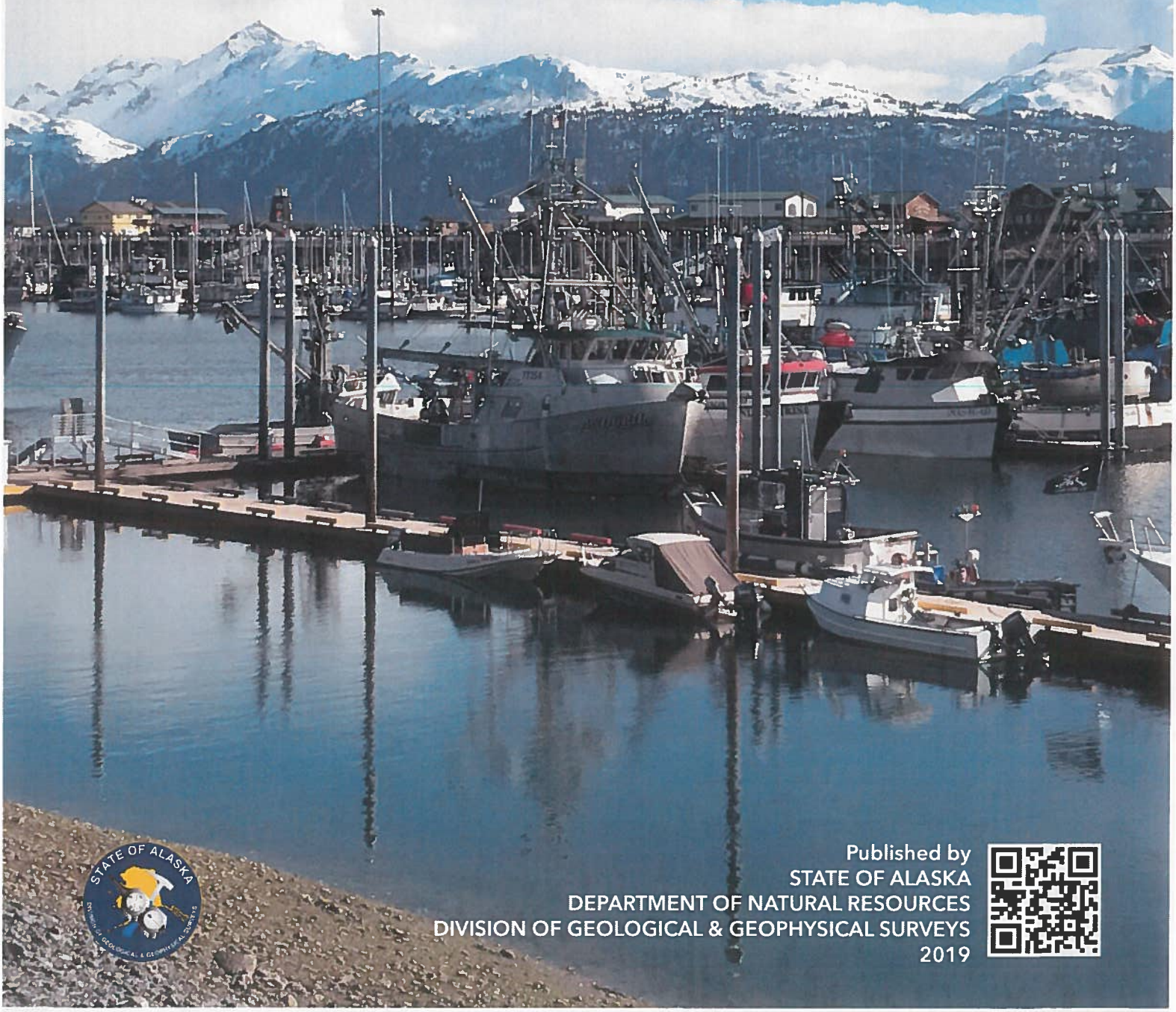
Report of Investigation 2018-5 v. 2

UPDATED TSUNAMI INUNDATION MAPS FOR HOMER AND SELDOVIA, ALASKA

E.N. Suleimani, D.J. Nicolsky, and J.B. Salisbury



Published by
STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS
2019

to develop maps of composite flow depths. We superpose all scenarios by selecting the maximum computed flow depth value at each grid point. Figures 26 and 27 show the composite tectonic flow depths over dry land for the town of Homer and for Homer Spit, respectively. The residential areas north and south of the tidal flats, areas north of Beluga Lake, some airport facilities, and a section of Kachemak Drive are all inside the inundation zone, with flow depths ranging from 3 to 5 m (10 to 16 ft). Composite tectonic flow depths on Homer Spit reach 5 m (16 ft). Figure 28 shows the composite tectonic flow depths over dry land in Seldovia. A significant part of the waterfront and the airport area are inside the inundation zone, with flow depths ranging from 1 to 5 m (3.3 to 16 ft).

The numerical simulations reveal that, for some scenarios, the first wave could arrive at Homer and Seldovia within one hour after the earthquake. As demonstrated by the time series data shown in appendix figures A3 and B3, significant wave activity could continue in the area for at least 12 hours after the earthquake, and the predicted average time interval between successive waves is 45 minutes to 1.5 hours.

Landslide Scenarios

While tectonically generated waves may not inundate the coast of Kachemak Bay for up to an hour after an earthquake, landslide-generated waves could hit low-lying areas while the ground is still shaking (Coulter and Migliaccio, 1966; Wilson and Tørum, 1968). Additionally, some landslide-generated waves can occur without an earthquake and therefore without any warning. We assume that slide-prone unconsolidated deposits are initially at rest, and ground shaking triggers

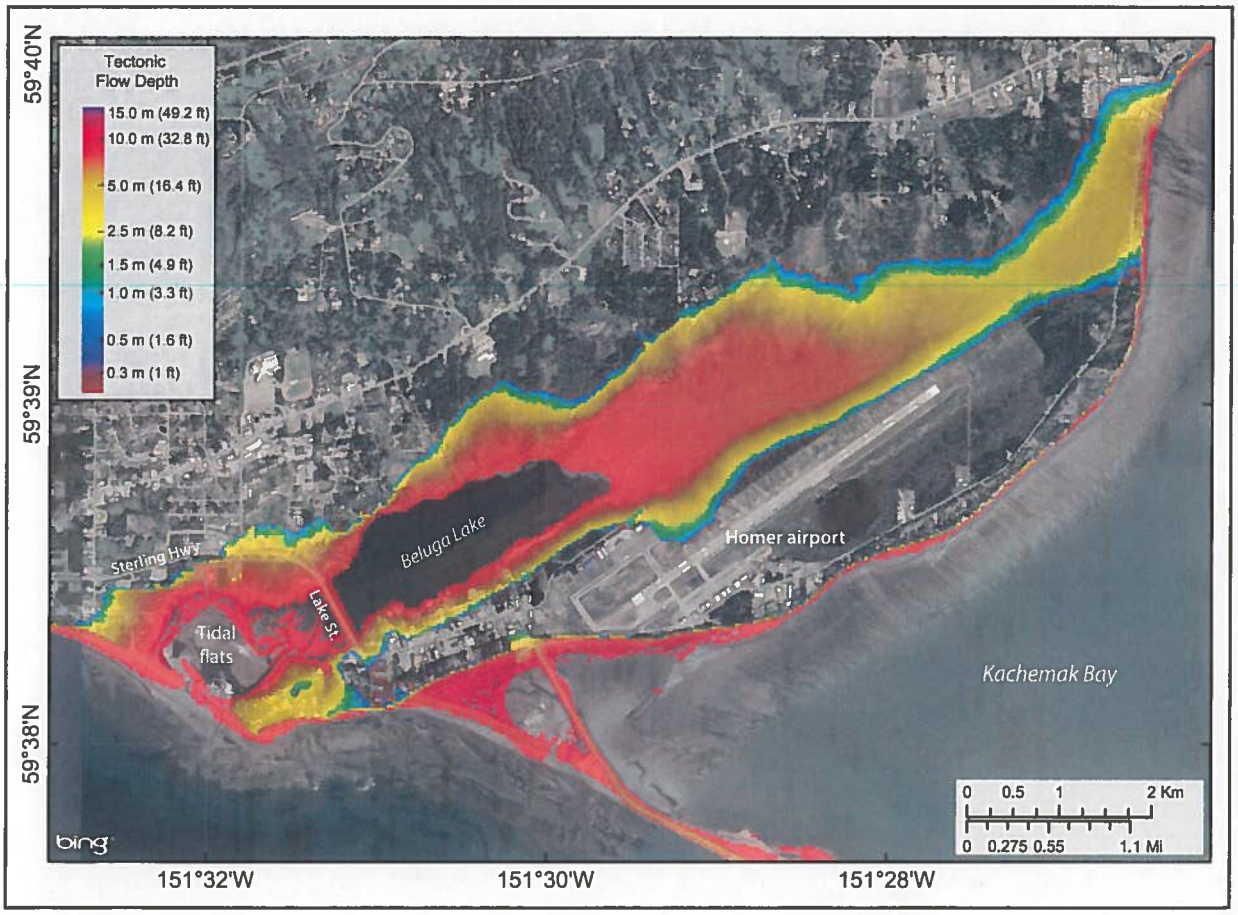


Figure 26. Modeled maximum composite flow depth over dry land for all tectonic scenarios for the town of Homer.