TSUNAMI INUNDATION ZONE

This document is intended to assist the Kenai Peninsula Borough Assembly members in understanding the tsunami inundation risks to water wells in the Cook Inlet region.

While studying the relationship between groundwater and nearby water wells the question was asked “how would a tsunami affect that relationship”.

Being unfamiliar with the science Dr. Mark Rains, was contacted. He is a national groundwater expert with years of experience in Alaska and the head scientist for the State of Florida. Dr. Rains and his students have been working with the Kachemak Bay Research Reserve over the past 15+ years studying groundwater in the southern Kenai Lowlands. Mark was asked him if there was information available that might help answer the question of how a tsunami could affect water wells.

Dr. Rains responded that it is a problem worldwide where a tsunami has pushed saltwater inland during an event and then is trapped in low lying areas outside of estuaries. He was asked what might happen in a gravel pit scenario and his answer was somewhat surprising. Mark explained that saltwater is heavier than freshwater and would sink to the bottom of any depression (such as a gravel pit) or pond. It then could contaminate nearby water wells with salinization for anywhere from several months to a couple of years as the salt worked its way into the groundwater.

A quick internet search of the University of Alaska Earthquake Center tells us “**coastal Alaska communities live with the most serious tsunami risk in the United States**”.

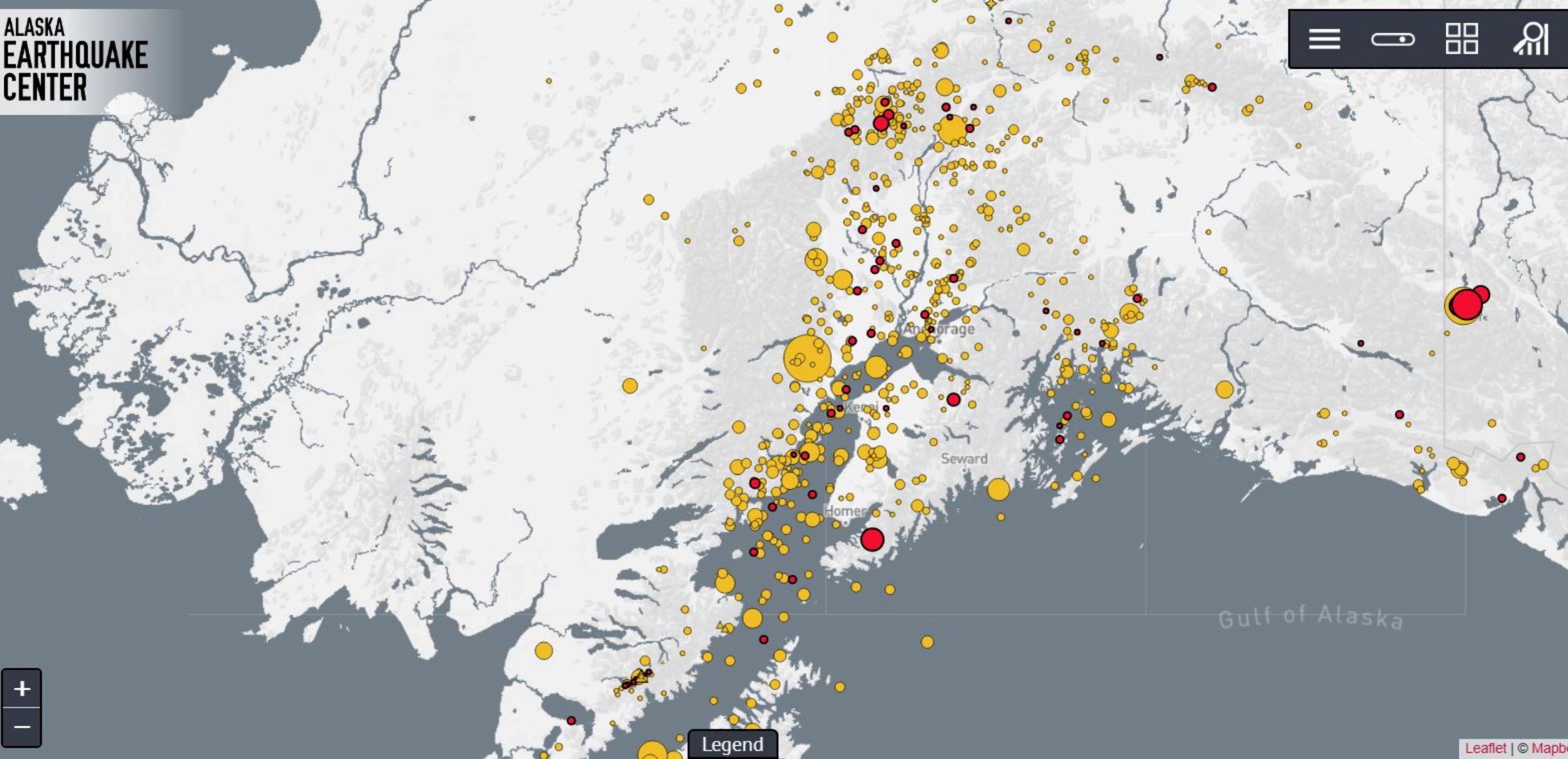
Attached is the State of Alaska Tsunami Hazard Maps and a map reflecting earthquakes near Cook Inlet, both from the Alaska Earthquake Center.

Three additional attachments are included to reflect mapping done by the State of Alaska Division of Geological and Geophysical Surveys. These are Cook Inlet Tsunami Hazard Maps of Port Graham, Anchor Point and Nanwalek.

Also included is a tsunami map indicating “at risk” wells near the Anchor Point estuary. There are six other communities on the Kenai Peninsula that fall within the tsunami hazard zone: Homer, Anchor Point, Jakalof Bay, Kachemak Selo, Nanwalek, Port Graham and Seldovia. It could be assumed there would be “at risk” water wells in those communities as well.

There have been 207 earthquakes in Alaska in the first three days of February this year. Two of those nearby Earthquakes in the last week were 5.0 or larger.

To say this area is prone to earthquakes is an understatement.


ALASKA
EARTHQUAKE
CENTER
Anchorage
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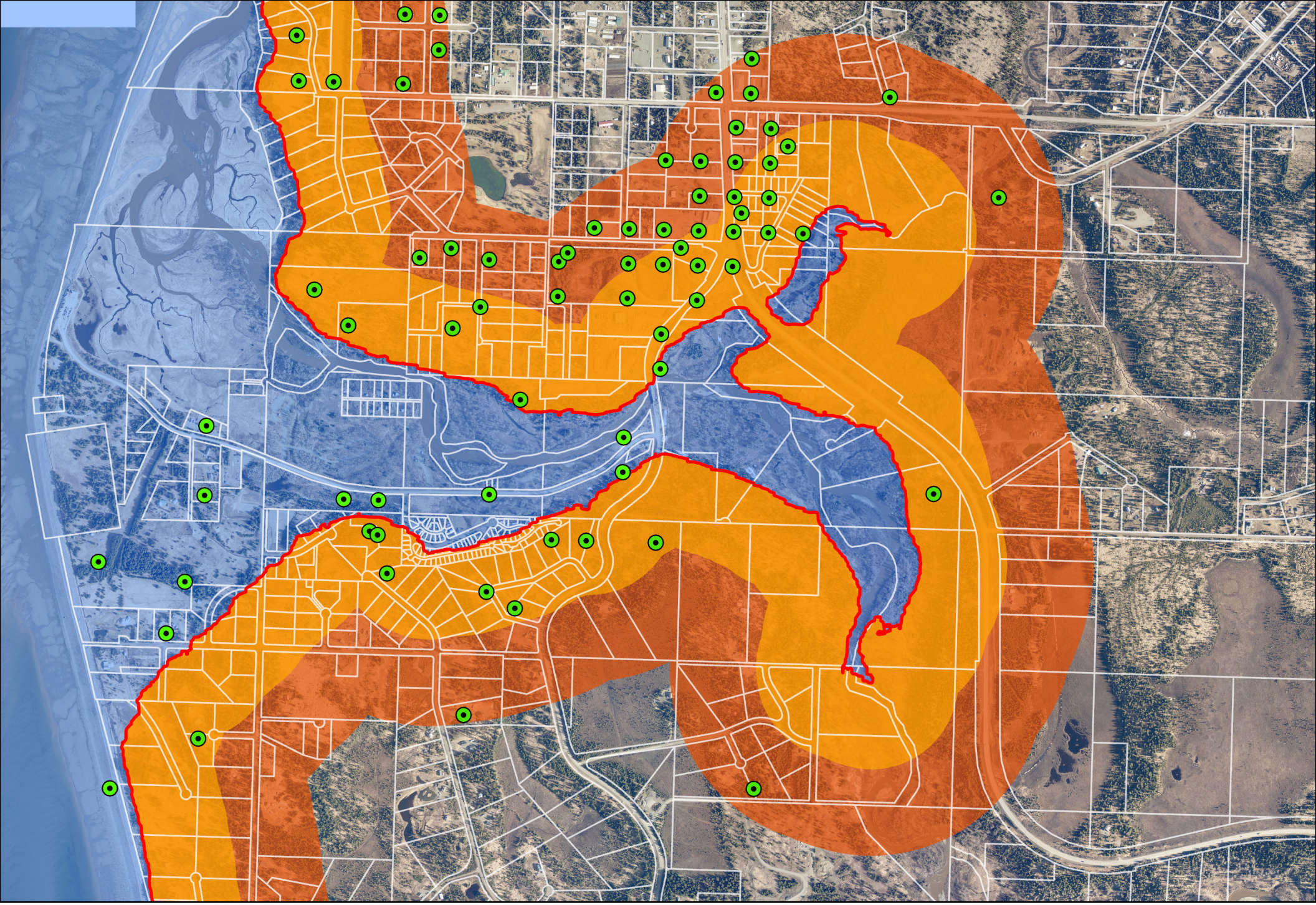
Homer
Gulf of Alaska
Legend
Leaflet | © Mapb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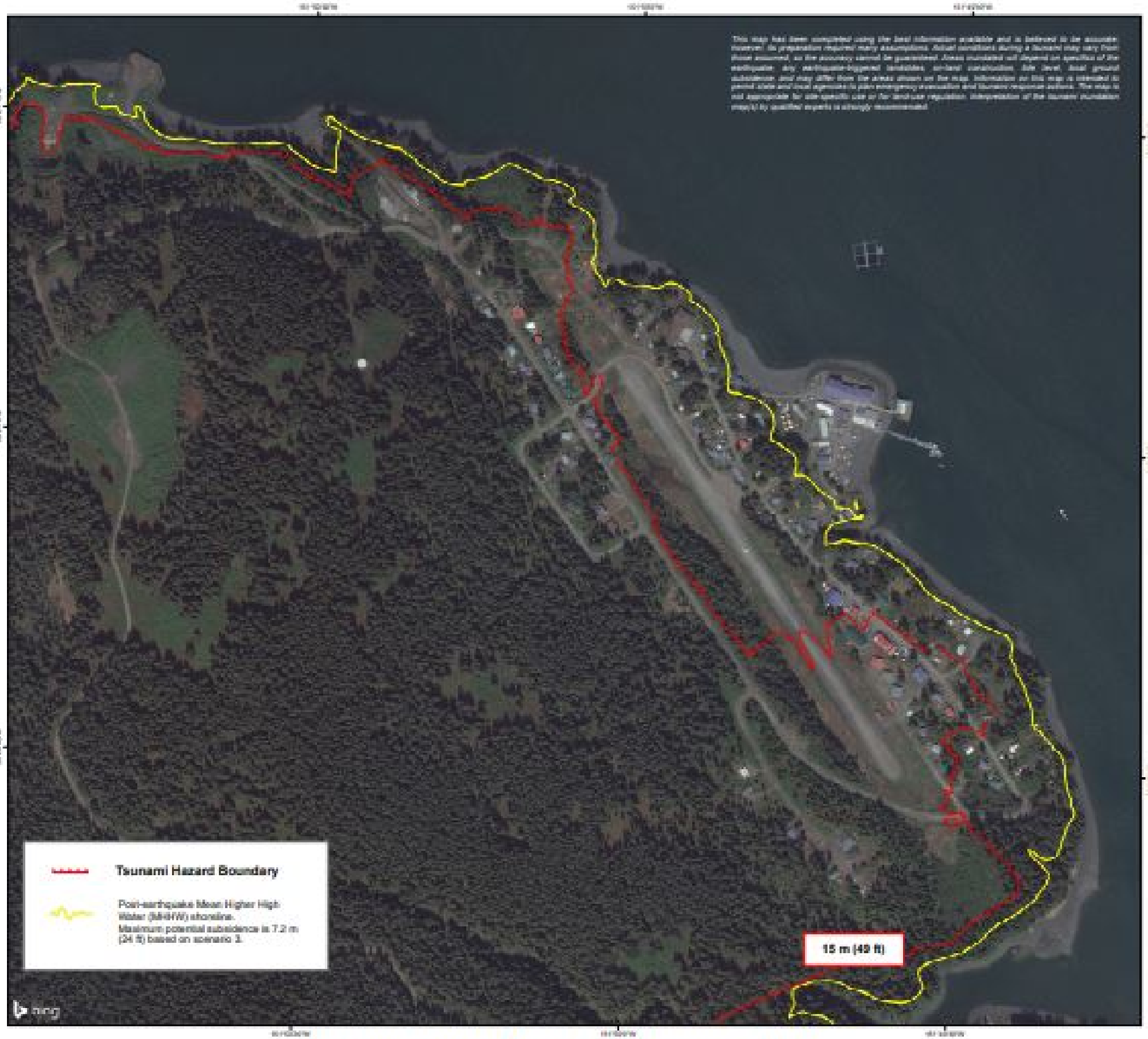
0
250
500
1,000 Meters
Tsunami Inundation Zone
Parcels
250 Meters
500 Meters
Well Logs - At Risk

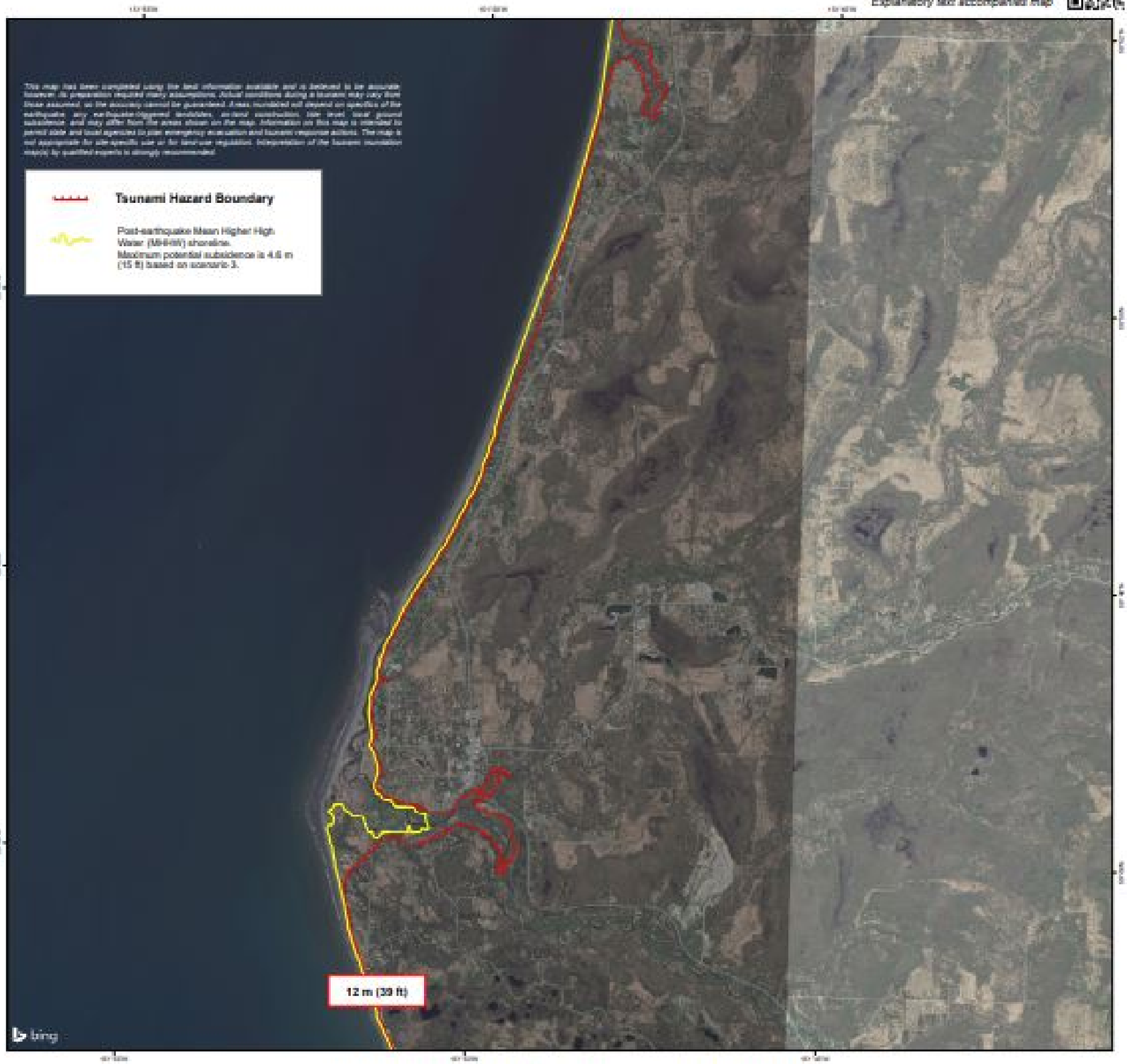


TSUNAMI HAZARD MAP OF PORT GRAHAM, ALASKA

Regional tsunami hazard assessment for Kenai Peninsula, Alaska

ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

REPORT OF INVESTIGATION 2019-5
Suleimani and others, 2019
SHEET 1 OF 3
Explanatory text accompanies map



TSUNAMI HAZARD MAP OF ANCHOR POINT, ALASKA

Regional tsunami hazard assessment for Kenai Peninsula, Alaska

REPORT OF INVESTIGATION 2019-5
Suleimani and others, 2019
SHEET 2 OF 3
Explanatory text accompanies map

TSUNAMI HAZARD MAP OF NANWALEK, ALASKA

Regional tsunami hazard assessment for Kenai Peninsula, Alaska