

Appendix F – Methodology for Zone of No Save Analysis

Concept

The Zone of No Save is the area in which rescue could be expected to be impossible, given a certain set of tug locations and wind conditions. This zone is dependent on the distribution of wind speeds and directions, the drift rate of a vessel for a given wind-speed, and on the location of the shore or other hazard. Because wind conditions vary along a continuum, the Zone of No Save is expressed as a probability. In this analysis, we used a 10% Zone of No Save--the area in which a drifting vessel has a 10% chance of hitting a hazard before being rescued. Because a successful rescue can occur any time before a vessel hits the hazard, a "just in time" save occurs when a rescue tug secures a drifting vessel just before it arrives at a hazard. Thus response times are based on the distance from the starting point of the rescue vessel to the hazard, rather than to the location where a hypothetical vessel lost power.

Inputs and Assumptions

Hazard Mapping: Whether or not a drifting vessel will collide with an obstacle that might rupture the hull depends strongly on tide state and vessel draft. To develop a threshold between hazardous waters and open waters, we drew polylines in a GIS based on National Oceanic and Atmospheric Association (NOAA) navigational charts provided via the Statewide Digital Mapping Initiative. We applied several "rules of thumb" to choose the threshold:

Minimize complexity: Where most of the character of a section of coast could be captured with a simple straight line, we chose that over more detailed curves that would suggest greater precision than we actually had.

Intertidal rocks are hazards: In all cases, the threshold passes outside of emergent rocks, and rocks marked with depth 0.

Reefs are hazards: In all cases, our threshold passes outside of mapped reefs. In Kamishak Bay some of these reefs are not associated with many rocks, but are bedrock, so we considered them hazards.

Soft coasts are not hazards, but are mapped: In areas like Trading Bay, where there are no rocks, we mapped a very simple threshold for stranding. This is not considered a hazard in our analysis. This also applies to soft shoals mapped on charts.

Human facilities are hazards: In Upper Cook Inlet we mapped the offshore oil and gas platforms, the Drift River Terminal, and a disused pipe protruding from the middle of the inlet as hazards.

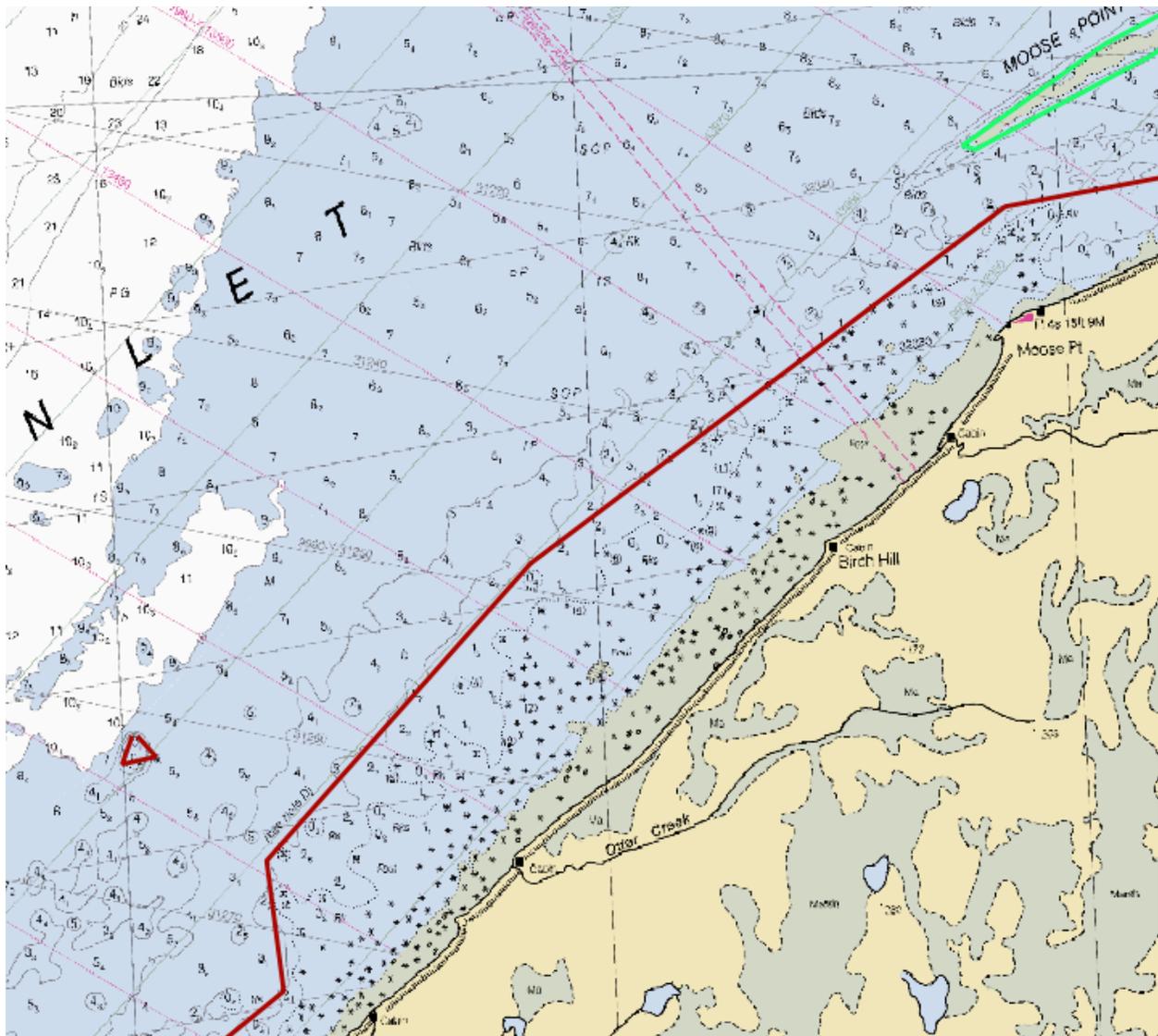


Figure E-1. Upper Cook Inlet example of hazard mapping, showing both the transition to boulder-ridden waters (red line) and to a soft coast (green line in NE corner), in this case a soft shoal.