Risk Condition & Factor Definitions

A. **Navigation** – environmental conditions vessels encounter within a waterway.

- **Winds** – movement of the air, especially in the form of a current of air blowing from a particular direction.
- **Tides and Currents** – periodic motion of water. Also consider storm-surge, flooding, etc. effects.
- **Visibility Restrictions** – natural phenomena hindering sight of aids to navigation and other vessels.
- **Bottom Type** – nature of the seafloor (e.g., mud/silt vs. rock/hard coral).

B. **Vessel Quality and Operations** – physical quality of vessels and their mariner's proficiency.

- **Deep Draft Commercial Vessels** – Oil tankers, container ships, break bulk carriers, cruise liners or other large, ocean-going like ships generally engaged in international trade and subject to the SOLAS convention or some 46 CFR Subchapters H, I, or D vessels
- **Shallow Draft Commercial Vessels** – Operating in the coastal or inland trade, such as towboats, offshore supply vessels, dinner cruise and similar excursion vessels, and most other vessels inspected under 46 CFR Subchapters T and K, or uninspected commercial vessels excluding fishing vessels.
- **Commercial Fishing Vessels** – commercial fishing vessels of any kind, most domestic fishing vessels are not required to be inspected and mariner credentialing is minimal.
- **Recreational Vessels -** all manner of pleasure craft (e.g., personal vessels/watercraft, yacht club regattas, recreational fishermen, and human-powered craft like paddle boards, sea kayaks, and canoes)

C. **Traffic** – number of vessels utilizing a waterway and how they interact with each other.

- **Volume of Commercial Traffic** – Consider various maneuvering, tonnage, cargo, passengers, staffing, and other factors of commercial traffic.
- **Volume of Recreational Traffic** – All noncommercial vessels utilizing the waterway.
- **Traffic Mix** – The extent to which multiple vessel types or other entities use, occupy, constrain, or affect the waterway.
- **Traffic Congestion** – vessels constrained within a geographic area or number of vessels relative to navigable waterway.

D. **Waterway** – physical properties of the waterway that affects vessel maneuverability.

- **Visibility Impediments** – artificial objects hindering sight of aids to navigation and other vessels.
- **Dimensions** – available waterway for vessels to maneuver/meet/pass/overtake.
- **Obstructions** – objects that may hazard vessels: sunken craft, dredge gear, abutments, seawalls, etc.
- **Configuration** – includes the number and direction of bends, converging channels, and conflicts to the prevailing flow from perpendicular crossing.

Risk Consequence Descriptions

A waterway casualty event may result in immediate and/or subsequent consequences. People can be seriously injured or killed, petroleum and hazardous materials spills may affect the environment, response resources may be required, and the marine transportation system can be disrupted. Subsequent effects of waterway casualties may be felt hours, days, months, or years afterwards, such as shore side facility shut-downs, loss of employment, destruction of fishing areas, decrease or extinction of species, degradation of subsistence living uses, and contamination of drinking or cooling water supplies.

- **Personnel Injury** – the nature and number of people that may be affected impacted or involved. Consider types of vessels on the water that carry passengers, number of passengers, and number and size of marine events.

- **Petroleum Discharge and Hazardous Materials Release** – a severity dependent on the quantity and toxicity if substances concerned with the potential for long and short-term consequences. Consider the types, carriage method, and quantity of cargoes in the waterway.

- **Port Mobility** – the impacts of port or waterway closure to critical infrastructure access, supply chains, military sea lift, etc. Consider the vulnerability of docks, highways, bridges, railroads, etc. that are used to move cargo to/from ships in a port.

- **Public Health & Safety** – the potential consequences to the community that lives around a waterway and the vulnerability of people living or working near the waterway.

- **Environmental Sensitivity** – the risks to wetlands and endangered species and public sensitivity to environmental quality .

- **Aquatic Resources** – impacts of a marine incident to the ability to extract food from a waterway. This typically includes fish, and shellfish, but can also include sponges, mollusks, and seaweed/algae.

- **Economic** – how the economy at a local, state, and national level may be affected by port closure or restriction.

Risk Mitigation Strategies

Coordination / Planning - Improve long-range and/or contingency planning and better coordinate activities / improve dialogue between waterway stakeholders

Voluntary Training - Establish / use voluntary programs (Coast Guard Auxiliary, Power Squadron, other state / local programs) to educate waterway users in topics related to waterway safety (Rules of the Road, ship / boat handling, etc.)

Rules & Procedures - Establish / refine rules, regulations, policies, or procedures (navigation rules, pilot rules, standard operating procedures, licensing, required training and education, Regulated Navigation Areas, etc.)

Enforcement - More actively enforce existing rules / policies (navigation rules, vessel inspection regulations, standards of care, etc.)

Nav / Hydro Info - Improve navigation and hydrographic information (the Physical Oceanographic Real- Time System (PORTS), Broadcast Notices to Mariners, charts, coast pilots, Automatic Identification System (AIS), tides and current tables, etc.)

Radio Communications - Improve the ability to communicate bridge-to-bridge or ship-to-shore (radio reception coverage, signal strength, reduce interference & congestion, etc.)

Active Traffic Management - Establish / improve a Vessel Traffic Service (information, advice and control) or Vessel Traffic Information Service (information and advice only)

Waterway Changes - Widen / deepen / straighten the channel and/or improve the aids to navigation (buoys, ranges, lights, LORAN C, Differential Global Positioning System (DGPS), etc.)

Other Actions Risk - Mitigation measures that do NOT fall under any of the above intervention strategy categories