

HARBOR SAFETY PLAN

of the Humboldt Bay Area

Mandated by Lempert-Keene-Seastrand Oil Spill Prevention and
Response Act of 1990

ORIGINALLY APPROVED: January 1993



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humboldtharborsafety.org

Harbor Safety Plan of the Humboldt Bay Area

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NTRODUCTION

Humboldt Bay Area Harbor Safety Plan Boundary

The plan boundaries for the Humboldt Bay Area Harbor Safety Plan include all submerged lands between Shelter Cove, California and Trinidad Head, California, from a shoreline elevation of mean higher high water, seaward for three (3) miles including all submerged lands of Humboldt Bay (Inner Harbor). The open water boundary of the “Harbor” shall be defined as the area centered on the Humboldt Bay Sea Buoy and extending radially outward for a distance of one mile then landward to the perpendicular intersection with the north and south spits. See Appendix I for a boundary map of the areas under the jurisdiction of the Humboldt Bay Area Harbor Safety Committee.

Humboldt Bay Area and Port of Humboldt Bay

The Humboldt Bay Area is located approximately 225 miles north of San Francisco, California. Humboldt Bay is a protected harbor. The mouth of the bay is much smaller than the body of water held behind it and open water conditions do not prevail. Humboldt Bay is the only deep water harbor between San Francisco, California and Coos Bay, Oregon.

The economy of the area is based upon forest products production and tourism of the nearby Redwood Forests. A small fishing fleet is also supported by local offshore fisheries. The Humboldt Bay and Harbor exports raw and processed timber products. The North Bay supports the largest oyster beds in California, producing more than 50 percent of the State's domestic oyster harvest.

There is only one bulk fuel terminal, handling both diesel and gasoline fuel, located in Humboldt Bay. Shipments of petroleum products (gasoline and diesel) range in frequency from every four days to every ten days. Three marine fueling facilities currently exist in Humboldt Bay. E-Z Landing, located in King Salmon, supplies gasoline for small recreational and commercial vessels; Johnny’s Marina and RV, also in the King Salmon area, supplies gasoline for small recreational and commercial vessels; Englund Marine, located along the south side of the Eureka Inner Reach, is the primary source of fuel, supplying gasoline and diesel to recreational and commercial vessels.

The main traffic corridor through Humboldt County is U.S. Highway 101, also known as the Redwood Highway.

The population for Humboldt County is approximately 130,000. The City of Eureka has a population of approximately 25,000 and is the largest city in Humboldt County. The county seat is located in Eureka, and as such, the city of Eureka is a hub to outlying areas.

Humboldt Bay Area Harbor Safety Committee and Plan.

The Humboldt Bay Area Harbor Safety Committee (HSC) was mandated by the Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 (ACT). On November 20, 1991, the California Department of Fish and Wildlife's (CDFW) Office of Oil Spill Prevention and Response (OSPR) officially appointed the Committee.

The following is the present membership of the Committee:

Port Authority

Member

Ms. Suzie Howser (Chair)
Dockmaster
Humboldt Bay Harbor, Recreation
and Conservation District

Alternate

Vacant

Coastal Commission

Member

Mr. Jonathan Bishop
Oil Spill Program Coordinator
California Coastal Commission

Alternate

Vacant

Local Law Enforcement

Member

Deputy Conan Moore
Humboldt County Sheriff's Department

Alternate

Vacant

Tug Operator

Member

Capt. Leroy Zerlang
Brusco Tug and Barge

Alternate

Vacant

Bar Pilot

Member

Capt. John Powell
Humboldt Bar Pilots

Alternate

Capt. Tim Petrusha
Humboldt Bay Harbor, Recreation
and Conservation District

Tanker Operations

Member

Mr. Ross McDonald
Sause Bros. Tug and Barge

Alternate

Vacant

Dry Cargo

Member

Ms. Julie Moug
Figas Construction

Alternate

Vacant

Tribal/Environmental

Member

Mr. Tim Nelson
Table Bluff Reservation Wiyot Tribe

Alternate

Mr. Eddie Koch
Table Bluff Reservation Wiyot Tribe

Commercial Fishing

Member

Vacant

Alternate

Vacant

Pleasure Boating

Member

Mr. Casey Allen
Humboldt Area Saltwater Anglers

Alternate

Ms. Bridget Hand
Humboldt Bay Aquatic Center

Local Coast Guard

Member

LCDR Jeff Garvey
Surface Operations
USCG Sector Humboldt Bay

Alternate

BMC Ryan Finch
Aids to Navigation
USCG Sector Humboldt Bay

NOAA

Member

Mr. Jeffrey Ferguson
California Navigation Manager
NOAA Office of Coast Survey

Alternate

Ms. Rebecca Smyth
NOAA Office of Coast Survey
San Francisco Bay Area

U.S. Coast Guard COTP

Member

Capt. Anthony Ceraolo
Commanding Officer
USCG Sector San Francisco

Alternate

Capt. Gregory Fuller
Commanding Officer
USCG Sector Humboldt Bay

Alternate

CWO Tanya Huneycutt
Marine Safety Detachment
USCG Sector Humboldt Bay

U.S. Army Corps of Engineers

Ms. Jessica Burton Evans
Navigation Program Manager
USACE San Francisco District

Mr. Peter Mull
Project Manager
USACE San Francisco District

Office of Spill Prevention and Response

Liaison

Mr. Reuben Macaspac
Oil Spill Prevention Specialist
CA Department of Fish and Wildlife

Local Office of Spill Prevention and Response

Mr. Jeff Dayton
Environmental Scientist
CA Department of Fish and Wildlife

The ACT required the Committee to review and evaluate the following:

1. Sounding checks;
2. Anchorage designations;
3. Traffic and routings from port construction and dredging projects;
4. Procedures for routing vessels during emergencies that impact navigation;
5. Communications systems;
6. Channel design plans;
7. Placement and effectiveness of navigational aids;
8. Bridge management requirements;
9. Small vessel congestion;
10. Recommendation as to whether establishing or expanding VTS systems within the harbors is desirable, and recommendation for funding VTS systems and other projects;
11. Recommendation determining when a tugboat(s) must accompany tankers;
12. Competitive aspects of recommendations; and,
13. Suggested mechanisms to ensure that the provisions of the plan are fully and regularly enforced.

The ACT further required that the Harbor Safety Plan (HSP) be submitted to the OSPR Administrator by December 31, 1991, and be subject to an annual review on or before July 1st of each year. On March 24, 1992, and April 27, 1992 letters were submitted to OSPR requesting an extension of the December 31, 1991 deadline until August 1, 1992, and on July 28, 1992 a letter was submitted to OSPR requesting an extension of the August 1, 1992 deadline to October 1, 1992.

On or before July 1 of each year, the ACT requires that the Harbor Safety Committee report its findings and recommendations to the Administrator concerning the safety of its harbor and any recommendations for improving tanker and barge safety in the harbor by amending the provisions of the Harbor Safety Plan, or through other means.

In developing the Harbor Safety Plan the committee reviewed all aspects of vessel operations and safety procedures in the Humboldt Bay Area harbor. The primary effort was to improve both harbor safety and the protection of the environment.

The first Humboldt Bay Area Harbor Safety Plan was respectfully submitted by the Committee, without any minority reports, to Mr. Pete Bontadelli, Administrator, Office of Oil Spill Prevention and Response, California Department of Fish and Wildlife for review as required by the ACT. Subsequent updates were also approved by the OSPR Administrator.

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GEOGRAPHICAL BOUNDARIES

General Geographic Description

Humboldt Bay

Humboldt Bay is a landlocked harbor on the coast of Northern California, about 225 nautical miles north of San Francisco and about 156 nautical miles south of Coos Bay, Oregon.

The greater Humboldt Bay actually consists of two large bays connected by a long, narrow channel and separated from the ocean by two long, narrow spits. From the entrance, Humboldt Bay extends north and south a distance of approximately 14 miles, varying in width from 0.5 to 4 miles, and covering an area of over 17,000 acres. Humboldt Bay is surrounded by rolling terraces, steep mountains and narrow valleys typical of the coast ranges of the region. Dense forests of redwood and Douglas fir cover much of the area. Humboldt Bay is the only harbor between San Francisco and Coos Bay with channels deep enough to permit passage of large, commercial, ocean going vessels.

The entrance to Humboldt Bay is bordered by two rubble mound jetties approximately one half mile apart and extending perpendicularly from the ends of two long, narrow sand spits that separate the shallow bay from the ocean. The water surface of Humboldt Bay covers over 26 square miles at high tide and about 8 square miles at low tide.

The topography of the Humboldt Bay area is relatively flat and characterized by bay waters, tidal flats, and slightly elevated flat to gently rolling terraces. Humboldt Bay is bordered on the south by Table Bluff ridge and on the north and east by rugged mountains. Freshwater and Jacoby Creeks discharge into Arcata Bay on the north and Elk River and Salmon Creek discharge into the central portion of Humboldt Bay and into South Bay, respectively. These streams and their corresponding sloughs are tidal, extending from one to two miles inland from their mouths. The flood plains are uniformly level grasslands, marshlands, and mud flats. There are many smaller tidal sloughs at the north end of Humboldt Bay near Arcata. The Mad River Slough is an abandoned mouth of the Mad River extending inland for about three miles. The present mouth of the Mad River is located approximately five miles north of Humboldt Bay. (See Appendix I – 1 Location Map)

Because of its general geomorphology, Humboldt Bay is usually divided into three distinct areas: North or Arcata Bay, Middle or Entrance Bay, and South Bay. The southwest ends of Woodley and Indian Islands may be considered the south end of North Bay. South Bay extends south of the South Spit Jetty and King Salmon.

North Bay covers about 13 square miles, and is 5.8 miles at its longest and 4.3 miles at its widest points. It is bounded by North Spit to the west, Arcata Bottoms to the north, Bayside Bottoms and Fickle Hill to the east and Eureka to the south. Indian (formerly Gunther), Woodley, and Daby Islands are all located in the southern portion of North Bay. McDaniel Slough, Jacoby Creek, and Freshwater Creek all discharge fresh water into the North Bay. Mad River Slough, located in the northwest portion of North Bay, does not normally discharge fresh water. During flood conditions on the Mad River, floodwaters may overflow into the slough, and thus into the Bay.

North Bay is extremely shallow, with over one-half the area (approximately 7 square miles) exposed at low tide. These tidal flats are dissected by several deep channels and numerous shallow channels. Samoa Channel and Eureka Channel are the principal commercial waterways of North Bay. The Arcata Channel located in the extreme North Bay (18 feet deep and 150 feet wide) is no longer used for commercial navigation and has not been maintained since 1931.

Entrance Bay is approximately 5 miles long and a maximum of one mile wide. It is bounded by North Spit to the west, and Eureka and the Elk River floodplain to the east. Unlike North and South Bay, it consists of a single deep channel, with generally steep sides. Elk River, the largest freshwater source in Humboldt Bay, empties into Entrance Bay.

South Bay covers approximately 7 square miles, with a maximum length of 4 miles and maximum width of about 2.5 miles. It is bounded by South Spit to the west, Humboldt Hill and Beatrice Flats to the east and Table Bluff to the south. Salmon Creek is the only freshwater source which discharges into South Humboldt Bay.

South Bay is similar to North Bay with respect to the broad expanses of tidal flats. These flats are also incised by tidal channels. Only one, the Fields Landing Channel, is used commercially and is maintained by the United States Army Corps of Engineers (USACE).

Separating the Bay from the ocean are two long sand spits with a narrow inlet between them. North Spit is about 10 miles long and 0.5 to 0.9 miles wide. Much of this spit consists of large dunes, up to 50 feet high and heavily forested in places. South Spit is about 4 miles long and varies from 0.1 to 0.7 miles in width; it consists of sparsely vegetated dunes much smaller than those on North Spit.

The entire Humboldt Bay watershed encompasses approximately 223 square miles. The Mad River (to the north) occasionally overflows into the Bay under

flood conditions. The Eel River (to the south) is separated from Humboldt Bay by Table Bluff.

Lowlands to the north and east consist of creek and river floodplains, and former tidal marshes that were diked and drained for agricultural purposes. These lowlands are bordered by low foothills of the Coastal Range. Farther to the east the terrain becomes more mountainous, with elevations of 3,000-5,000 feet and narrow steep canyons.

Eureka is the principal city adjacent to Humboldt Bay. It serves as the County seat and commercial center of the region. Arcata is the only other incorporated city adjacent to Humboldt Bay, and is the location of Humboldt State University. Other communities in the Humboldt Bay area include Bayside, Fairhaven, Fields Landing, King Salmon, Manila, and Samoa.

The commercial/industrial portion of Humboldt Bay is generally located in mid-Humboldt Bay between the southern end of the Fields Landing Channel and the Samoa Bridge to the north. Within this area, coastal dependent industrial uses exist on the east side of the Samoa Spit, along a one-mile stretch of Eureka's shoreline and along a similar length of the Fields Landing Channel in the community of Fields Landing. In 2007, the Harbor Safety Committee of the Humboldt Bay Area adopted a dock address system listing 60 docks and structures within Humboldt Bay. The dock addresses are listed by port area, Universal Location Code, channel, common name, AIS destination code and latitude/longitude. The complete address system can be found in Appendix IX. For additional information on the port area and services, please consult www.humboldtbay.org.

The local seismic history is active, extremely complex, and not fully understood. Humboldt County is considered not as active as other counties in California, primarily those counties bordering the San Andreas Fault. Destructive earthquakes occur occasionally, such as the April 1992 quake (Richter magnitude 7.1), which was centered 30 miles south of Eureka. A Richter magnitude 7.0 earthquake occurred in November 1980, located on a possible ocean ward extension of the Mad River Zone. The epicenter was located approximately 5 miles offshore of Patrick's Point, 22 miles from Eureka, and was approximately 12 miles deep.

Shelter Cove

Shelter Cove is about 60 ocean miles south of Humboldt Bay. It lies under the south face of Point Delgada and affords fair shelter in northwest weather, but is exposed and dangerous with south or southeast winds. Occasionally a swell runs in the cove. There are no wharves in the cove.

The rocks, covered 1 to 5 fathoms south of Point Delgada, can be avoided in

approaching Shelter Cove by staying over 200 yards south of the lighted whistle buoy and east of the bell buoy.

From Point Delgada the coast extends northwest for 19 miles to Punta Gorda and is backed by steep mountains covered with chaparral and trees. A black sand beach, 0.8 miles north of Point Delgada, extends north for 4 miles. Kaluna Cliff overlooks the south end of the sand beach, and its steep face, scarred by frequent slides, is a noticeable landmark.

Trinidad Head

Trinidad Head is nearly 39 miles north-northeast of Cape Mendocino and 17.5 miles north of the entrance to Humboldt Bay. It rises to a height of 380 feet. The sides are steep and covered with chaparral. From north or south the head is generally seen as a dark round-topped island. Near the north end it is joined to the mainland by a narrow neck, from the south side of which Little Head, a rocky knoll 125 feet high, projects into Trinidad Harbor. The white cross 200 yards north of the south point of Trinidad Head is fairly prominent.

Trinidad Head Light, 196 feet above the water, is shown from a 25 foot white square tower near the southwest side of the head. A lighted whistle buoy is 1 mile west of the head. A fog signal is at the light.

Trinidad Harbor, a small cove east of Trinidad Head, affords shelter in northwest weather, but is dangerous in west or south weather. The cove is small and is further constricted by several rocks, and as a rule, there is always a swell even in north weather. It is used by fishing boats to a considerable extent during the summer, even though the holding ground is only fair. A white lighthouse structure, a memorial containing the original oil-burning light used at Trinidad Head until 1948, is at the center of the bluff on the north side of the harbor. A pier with a fish house and restaurant is in the bight west of Little Head. Fish are unloaded at the pier and are trucked to Eureka and San Francisco. A small marine railway near the foot of the pier is used for launching and retrieving small craft up to 26 feet long and 9 feet wide.

REF: 14 CCR 802(b)(2)

HARBOR CONDITIONS

Weather

Existing and Expected Weather. Humboldt Bay has a year round maritime influenced climate. The rainy season is from October to April, during which 90% of the precipitation falls. The annual average rainfall is 38 inches. The dry season is from May to September and is marked by considerable fog and low clouds. The fog usually clears by late morning. The prevailing wind is from the northwest, with most storms approaching from the north. Typical yearly temperatures range from lows in the mid 30s to highs in the low 70s (degrees Fahrenheit). Record highs have reached the 80s and lows have approached 20 degrees.

Tides

There are two tide cycles every twenty-five hours. Each cycle occurs 50 minutes later each day.

The tidal range between mean lower low water (MLLW) and mean higher high water (MHHW) is 6.4 feet at the Bay Entrance, 6.7 feet at Eureka and Fields Landing, and 7.0 feet at Samoa. Extremes may vary from 11 feet or more between tide cycles. The 1964 Alaskan earthquake produced a 6-foot tide change in 20 minutes in the Samoa Channel.

Tidal currents generally parallel the federally maintained channels. Maximum tidal current velocities during flood and ebb cycles are approximately 2 to 3 knots in the North Bay Channel and 2 to 4 knots in the entrance channel. The 1964 Alaskan earthquake produced a tsunami-induced current of approximately 14 knots in the Samoa Channel.

Making the turn from the approach to the entrance range is abrupt and difficult to make under certain conditions of wind, sea, and current. Strong and variable tidal and non-tidal currents, rough seas, breaking waves, wind and fog often adversely affect navigation in the entrance channel.

Shoaling

Shoaling conditions can exist in the bar and entrance channels. The conditions are unpredictable but occur more often in the winter months or upon the onset of inclement weather.

Some of the more prominent shoaling areas include the Bar Channel in the vicinity of Buoy 2 and the tip of the south jetty; the Entrance Channel; the

110-degree turn in the vicinity of Buoy 7 and Buoy 9; the area around Buoy 10, and the area around Lighted Beacon No. 16. (See Appendix I - 4 Map of Humboldt Bay)

Poor visibility because of surf haze and fog may also hamper vessel operations.

REF: 14 CCR 802(b)(3)(A)(b)(i)(B)(iii)

HARBOR DEPTHS AND CHANNEL DESIGN

Channel Depth

The Federally authorized and maintained navigation channels in Humboldt Bay, from south to north (as noted in Appendix I – 3, Humboldt Bay Area Facilities Map) are as follows:

Fields Landing Channel - 26 feet deep (MLLW) (28 feet with overdredge), and 300 feet wide.

Fields Landing Turning Basin - 26 feet deep (MLLW) at mile 3.16 (lower end of Fields Landing Channel) - 300 to 800 feet wide, and 600 feet long.

Bar and Entrance - 48 feet deep (MLLW) (50 feet with overdredge), and 2100 feet wide at seaward mile 1.0 NM tapered to 750 feet wide at seaward mile 0.18, and 500 wide from seaward mile 0.18 to mile 0.75.

Turn – (110 degree turn) - 48 feet deep (MLLW) (50 feet with overdredge)

North Bay Channel - 38 feet deep (MLLW) (40 feet with overdredge), and 500 feet wide from mile 0.75 to mile 4.29.

Outer Eureka Channel - 38 feet deep (MLLW), and 400 feet wide between mile 4.29 and mile 5.0.

Inner Eureka Channel - 26 feet deep (MLLW) (28 feet with overdredge), and 400 feet wide between mile 5.0 and mile 6.30.

Samoa Channel - 38 feet deep (MLLW), and 400 feet wide between mile 4.29 and mile 5.84.

Samoa Turning Basin beyond mile 5.84 (upper end of Samoa Channel) - 38 feet deep (MLLW) (40 feet with overdredge), and 400 to 1000 feet wide, and 1800 feet long.

Arcata Channel - 18 feet deep and 150 feet wide. Abandoned since 1931, it is no longer maintained.

Design

The Humboldt harbor channels were designed to conform to the historic tidal drainage patterns of Humboldt Bay. In design of the channels and other navigational features, adequate clearance between the vessel keel and the channel bottom must be taken into account. Clearance factors must allow for vessel squat, trim, maneuverability, and wave action. The Humboldt Bay Harbor District has established rules requiring a two-foot underkeel clearance on all vessels over 300 gross tons while transiting navigation channels.

The U.S. Army Corps of Engineers monitors channel depth, width, and alignment at least annually, and consults with the Harbor District and others concerning any changes. The Corps of Engineers has also initiated (2004) a long-term shoal management study of the bar/entrance channel to Humboldt Bay.

REF: 14 CCR 802(b)(3)(D)

RECOMMENDATIONS

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RECOMMENDATIONS

MONITORING THE IMPROVED CHANNELS

The Harbor Safety Committee has evaluated the current dredging program to determine accurate depth information and found that improvements were necessary.

- a. *Because of adverse weather conditions some channel areas of Humboldt Bay can shoal very quickly. The U.S. Army Corps of Engineers needs to continue to monitor the channels to assure that sufficient depths are maintained for safe vessel passage. The Entrance Channel and North Bay Channel shall be maintained at the project depth in order to minimize the risk of grounding. This recommendation is to be conducted and funded by the U.S. Army Corps of Engineers.*
- b. *Soundings associated with existing annual harbor dredging operations by the U.S. Army Corps of Engineers are conducted between April and October, and include the Bar Channel, Entrance Channel, North Bay Channel, and the Samoa Channel. These dredge related soundings are considered adequate for traffic safety during the summer season providing that such dredging project-related soundings do commence with the "conditional" sounding in April, which is deemed necessary to indicate post-storm season conditions. Should the U.S. Army Corps of Engineers change existing dredging schedules; these areas will require sounding in April for traffic safety. This recommendation to be conducted and funded by the U.S. Army Corps of Engineers.*
- c. *Monthly soundings from December to March from the Bar to Beacon No. 11. This recommendation to be conducted and funded by the U.S. Army Corps of Engineers.*
- d. *The above sounding information is to be provided in a timely manner to the Humboldt Bay Harbor District and to shipping agents who request it from the Corps of Engineers.*
- e. *In 2004 the Humboldt Bay Harbor, Recreation and Conservation District partnered with the U.S. Army Corps of Engineers (USACE) to develop a long term sediment management program aimed at a permanent solution to minimizing shoaling at Humboldt Bay's entrance between buoy 2 and the south jetty. In 2005 the USACE completed the reconnaissance phase of*

this project. The next phase of the project is to complete a feasibility study of the nine potential remedies to the shoaling issue. To initiate the feasibility study the USACE requires a 50/50 match of the approximately three million dollar project. The Harbor Safety Committee recommends the State of California, through proposition 1B, funds the State's share of the match.

The OSPR sent a letter, in 2008, to California Transportation Commission asking that Proposition 1B funds be used to cover the 50% local cost share necessary to conduct the long term sediment management feasibility study as described in item "e" above.

The OSPR sent a letter, in 2009, to U.S. Army Corps of Engineers to perform items "a-d" above as part of a program to determine and portray accurate depths for Humboldt Bay.

Recommendations

Recommendation 1

Each public facility shall maintain the channel project depth of the berth. Industrial and other private docks shall maintain a depth sufficient for intended use. Soundings shall be performed on a periodic basis, at least annually, to verify the depth of water in and to each berth. This recommendation to be conducted and funded by the Owner of the respective Berth.

Recommendation 1 is currently practiced by facilities within the Harbor. No action is required by the OSPR at this time.

TSUNAMI

A Tsunami generated by an earthquake along the Cascadia Subduction Zone or on the Mendocino Fault / Northern San Andreas Fault could arrive in just minutes after the initial shock. The lack of warning time from such a nearby event will result in higher casualties than if it were a distant tsunami source.

For tsunamis originating at distant sources, the West Coast Alaska Tsunami Warning Center will provide initial warning notification to local emergency response agencies in time to warn and evacuate threatened coastal areas.

On March 11, 2011 the M9.0 Tohoku (Tohoku-Chiho Taiheiyo-Oki) Earthquake occurred near Sendai, Japan sent a series of tsunami waves to the west coast of the United States within 8 to 10 hours. Widespread damage occurred along the coast including the sinking of 35 vessel and complete destruction of the Crescent City harbor.

For the Port of Humboldt Bay, weather conditions would not allow vessels to cross the bar safely to get to deep water and the only two vessels able to depart Humboldt Bay were the US Coast Guard 47 foot motor life boats. Prior to the earthquake and tsunami, local sea conditions were predicted to rise to 18 to 20 feet with Gale winds forecast for the entire week. Crescent City vessels that had gone to sea in advance of the tsunami were able to make it into Humboldt Bay prior to the advancement of the storm.

The California Emergency Management Agency is currently working on Tsunami Inundation Mapping, Probabilistic Tsunami Hazard Mapping and Tsunami Guidance for the Maritime Community. California Tsunami Maritime Safety Goals include creating an offshore safety zone map (for use by Harbors that recommend sending vessels to sea), create in-harbor hazard maps by modeling 5 major harbors' tsunami hazards (damaging currents), provide statewide guidance for evacuation planning and harbor protection (based on above results).

The County of Humboldt Office of Emergency Services is currently involved in developing a tsunami plan for the County of Humboldt as part of their emergency operations plan. The National Weather Service Forecasting Office in Eureka has acquired warning sirens to be used as part of the early warning system for numerous communities along the North Coast as part of the implementation of the County plan.

Recommendation 1

In the event that a major earthquake or tsunami occurs within the Humboldt Bay region, the Port Authority will make every effort to contact the U.S. Army Corps of Engineers to survey the channels and entrance if adverse conditions are noted.

If a surveyor cannot respond to the request within a reasonable length of time, the Port Authority may contact the National Ocean Service for assistance in this matter. The Point of Contact is the West Coast Regional Manager for the Office of Coast Survey at 831-583-2365 or the Deputy Director of the Navigational Service Division at 301-713-2732 extension 160.

Action 1: The HSC will participate in the development of the tsunami section of the County of Humboldt Emergency Operations Plan.

AIDS TO NAVIGATION

Types of Aids to Navigation

The aids to navigation within Humboldt Bay Harbor and adjacent to it are as follows:

1. Fixed Aids: Steady, flashing, rotating, and radar reflecting.
2. Buoyed Aids: Flashing, and radar reflecting.
3. Channel Markers: Fixed and buoyed.
4. Audible Markers: Horn, bell and whistle.

Humboldt Bay Entrance Small Boat Warning Light (LLNR 8136) is located at U.S. Coast Guard Station Humboldt Bay on the boat house jetty. The U.S. Coast Guard has issued hazardous bar warnings two hundred fifty-three (253) times (days) from June 01, 2012 to July 01, 2013.

The Aids to Navigation Team from Coast Guard Group Humboldt Bay presently provides quick response to reports (usually by harbor pilots) of any damaged or “off-station” navigational aids. Contact Group Humboldt Bay at (707) 839-6123 for any repairs or replacement of damaged navigational aids, as well as missing or off-station buoys. Additionally, a USCG ship comes from San Francisco 2 to 3 times per year for repairs.

For positions and specific description see Appendix VI Aids to Navigation; Humboldt Bay Navigational Chart (18622); Point Arena to Trinidad Head Navigational Chart (18620); Trinidad Head to Cape Blanco Navigational Chart (18600; current Light Lists are also available via the internet at www.navcen.uscg.gov/pubs/LightLists/LightLists.htm and at <http://chartmaker.ncd.noaa.gov/mcd/enc/index.htm>

Navigation Hazards in Humboldt Bay

Humboldt Bay is a shallow bay that has been improved for navigation by the regular maintenance of dredged channels. These channels are marked by lighted buoys and fixed lights, which constitute the majority of the Aids to Navigation.

Vessels currently experience sailing delays due to waiting for favorable tides.

The Harbor Entrance has been stabilized by the addition of stone jetties, which are marked by lights and foghorns. Some wharves or piers, which are parallel to or extend into the channels, are lighted by the U.S. Coast Guard or private entity. There are no natural rock hazards within Humboldt Bay.

Troy Nicolini of the National Weather Service - Weather Forecasting Office in Eureka along with Greg Crawford of Humboldt State University Department of Oceanography, have implemented a hazardous wave forecasting model for Humboldt Bay's entrance.

SWAN - Simulating WAVes Nearshore, is a physics based wave model for computing spectral wave energy within the nearshore environment. SWAN was developed by the department of environmental fluid mechanics at Delft University in the Netherlands. The SWAN model is currently in use at the Weather Forecasting Office (WFO) in Eureka, California. This SWAN implementation uses NOAA's WaveWatch III (WW3) global, deepwater wave model and wind grids locally forecasted at the Eureka WFO to drive the SWAN model. The model routes the spectral wave energy from WW3 through a low resolution (3.5 km) outer grid to a high resolution (50 m) inner grid based around the Humboldt Bay harbor entrance. The SWAN model routes the spectral energy while accounting for energy sinks and sources such as bottom friction and wind. The highest resolution grid also uses tidal current data produced from a hydrodynamic circulation model to produce a first order approximation of wave-current interaction at the harbor entrance.

Presently NOAA has assisted various ports throughout CA with a Physical Oceanographic Real-Time System (PORTS) in providing weather, wave, current and other physical oceanographic conditions to local mariners on a real time basis. PORTS presently operate independently, which has created inconsistency and operation maintenance and data dissemination. In 2007 Senator Lowenthal (Long Beach) introduced SB 965 that establishes, the California Physical Oceanographic Real-Time System (CalPORTS). This bill would have authorized the administrator of OSPR, in cooperation with the National Oceanic and Atmospheric Administration/National Ocean Service, port authorities, and harbor safety committees, to establish, maintain, and operate a CalPORTS information network linking existing and proposed PORTS information systems, to improve the efficiency and access to critical environmental information affecting safe navigation. This died in 2008 for lack of identification of capital outlay and long term O&M funding sources. Without identification of these funding sources, OSPR could not support the bill.

REFERENCES: Wave breaking on a current at an idealized inlet: Coastal Inlets Research Program, inlet laboratory investigations / by Jane M. Smith ... [et al.]; prepared for U.S. Army Corps of Engineers. 57 p.: ill; 28 cm.
Accessed Online 26 May 2005
<http://cirp.wes.army.mil/cirp/pubs/pdf/TR-CHL-98-31.pdf>

Scripps Institution of Oceanography Coastal Data Information Program operates and maintains Waverider buoys off the coast of Humboldt. Major funding for these buoys comes from the U.S. Army Corps of Engineers and the California Department of Boating and Waterways.

In 2012, OSPR sent a letter to Scripps Institution of Oceanography supporting the operation and maintenance of Waverider buoy 46212 off the coast of Humboldt Bay's south spit and all Waverider buoys along the California coast.

There are currently two Waverider buoys located off Humboldt. Buoy 46213 near Cape Mendocino and buoy 46244 off Humboldt Bay's north spit. Unfortunately, Waverider buoy 46212 was not funded and was removed from the water in early 2013.

The Humboldt Bay Harbor, Recreation and Conservation District through a Port Security Grant was able to obtain a camera system to monitor the Bar and Entrance channels. In cooperation with the U.S. Coast Guard and the National Weather Service, this camera system was installed in 2011.

The Aids to Navigation Team from Coast Guard Group Humboldt Bay presently provides quick response to reports (usually by harbor pilots) of any damaged or "off-station" navigational aids. Contact Group Humboldt Bay at (707) 839-6123 for any repairs or replacement of damaged navigational aids, as well as missing or off-station buoys. Additionally, a USCG Cutter services the navigational aids for Humboldt Bay.

Recommendations

The Harbor Safety Committee has evaluated the Aids to Navigation and recommends the following:

Recommendation 1

OSPR should fund and implement a "CalPORTS" program giving OSPR the authority to oversee the operation and maintenance of a state wide PORTS® (Cal PORTS) program.

At the 2009 and 2010 Summits of Harbor Safety Committee Chairs, OSPR explained that it does not have funding to initiate, operate and/or maintain any new PORTS® projects in California. The current State Fiscal crisis has only exacerbated this situation.

The Port of Humboldt Bay was able to secure funds for the installation of PORTS® at Humboldt Bay. They were also able to secure funds for the operations and maintenance of the system for five (5) years

ACTION 1: The Committee recommends that the Administrator identify long term O&M funding for the CalPORTS program and identify a source of funding for the capital costs.

Review by the Harbor Safety Committee prior to July 1 each year.

REF: 14 CCR 802(b)(5)(A), (B)

VESSEL ROUTING AND TRAFFIC PATTERNS

Vessel Routing

Present Conditions

Vessel traffic is restricted to existing channels. Vessels do not frequently pass each other in the channel. When this does occur the vessel with the shallower draft will move to the outer edge of the channel and allow the deeper draft vessel to use the center of the channel.

Vessel routing is conducted by pilots using VHF communication, such that vessels pass at appropriate locations in the channel and in a safe manner.

Navigation in reduced or restricted visibility proceeds based on the judgment of the ship's master or the pilot advising him.

All large vessels carry surface search radar, which allows safer navigation in reduced visibility.

Vessel traffic during dredging operations is rerouted using normal vessel-to-vessel passing procedure.

Recommendations

Existing and proposed federal, state and local laws, regulations, and ordinances affecting the harbor area were reviewed and considered in the HSC recommendations.

The HSC recommends that the above-mentioned procedures remain as is without alteration at this time.

Review by the Harbor Safety Committee prior to July 1 of each year.

Vessel Traffic Patterns

Present Use

Commodity traffic at Humboldt Harbor is composed of deep draft shipping, barge traffic and commercial fishing. Foreign flagged deep draft ships, log barges and commercial fishing vessels, domestic petroleum barges, and foreign flagged cruise ships frequent Humboldt Bay.

Visiting barges, tankers and freighters are at the upper size end of the vessels that visit and operate in the Humboldt Bay region. Canoes, rowing skiffs, small recreational boats, boats from the local and visiting fishing fleet, and small yachts, also use the harbor.

Recreational sailing and fishing activities occasionally disrupt vessel traffic patterns and create hazards to safety of navigation of large commercial vessels. Sailing vessels participating in organized sailing races occasionally have impeded large vessels which can only maneuver in narrow channels.

Recreational fishing in the Harbor Entrance Channel occurs during the salmon fishing season and may impede the passage of a vessel that can safely navigate only within the narrow channel.

To reduce conflict between small and large vessels, the HSC requested and received approval of Rule 9 to regulate vessel movement and reduce this hazard. The US Coast Guard Captain of the Port issued Public Notice 2-92 (COTPNOTE 2-92, April 15, 1992), which identifies the narrow channels for the purpose of application of Rule 9 in Humboldt Bay. This notice is included in Coast Pilot 7. See Appendix IV. (COTP Notice 2-92).

There are a number of safe boating education programs available through the appropriate schools, Community Colleges, U.S. Coast Guard Auxiliary and the California Department of Boating and Waterways. However, incidents still occur occasionally.

Recommendations

Existing and proposed federal, state, and local laws, regulations, and ordinances affecting the harbor area were reviewed and considered in the HSC's recommendations.

Recommendation 1

The Harbor Safety Committee will publicize all information received on boating safety courses.

Recommendation 2

The HSC will work to assist all organizations offering safe boating classes.

Recommendation 3

The Harbor Safety Committee will continue to monitor vessel traffic within Humboldt Bay, and will recommend solutions if potential problems are recognized.

REF: 14 CCR 802(b)(3)(B), (4)(C), (4)(D), (4)(E), (4)(F)

The Humboldt Bay Harbor Recreation and Conservation District, with the assistance of the HSC and OSPR, has developed a Harbor Safety Guide for Humboldt Bay. The guide was completed and distributed in the summer of 2003 and is periodically updated.

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BEST MARITIME PRACTICES

Introduction

Best Maritime Practices (BMPs) are accepted and agreed upon methods to conduct vessel transits or operations that are necessary for or enhance the safety of vessels, personnel, dockside facilities and marine resources. These BMPs are not to be considered regulations or laws, but *guidelines* to assist the mariner with *local knowledge* while operating in the vicinity of the Port of Humboldt Bay.

This BMP section has been designed as a reference guide for safe and environmentally sound vessel movements and operations in and around the port area. The BMPs that are covered in this section include:

- General Anchorage
- Under Keel Clearance
- Tug Assist
- Safe Speed
- Small Craft (Recreational Vessels)
- Communications
- Distant Source Tsunami

More detailed and extensive information, regulations and recommendations supporting these BMPs can be found in the following documents: Port of Humboldt Bay Tariff #15 www.humboldtby.org, U.S. Coast Pilot www.nauticalcharts.noaa.gov, USCG Rules of the Road www.navcen.uscg.gov, Harbor Safety Plan of the Humboldt Bay Area www.humboldtharborsafety.com, California Harbors and Navigation Code and California Boating Law www.dbaw.ca.gov.

It is important to note that these BMPs are not intended to be in conflict with nor do they replace existing federal, state, and local regulations that are already in place. Nothing in these Best Maritime Practices precludes a master or pilot from taking necessary steps and prudent actions to avoid or mitigate unsafe conditions.

Important General Information

In the past Humboldt Bay was considered treacherous and dangerous, and many disasters have occurred there. Even with present improvements, mariners are still advised to use extreme caution on the bar. The strong currents that may be encountered, and the abrupt turn at the outer end of the South Jetty, are apt to be dangerous for strangers. The bar is the smoothest during the last of the flood current, and it is often passable at this time and impassable 2 hours later, when the ebb current has set in. Mariners are advised to contact Coast Guard Station Humboldt Bay on VHF channel 16 or 22A prior to transiting the bar. Caution should also be exercised inside

the jetties due to the rapid change in the channel conditions. Deep-draft vessels are usually taken in and out of the bay at high tide if there is any swell on the bar because of the shoaling in the entrance channel. (Coast Pilot 7 - 40th Edition 2008)

General Anchorage

There is no designated anchorage in Humboldt Bay. Please refer to the Humboldt Bay Harbor, Recreation and Conservation District Ordinance No.17 regarding Anchorage.

Under Keel Clearance

The Humboldt Bay Harbor, Recreation and Conservation District has established rules requiring a two-foot underkeel clearance on all vessels over 300 gross tons while transiting the navigation channels.

Tug Assist – Non Tank Vessels

Tug assist guidelines for vessels transiting Humboldt Bay requiring pilotage.

North Bay: Two (2) tugboat requirement on all vessels not equipped with bow thruster.

Tugboat 1: Twin screw, minimum 1,500 hp

Tugboat 2: Twin screw, minimum 2,000 hp

Vessels equipped with bow thruster will be reviewed by the Pilots on a case by case basis depending on current weather and tidal conditions, horsepower of thruster, design of rudder and draft of the vessel.

Single tug departure will be at the discretion of the Pilot.

South Bay: Two (2) tugboat requirement on all vessels arriving in South Bay.

Tugboat 1: Twin screw, minimum 1,500 hp

Tugboat 2: Twin screw, minimum 2,000 hp

Single tug departure will be at the discretion of the Pilot.

*Tugboat carrying Pilot to the pilot station must have transfer platform and safety equipment meeting or exceeding recommendations agreed upon with the Pilots.

**Pilot reserves the right to make changes to the above minimums based upon ship conditions, weather or other limiting factors.

***Tank Vessel are regulated by 14 CCR 851.80-851.86

Safe Speed

Speed within the port should be at a minimum safe speed to maneuver and control the vessel, with regards to weather, conditions of draft, and the maneuvering characteristics of the particular vessel.

On approaches, speed should be at a level to accommodate safe transit (minimum for existing conditions). It should be noted that the approach to the Port of Humboldt Bay generally involves cross currents which are mostly unpredictable for direction and strength.

Extreme caution (no wake) should be used in the vicinity of the Fuel Barge and a No Wake Zone exists between the Samoa Bridge and the south end of the City of Eureka's Public Marina. (City of Eureka Municipal Code §100.14)

California Harbors and Navigation Code limits vessel speed to not more than 5 miles per hour within 100 feet of any person who is engaged in the act of bathing, a swimming float, diving platform or lifeline, and within 200 feet of a beach frequented by bathers, a way or landing float to which boats are made fast or which is being used for the embarkation or discharge of passengers.

The U.S. Coast Guard has established protection zones for a distance of 500 yards around all U.S. naval vessels in navigable waters of the United States. Vessels are to proceed at a no-wake speed when within a protection zone. Non-military vessels are not allowed to enter within 100 yards of a U.S. naval vessel, whether underway or moored, unless authorized by an official patrol.

Small Craft

Recreational vessels approaching the Port of Humboldt Bay should be aware that large commercial vessels transiting to and from the port will be maneuvering either to embark or disembark a pilot, and that during these times they will be highly limited in their ability to maneuver other than for the pilot boat, or other authorized personnel.

Recreational vessels should follow the below Standards of Care to ensure the safe operation of their craft while in and around the port. Recreational vessel operators should be sensitive to the fact that large commercial vessels are severely limited in their ability to stop or alter course and many times are limited in their ability to sight small vessels due to "blind spots" that extend more than ½ mile ahead, and therefore cannot easily avoid a collision with a smaller, more maneuverable recreational vessel.

Be aware of Security and Safety Zones around fuel barges and cruise ships. Small vessels, according to Rule 9, shall remain clear of large commercial and naval vessels that for navigational safety and the practice of prudent seamanship. Tugs with tows have limited maneuverability. Do not pass a large vessel, tugs, barges, etc. without first

contacting the vessel. Be aware of ships and tugs coming up behind you in the main channel.

Standards of Care:

1. Ensure vessel is safe before getting underway
2. Ensure vessel is seaworthy
3. Keep flares and distress calling equipment readily accessible
4. Be extra careful in fog – DO NOT LOITER near the jetties or in the navigational channels
5. Comply with Rule 9 – small vessels remain clear of large vessels that must navigate within a narrow channel
6. Avoid passing larger vessels close aboard
7. Do not pass large vessels, tugs, etc without first notifying the vessel of your intention
8. Know how and when to monitor VHF Channels
9. Know vessel's position – navigation equipment i.e.: nautical charts, GPS, handheld GPS, etc.
10. Be an informed mariner:
 - 5 or more short blasts of a vessel's whistle/horn = DANGER SIGNAL
 - Know the Rules of the Road
 - Read Coast Guard Notice to Mariners
 - Monitor the weather
 - Listen to VHF Channel 16 for Coast Guard information broadcasts
 - California State Law requires all persons 11 years of age and younger to wear a personal floatation device (PFD) while underway on a vessel 26 feet or less in length. It is highly recommended that all persons wear a PFD while underway
 - Be aware of current weather conditions, tidal times, currents, and changing conditions
 - Ensure everyone on board is aware of all emergency procedures
11. (Canoes, Kayaks and Sculls – placeholder)
12. The Coast Guard offers free, non-punitive, commercial fishing vessel safety dockside exams. Upon successful completion of a dockside exam, a decal is issued and any future Coast Guard boarding at sea may be greatly abbreviated. Contact Coast Guard Group Humboldt Bay at (707) 839-6123 to schedule an exam.

Communications

- VHF Channel 13 - Bridge to Bridge Communications
- VHF Channel 16 - Hailing and Distress
- VHF Channel 14 - Port of Humboldt Bay/Woodley Island
- VHF Channel 77 - Humboldt Bay Bar Pilots

- Coast Guard Group Humboldt Bay - Emergency Search and Rescue only
(707) 839-6100 or 9-1-1

Treat VHF Channel 16 like you would 9-1-1. Mariners should be aware that Channel 16 is used for “Security” broadcasts for vessel movement and safety.

Use VHF Channel 13 to make passing arrangements with other vessels.

All users are encourage to minimize voice traffic on all channels, maintain circuit discipline and broadcast on “low power” whenever possible.

Cellular phone coverage can be unreliable. Do not rely on a cellular phone as your only source of communication. Cellular phones cannot replace the VHF-FM marine radio’s ability to communicate marine safety information with multiple marine users at one time.

Tsunami Maritime Actions

Maritime Actions for a Distant Source Tsunami Hazard

FOR SMALL CRAFT such as recreational sailing and motor vessels, and commercial fishing vessels. All vessels under 300 gross tons.

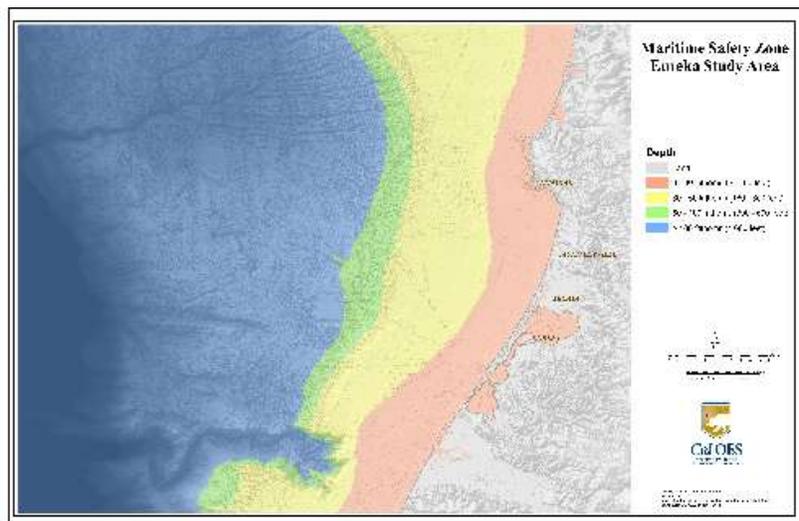
DROP, COVER, HOLD ON - You should first protect yourself from an earthquake. When the shaking stops, move quickly to higher ground away from the coast. Signs a tsunami may be imminent - if you feel a strong earthquake lasting 20 seconds or more near the coast, rapid change in water elevation, a loud roar from the ocean, go to high ground immediately.

Maritime Actions for a Distant Source Tsunami Hazard

These Maritime Actions for a Distant Source Tsunami Hazard have been created for the Humboldt County Emergency Operations Plan and is considered a living document subject to change. This is for a DISTANT SOURCE tsunami only.

KEY POINTS TO KNOW

- The safest locations for a vessel in a tsunami event are in deep water or out of the water and out of the Tsunami Hazard Zone.
- CalOES's "RULE OF THUMB" is 180+ feet (30 fathoms or more) in depth. This is 3 miles off shore of Humboldt Bay.
- NOAA also recommends Mariners in deep water 180 feet or greater should stay at sea. Those in shallow water or harbors should move to deep water if there is enough time and weather conditions are suitable.



Possible Mariner Actions Prior to Tsunami Surge Arrival:

- **Vessels at sea when a tsunami event is announced should remain in deep water.**
- **Given the time frame available, vessels within Humboldt Bay, with the ability to travel to deep water prior to the initial tsunami surge arrival time should do so as soon as possible. At Humboldt Bay, bar conditions may dictate the ability of vessels to get to sea.**
- **Trailerable vessels in the water or vessels on trailers within the Tsunami Hazard Zone should be moved to locations outside the zone.**

DO YOU HAVE ENOUGH TIME TO ACCOMPLISH YOUR GOAL?

Exceptional care should be taken when making the decision to move a vessel from the Tsunami Hazard Zone. Congestion on the roads and in the harbor area may greatly delay all mitigation actions. **Mariners should not attempt to remove a vessel from the Tsunami Hazard Zone unless they are certain the movement activity can be completed in the time available.**

Remember there may be road closures, restricted access and traffic congestion. **At tsunami estimated TIME of arrival MINUS ONE (1) HOUR, also known as T minus 1 or T-1, access to coastal areas including the marinas will be prohibited.**

TRAILERABLE: If your vessel is trailerable and you wish to remove it from the water, consider the following:

- Make sure your family is safe first
- Check the tide and weather conditions
- Find someone to assist you to, hook up your trailer, drive to the marina to drop you off, drive to the boat ramp, load the boat, go to high ground.
- **PLEASE remember**, there may be road congestion and congestion at the boat ramps. *If you do not have time to accomplish your goals, you should not make the attempt.*

NON-TRAILERABLE: If you are unable to remove your vessel from the water, consider the following:

- Make sure your family is safe first
- Grab extra lines and fenders for your vessel and remove any important items

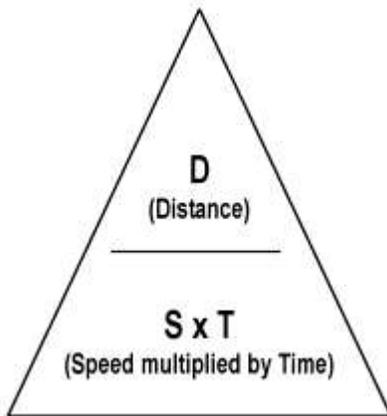
from your vessel

- **PLEASE remember**, there may be road congestion. *If you do not have time to accomplish your goals, you should not make the attempt.*

VESSELS considering leaving the harbor and head to sea, please consider the following:

- Make sure your family is safe first
- Check tide, bar and ocean conditions
- Check the weather forecast for the next couple of days
- Ensure you have enough fuel, food and water to last a couple of days
- Have someone drive you to the marina so your vehicle is not in the inundation zone.
- **PLEASE REMEMBER:** There may be road congestion. There may also be vessel congestion in the harbor as SHIPS, BARGES and other vessels attempt to depart at the same time. All vessels should monitor VHF Channel 16 and use extreme caution. NEVER impede another vessel. *If you do not have time to accomplish your goal, you should not make the attempt.*

Distance Speed Time formula. To use this triangle put your finger over the letter you are going to solve. **Distance = Speed multiplied by Time.**



- If you want to know **S**, then put your finger over the **S** and it gives you **D / T (Distance divided by Time)**.
- If you want to find **D** then cover the **D** and you have **S x T (Speed multiplied by Time)**.
- If you want to find **T** then cover the **T** and you have **D / S (Distance divided by Speed)**

For marine purposes **Distance** is in nautical miles and tenths of a nautical mile. **Speed** is in knots (nautical miles per hour) and tenths of a knot. **Time** is in hours and minutes. To convert minutes to hours, divide by 60. To

convert hours to minutes, multiply by 60.

Example:

I need to travel 9.0 nautical miles at 6 knots. How long will it take?

Distance divided by Speed = Time

9.0 nautical miles / 6 knots = 1.5 hours (1 hours 30 minutes)

It is approximately 09 nautical miles from Woodley Island Marina breakwater to 30 fathom line.

It is approximately 15 nautical miles from Woodley Island Marina breakwater to 50 fathom line.

It is approximately 19 nautical miles from Woodley Island Marina breakwater to 100 fathom line.

Things to consider while at sea:

- Monitor VHF-FM Channel 16 and the marine WX channels for periodic updates of tsunami and general weather conditions.
- Keep in contact with other boaters for safety and moral support.
- **BEFORE RE-ENTERING HUMBOLDT BAY**, make sure the harbor is open for traffic.
- Be aware of the tides, currents and surges. Keep a look out for debris.

Possible Mariner Actions Following the Tsunami "All-Clear" Message:

"ALL CLEAR" – DOES NOT MEAN THE HARBOR IS OPEN.

The "All-Clear" message is for land entry only. Mariners at sea should stay at sea until after the United States Coast Guard Captain of the Port has issued a

message stating that Humboldt Bay is open for traffic. Check with your docking facility to ascertain its ability to receive vessels. Adverse tsunami surge impacts may preclude safe use of the harbor. Vessels may be forced to anchor offshore or to travel great distances to seek safe harbor. An extended stay at sea is a possibility if the Harbor is impacted by debris or shoaling. Make sure your vessel is prepared to stay at sea. Where possible, mariners should congregate for mutual support while at sea, anchor or during transit elsewhere.

LESSONS LEARNED FROM PAST EVENTS

During the March 11, 2011 event, Crescent City boats headed to sea. Once the tsunami hit and they realized they were unable to return to Crescent City harbor, decisions needed to be made as to where to go because of a huge storm approaching the coast. Some vessels had enough fuel to make it to Brookings Harbor and to Humboldt Bay. Some smaller vessels did not have enough fuel and made the choice to re-enter Crescent City harbor to anchor. Some Crescent City Captains had never been to Humboldt Bay and some were running single handed as they did not have enough time to round up crewmen. As with the Captains who chose to go to Brookings, all of the Captains heading to Humboldt Bay kept in close contact with each other for safety and for moral support. Even though the tsunami initially impacted the west coast on the morning of March 11, 2011, the largest surges in Crescent City did not arrive until later in the evening.

BACKGROUND

Very large underwater earthquakes are the most likely cause of tsunami waves which can cause significant damage at very distant shores. Earthquake-caused tsunami waves occur when the sea floor abruptly deforms and vertically displaces the overlying water column. The displaced water travels outward in a series of waves which grow in intensity as they encounter shallower water along coastlines. Tsunami wave impacts are greatest in and around ocean beaches, low-lying coastal areas, and bounded water bodies such as harbors and estuaries. Potential tsunami wave impact areas should always be avoided during tsunami events.

Any tsunami event can threaten harbors, facilities and vessels. A distant source tsunami event does allow at least some time for local agencies and citizens to take steps to help mitigate the expected impacts of tsunami surges. However, the time available for response is minimal – All needed mitigation actions probably cannot be accomplished. Therefore, the actions to be taken must be prioritized and based on life-safety preservation. Only those actions with a surety of success should be attempted.

The distant tsunami source location does greatly impact the ability of Humboldt County response entities and the public to mitigate expected impacts. A tsunami originating in Chile (14-15 hours away) or Japan (9-10 hours away) will allow much more local mitigation activity than will a tsunami originating in the Aleutians (4-5 hours away).

Response entities and the public should allow enough time to complete the mitigation activity and to depart the Tsunami Hazard Zone prior to the projected first tsunami surge arrival time. Emergent mitigation activities will be extensive and involve large numbers of people resulting in congestion and delayed actions – It may not be possible to complete normally simple mitigation actions in the time frame available.

Where do I get more information on Tsunamis and local conditions?

Redwood Coast Tsunami Working Group

<http://humboldt.edu/rctwg/>

Tsunami evacuation maps may be found on the Redwood Coast Tsunami Working Group website. Locate your home, work, schools, etc. and download the maps of your areas. Talk with your family about emergency procedures. Know your surroundings and how to react.

Tsunami Warning Center

www.tsunami.gov

National Weather Service Office in Eureka

www.weather.gov/eureka

1-707-443-6484

Humboldt Harbor Safety Committee

<http://humboldtharborsafety.org/>

Local television and radio stations.

Precautionary Measures Ocean Going Ships/Barges:

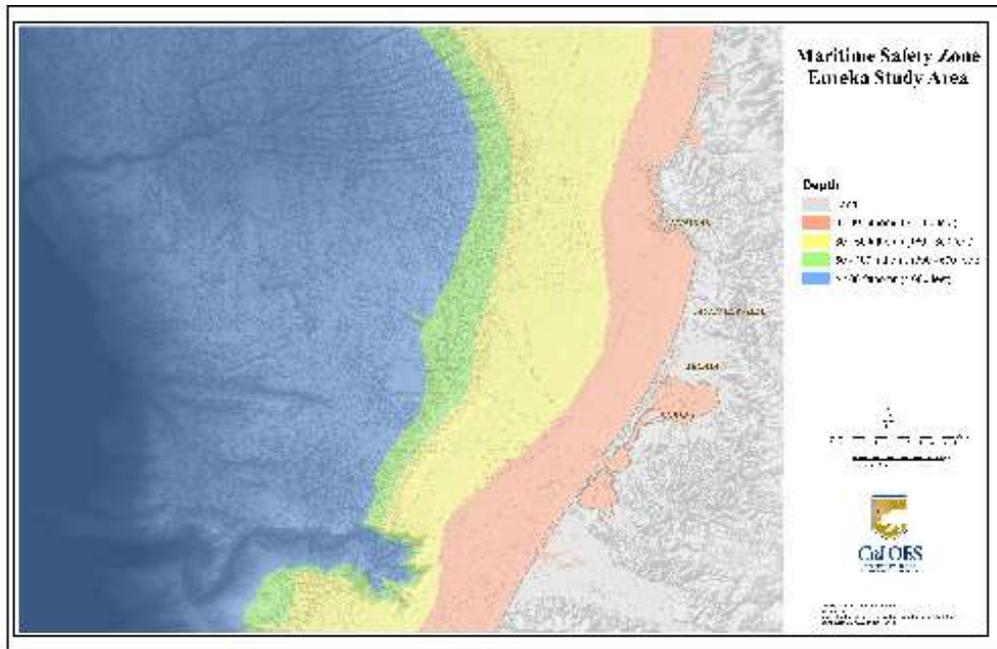
- a. Collect information
 - i. Determine Humboldt Bay Bar Conditions and Forecast.
 - a. Note: A Tsunami event may trigger unusually large ebb current conditions followed by flood current conditions.
 - ii. If pilotage required, establish contact with Humboldt Bay Pilots.
 - iii. If Tug assistance required, determine availability of tug assist.
 - iv. Determine Means of Broadcasting Traffic information between ships and tug/barges. VHF Ch 16 and 13
 - v. Establish contact with USCG
 - vi. Alert USCG of possible evacuation and emergency request for clearance if necessary.
 - vii. Establish availability and location of land shelters.
- b. Tank Barges and tugs at dock, should in cooperation with the Oil Terminal Manager, ensure adequate safety measures as far in advance as possible taking into consideration the consequences in the event the tank barge is damaged by the Tsunami.
- c. Definitions
 - i. Tsunami Warning – Inundating wave possible – Full evacuation suggested.
 - ii. Tsunami Advisory – Strong currents likely – Stay away from Shore.
 - iii. Tsunami Watch – Alert that an event may later impact the Watch Area. Normally issued based on seismic information without confirmation that a destructive tsunami is underway.

NOAA currently states Mariners in deep water 180 feet or greater should stay at sea. Those in shallow water or harbors should move to deep water if there is enough time and weather conditions are suitable.

There may be vessel congestion in the harbor as SHIPS, BARGES, TUGS, COMMERCIAL FISHING and RECREATIONAL vessels attempt to depart at the same time. All vessels should monitor VHF Channel 16 and use extreme caution.

**TABLE OF TSUNAMI COUNTERMEASURES FOR SHIPS AND BARGES IN PORT
OCEAN CONDITIONS AND TIDES MAY INFLUENCE RESPONSE TIME**

Type of Information	Response Time	Ship/Barges at Dock		Ship/Barges At Anchorage or Mooring Buoy	Ships in Channel
		Tank Barges	Cargo Ships/Barges		
Tsunami Warning	Equal to or Less than 3 hours	Suspend Cargo Transfer Operations, Secure for Sea, and Evacuate, if possible, for Sea. If unable to Evacuate consider pushing on barge at dock.	Suspend Cargo Operations, Secure for Sea, and Evacuate, if possible, for Sea or to Land Shelters. If unable to evacuate consider additional mooring lines.	Use Main Engines, or if possible, Evacuate for Sea.	Evacuate for Sea.
Tsunami Warning	Greater than 3 Hours	Suspend Cargo Transfer Operations, Secure for Sea, and Evacuate, if possible, for Sea.	Suspend Cargo Operations, Secure for Sea, and Evacuate, if possible, for Sea	Use Main Engines, or if possible, Evacuate for Sea.	Evacuate for Sea.
Tsunami Advisory		Suspend Cargo Transfer Operations, Secure for Sea, and Evacuate, if possible, for Sea. If unable to Evacuate consider pushing on barge at dock.	Suspend Cargo Operations, Secure for Sea, and Evacuate, if possible, for Sea or to Land Shelters. If unable to evacuate consider additional mooring lines.	Use Main Engines, or if possible, Evacuate for Sea, depending on conditions.	Evacuate for Sea.
Tsunami Watch		Monitor for updated information. Complete Precautionary Measures.			



Emergency Marine Information:

NOAA Weather Radio
VHF Marine Radio Channel 16

USCG
1-707-839-6110

Humboldt Bay Bar Pilots
1-707-845-4938 Capt. John Powell
1-707-845-4939 Capt. Tim Petrusha

Bar Pilots will be in contact with the USCG. Bar Pilots will also be able to provide Masters of vessels with information regarding, tug availability, weather and tide conditions, land evacuation sites if needed, land transportation, etc.

West Coast Alaska Tsunami Warning Center
www.tsunami.gov

National Weather Service Eureka California – Marine Weather Page
www.wrh.noaa.gov/eka/marine/
1-707-443-6484

Conclusion

In summary, all Best Maritime Practices are intended as a guide for the mariners of Humboldt Bay. All Mariners are encouraged to obtain up to date information regarding current conditions prior to departure.

For information on Safe Boating classes, please contact the local US Coast Guard Auxiliary at (707) 839-6123

For more tsunami information visit www.tsunamiready.noaa.gov or www.humboldt.edu/rctwg/

VESSEL ANCHORAGE

Present Conditions

There are no officially designated anchorages within the boundaries of Humboldt Bay as defined in Section I, Geographic Boundaries. Small craft anchorages are seasonally available in Shelter Cove and Trinidad Bay.

In Humboldt Bay the area between Lighted Buoy #17 and the southern end of Fairhaven Terminal's dock, west of the main North Bay Channel, has been used as a temporary holding area. Large vessels may only hold for a single tide period, because there is not enough room in the channel for them to swing with the change in tide.

It is not the intent of the Harbor Safety Committee to officially designate any anchorages within the defined Harbor boundaries at this time because of physical limitations (narrow channel width). It is the HSC's position that current procedures be maintained, i.e. the pilot that guides the vessel be allowed to determine the most suitable holding area for that vessel at that time.

Unloaded vessels calling in Humboldt Bay shall be sufficiently ballasted to navigate the harbor entrance channel and the bar without significant difficulties. Vessels shall arrive with clean ballast or segregated ballast aboard so that it can be discharged into the harbor without pollution. Vessels arriving from foreign ports where they have loaded ballast aboard before departing that port shall change their ballast completely with clean sea water in accordance with California PRC Section 71200-71215.

Vessels' agents shall be advised to instruct masters by e-mail, facsimile, or telex to change ballast prior to arrival in Humboldt Bay.

There are no shoreside ballast reception facilities available for vessels calling in Humboldt Bay.

Recommendations

Recommendation 1

- a. *All vessels calling at marine terminals in Humboldt Bay shall have sufficient mooring ropes or wires of proper strength to hold the ship fast to the marine terminal during all weather conditions which may be expected in Humboldt Bay.*
- b. *It is the responsibility of the owner/operator of the terminal to ensure that the bollards and hooks on the docks and mooring dolphins to which the ship attaches its mooring ropes and wires*

shall be of sufficient holding strength to hold the ship alongside during all conditions which may be expected in Humboldt Bay.

c. *Each terminal shall provide mooring facilities that can be used by ships for safe mooring. Terminals shall have bearing surface of sufficient strength to lie against and support the ship properly.*

d. *The Humboldt Bay Harbor District, in consultation with the HSC, developed an anchoring ordinance adopted June 2004.*

The HSC has determined that due to physical limitations (narrow channel width), anchorages will not be officially designated within the defined Harbor boundaries and that current procedures will be maintained (i.e., the pilot that guides the vessel will be allowed to determine the most suitable "holding" area for that vessel at that time). It should be clarified in the plan's annual update that there are no anchorages within the bay, and that there is a one-way traffic channel which shall be adhered to in order to make harbor travel safe.

The HSC has made Recommendation 1 a-d with regard to safe mooring. However, upon further discussion with the HSC members, no further action will be required by the OSPR, as these recommendations are already being practiced by vessel and terminal owners/operators, and sufficient mooring ropes or wires during transfer operations are already required under federal regulation (33 CFR 156.120 (a)).

REF: 14 CCR 802(b)(3)(c)

VESSEL TRAFFIC SERVICE

The Humboldt Bay HSC has examined the need for a Vessel Traffic Service (VTS) in Humboldt Bay and has determined that VTS is not needed. It would not significantly enhance the safe movements of vessels and barges in and about Humboldt Bay, nor would it reduce the risk of environmental harm resulting from grounding and collisions.

There are 7 terminals in Humboldt Bay which are currently being used by ships and barges.

The terminal located farthest from the sea buoy at the main channel entrance is 6.6 miles from that sea buoy. Humboldt Bay harbor is relatively small compared to other harbors on the U.S. West Coast that have planned for or are using VTS.

There is only one entrance channel into Humboldt Bay, and the North Bay has one main ship channel. This channel is 400 feet in width, and normally does not permit large ships to meet or pass in the channel. Therefore, normally only one-way traffic exists, and only one ship moves at a time in Humboldt Bay.

The Humboldt Bay Bar Pilots direct all of the ship movements in the bay. According to Federal Law, all U.S. registered ships and all foreign ships (all vessels 300 gross tons or more) must use a bar pilot when transiting the bay. From a practical standpoint U.S. ships under enrollment (a type of registration issued by the United States Coast Guard), which are not required to take a bar pilot, do so nevertheless. Therefore, all ship movements in the bay are directed or monitored by the bar pilots.

Tugs with barges under tow carrying "certain hazardous materials" must report to the U.S. Coast Guard Station at the entrance to Humboldt Bay prior to transiting the bay. These movements are in turn reported to the bar pilots who monitor these barge movements. In Section XI, Communications, the Humboldt Bay HSC has recommended that all tugs with barges and self-propelled vessels over 200 feet in length make security broadcasts at various locations in the bay and approaches, so that large vessel movements are known by all users.

There are two tug boat companies serving Humboldt Bay which provide assistance to vessels mooring, unmooring, and transiting the bay, and assist barge movements in the bay. The tug companies work in close liaison with the bar pilots, and any vessel or barge movements assisted by the tug companies are coordinated with the bar pilots.

The Humboldt Bay Harbor Safety Committee has determined that a Vessel Traffic Service is not needed in Humboldt Bay based on the above facts and circumstances.

Recommendations

The Committee has examined the need for a Vessel Traffic Service (VTS) in Humboldt Bay, and has determined that conditions in the harbor currently do not warrant the need to install a VTS. The need for a Vessel Traffic System will be reevaluated periodically.

REF: 14 CCR 802(b)(9)(A), (B)

TUG ESCORTS

Present Conditions

The present use of tugs in Humboldt Bay is for escort of vessels and petroleum barges, and to assist with vessel docking and undocking.

Humboldt Bay is served by Knutson Towboat Company and Brusco Tug and Barge.

The operating company, power, propulsion, and size of the tugboats operating in Humboldt Bay are as follows:

<u>Name</u>	<u>Operator</u>	<u>Power</u>	<u>Propulsion</u>	<u>Length x Beam x Draft</u>
<i>Koos King</i>	Knutson Towboat Company	2400 h.p. 67,205 lbs BP Ahead 37,510 lbs BP Astern	twin screw	63'11" x 23'11" x 7'6"
<i>Humboldt</i>	Knutson Towboat Company	1430 h.p. 40,500 lbs BP Ahead 29,300 lbs BP Astern	Twin screw	59'6" x 20'0" x 9'1"

Bollard pull certificates for the '*Koos King*' dated July 19, 2011 and '*Humboldt*' dated November 19, 2002, are listed in Appendix VII.

Pilotage is required for all U.S. ships under enrollment and all foreign ships (all vessels 300 gross tons or more). It is recommended that any mariners unfamiliar with Humboldt Bay employ a local pilot. Pilots board vessels about 0.5 miles west of Humboldt Bay Entrance Lighted Whistle Buoy (HB). Bar Pilots also provide visibility and bar condition information for ships using the service.

Tugboat assistance is advised by the Humboldt Bay Bar Pilots due to the lack of maneuvering room in Humboldt Bay, and increased vessel size. The assist tugs are presently used for the dual purpose of assist and escort.

At times strong and unpredictable cross currents can occur at the Harbor Entrance. These currents are predicated on past weather conditions.

Southerly weather accompanied by a southwesterly to westerly swell creates a strong current during low water periods at the 110-degree turn from the Lighted Buoy No. 5 to Light No. 11.

For approximately the first three miles of the transit the tug assist/escort boats are not made fast to the vessel employing them. This is due to the open sea conditions that exist.

It would be nearly impossible for a tug to approach a ship moving at full power and trying to negotiate the sometimes treacherous swell and currents of the Humboldt Bay entrance if the larger vessel lost its power or steering. It would also be dangerous to slow the larger vessel to a speed at which the tug could come alongside because that would result in considerably less control of the larger vessel by the pilot. However, a ship negotiating the 110-degree turn at the Humboldt Bay entrance or moving at slower speeds inside the harbor would benefit from the presence of an escort tug if a loss of engine or steering control occurred. The escort tug would be able to provide some steering and/or stopping ability for the stricken vessel.

The pilot may send the escort tug ahead of the ship to make certain that the ship's path is clear. Tugs are also indispensable in thick fog for marking buoys and lights and checking tidal current conditions ahead of the ship while the pilot is navigating the narrow channels of Humboldt Bay.

Before a vessel arrives at the port, the ship's captain radios the port requesting tug and pilot service. The tug then transits the entrance, meets the vessel, and the bar pilot boards the vessel. It is at the pilot's discretion as to whether a tug escort is needed. If not, the escort tug returns to port and meets the assist tug. These two tugs are then used to berth the vessel. This procedure reversed when the vessel is ready to leave the harbor.

Tugboats engaged in escorting or assisting vessels in Humboldt Bay shall continue their service until dismissed by either the pilot or the master of the vessel employing them. However, the master of the tugboat engaged in escorting or assisting another vessel may temporarily halt or discontinue service if he deems his crew or vessel is in immediate danger.

Recommendations

Recommendation 1

The HSC shall annually review the performance and effectiveness of tug capabilities. This review shall rely, in part, on information solicited by the HSC from pilots, masters, industry representatives, and other parties.

Recommendation 2

The Humboldt Bay Area HSC recommends the following number of assist tugboats, which will also function as tug escorts, for vessels and barges in the Humboldt Bay Harbor.

- a.** *All barges carrying hazardous or liquefied compressed gasses will be escorted according to escort procedures described by the current Captain of Port Public Advisory (See Appendix IV).*
- b.** *All tank vessels must have a qualified Humboldt Bay Bar Pilot and escort tug. Additional tug(s) will be standing by and prepared to render assistance.*
- c.** *Any vessel equipped with a working bow and/or stern thruster may substitute this equipment for the services of one tugboat provided that such substitution does not reduce the total number of tugs below one (1). It shall be understood that the minimums contained herein reflect ideal circumstances and conditions. The master/pilot shall arrange for additional tugboat assistance should adverse weather conditions, unusual port congestion, or other conditions or circumstances so require.*

Recommendation 3

Tugs and barges transporting oil or oil derivative products, or "certain dangerous cargoes" as described in 33 CFR 160.203 shall comply with the following rules and regulations:

- a.** *All barges carrying hazardous or liquefied compressed gasses will be escorted according to escort procedures described by the current Captain of Port Public Advisory (See Appendix IV).*
- b.** *46 CFR 15.812*

REF: 14 CCR 802(b)(1)(A), (B)(i), (B)(iv), (B)(v), (C)(i), (C)(ii), (C)(iii), (C)(iv), (1)(D)

Review by the Harbor Safety Committee prior to July 1 each year.

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PILOTAGE

The ports of Long Beach, Los Angeles, San Diego, Port Hueneme, and Humboldt Bay; the State of California; and the U. S. Coast Guard have executed a Memorandum of Agreement (MOA) to create an improved system of pilotage. The parties to this agreement intend to maintain the safety of vessel navigation and port and environmental safety by establishing local pilotage training and apprenticeship programs which ensure the use of pilots with local knowledge on vessels over 300 gross tons not in enrollment while navigating at the ports subject to this agreement. This agreement also created a Pilotage Advisory Committee in each port subject to this agreement, which will provide recommendations for the implementation and improvement of the pilotage system for the port. The Humboldt Bay Harbor, Recreation and Conservation District currently employs and licenses pilots for Humboldt Bay.

The Humboldt Bay Pilotage Advisory Committee completed its report on April 20, 1999. The Harbor District Board accepted the report and forwarded it to the OSPR Administrator on April 22, 1999, thereby fulfilling the requirements of the MOA. Training standards and pilot proficiency were then codified in the Harbor District's Ordinance 15: General Tariff No.1.

Pilotage standards are maintained by apprenticeship, professional growth, and oversight programs defined in Ordinance 15. The State will review programs for consistency. The Ports will maintain control of pilots.

The Harbor Safety Committee asked for and received from U.S. Coast Guard verification that the Captain of the Port (COTP) will notify the Port Authority and Humboldt Bay Bar Pilots of any order altering the movement of any vessel arriving or departing Humboldt Bay.

Recommendations

The HSC shall rely, in part, on information solicited by the HSC from pilots, masters, industry representatives, and other parties for recommendations.

Review by the Harbor Safety Committee prior to July 1 each year.

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COMMUNICATIONS

Present Condition

At this time communication from vessel to vessel, and vessel to shore (commercial) is by VHF radio. Many smaller craft (pleasure boats and sail boats) rely on CB radio.

Current VHF channels and their use/user are listed below:

<u>VHF Channel (Frequency - kHz)</u>	<u>Use/User</u>
10 (156.500)	Port Operations Only
13 (156.650)	Bridge to Bridge Communication
16 (156.800)	Emergency (Open at All Times)
22A (156.100)	Coast Guard Public Access
77 (156.875)	Pilot to Tug Communication

At this time there are not believed to be any "silent" or low propagation areas within the defined harbor boundaries.

Pilots and boaters have occasionally experienced "bleed over" of signal from the Eureka Police Department's communications system. Occasionally an emergency transmission will override the pilot's hand-held VHF radio set.

The U.S. Coast Guard shall announce daily on Channel 22A that Channel 13 is for bridge to bridge communication, Channel 77 is for pilot to tug communication, and neither channel shall be used for personal, non-business communication. It will be left to the Coast Guard's discretion as to when to make the announcement.

The VHF Channels and Users are included in US Coast Pilot 7, chapter 8, for Humboldt Bay.

The following types of vessels are subject to security calls:

- a. Tugs with barges, and
- b. Self propelled vessels over 200 feet in length

Security calls shall be made on channels 13 and 16 when:

- a. Inbound vessel reaches the sea buoy
- b. Vessel is about to move from dock to dock
- c. Vessel is leaving dock for sea.

Security calls will allow other vessels to be aware of ship or barge movements approaching and leaving the harbor.

"Sea" is considered to be beyond the end of the jetties.

It is the opinion of the Harbor Safety Committee that current communications systems are adequate and that current procedures be maintained.

REF: 14 CCR 802(b)(6)(A), (B), (C)

Review by the Harbor Safety Committee prior to July 1 each year.

CASUALTY DATA (2012 - 2016) WITHIN THE HUMBOLDT BAY REGION

46 CFR Cit. 1, Subpart 4.03 - Definitions

4.03 - 1 Marine casualty or accident.

- (a) The term marine casualty or accident shall mean any casualty or accident involving any vessel other than public vessels if such casualty or accident occurs upon navigable waters of the United States, its territories or possessions or any casualty or accident wherever such casualty or accident may occur involving any United States' vessel which is not a public vessel.
- (b) The term marine casualty or accident includes any accidental grounding, or any occurrence involving a vessel which results in damage by or to the vessel, its apparel, gear, or cargo, or injury or loss of life of any person; and includes among other things, allisions, collisions, strandings, groundings, foundering, heavy weather damage, fires, explosions, failure of gear and equipment and any other damage which might affect or impair the seaworthiness of the vessel.
- (c) The term marine casualty or accident also includes occurrences of loss of life or injury to any person while diving from a vessel and using underwater breathing apparatus.

SUMMARY OF CASUALTY DATA FOR HUMBOLDT BAY BY VESSEL TYPE 2012-2016

YEAR	VESSEL TYPE			
	LARGE COM'L	TUG/BARGE	SMALL FISHING/PLEASURE	DEATH
2012	0	0	11	0
2013	0	0	16	0
2014	1	0	20	0
2015	0	0	12	0
2016	0	0	13	1

**SUMMARY OF CASUALTY DATA IN HUMBOLDT 2012-2016
BY VESSEL TYPE, VESSEL SIZE, CAUSE OF CAUSALITY AND RESULT**

Year	2012	2013	2014	2015	2016
Number of Vessels	11	16	21	12	13
Vessel Type					
Dry Cargo	0	0	0	0	0
Other Commercial	0	0	2	0	0
Commercial Fishing	8	16	18	9	10
Recreational	3	0	1	3	3
Vessel Size					
<100 GT	11	16	20	12	12
100-1,000 GT	0	0	0	0	1
>1,000 GT	0	0	1	0	0
Cause of Casualty					
Mechanical/Physical	5	14	19	11	10
Operator Error	3	2	2	2	2
Unknown		0	0	0	1
Nature of Casualty					
Collision	1	1	1	1	2
Disabled	8	12	15	9	9
Grounding	0	1	1	1	0
Sinking	1	1	1	1	2
Fire	0	0	0	0	0
Unknown	0	0	0	0	1
Injury/Death	1	1	0	0	1
Discharge of Oil			3	4	2

Annual review of U.S. Coast Guard data and information solicited by the HSC from Humboldt County Sheriff's Marina Patrol, pilots, masters, industry representatives, and other parties shall be performed to assess the effectiveness of tug escorts in the prevention of accidents.

REF: 14 CCR 802(b)(1)(c)(v.); (4)(B)

MOTOR VEHICLE BRIDGES

Present Condition

Highway 255 crosses over Eureka, Woodley Island, Indian Island, and Arcata Channel by way of a fixed highway bridge. Clearances of the three spans are 40 feet vertical, 150 ft. horizontal from Eureka to Woodley Island; 30 feet vertical, 100 feet horizontal from Woodley Island to Indian Island; and 45 feet vertical, 200 feet horizontal from Indian Island to the Samoa Channel. Vertical clearances are referred to mean high water. No large commercial vessels pass under these spans. Small pleasure and sailing craft pass under these spans while on their way to use the boating, sailing opportunities, and commercial oyster harvesting activities that exist on Arcata Bay during high tide periods.

These bridges have undergone seismic retrofit (project completed spring 2006). The horizontal and vertical clearances were not altered.

Recommendations

Present procedures and regulations are believed to be adequate; there are no recommendations for change at this time.

REF: 14 CCR 802(b)(7)(A)

Review by the Harbor Safety Committee prior to July 1 each year.

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MONITORING AND PLAN ENFORCEMENT

Present Condition

Monitoring

Each member of the HSC as they function within the meaning of the existing federal, state, and local laws, regulations and ordinances as they affect the Humboldt Bay Area, is charged with the responsibility of bringing back to the Harbor Safety Committee any recommended changes to the foregoing.

Enforcement

The U.S. Coast Guard is the principal regulator of vessel movements within the harbor boundaries as defined in Section I. The Coast Guard performs these duties on air, sea, and land through the use of helicopters, patrol boats, and shoreside surveillance.

Pursuant to 33 CFR 6, Protection and Security of Vessels, Harbors, and Waterfront Facilities (Espionage Act), the rules and regulations of the relevant legislative authorities shall be enforced by the Captain of the Port (COTP) under the supervision and general direction of the District Commander and the Commandant. The COTP may supervise and control the movement of any vessel. The Espionage Act has powers based on security, not safety, and has only criminal penalties.

The Ports and Waterways Safety Act (PWSA) of 1972, as amended by the Port and Tanker Safety Act of 1978, (33 USC 1221 et seq.) provides the strongest authority for the Coast Guard's port safety program, and is intended to increase vessel safety and protect the marine environment in ports, harbors, waterfront areas, and navigable waters. It allows the establishment of a Vessel Traffic Service (VTS), control of vessel movement, establishment of requirements for vessel operation, and other related port safety controls. This Act allows civil and criminal penalties for violations.

In addition, a number of other laws call for Coast Guard enforcement. These include the Federal Water Pollution Control Act, which delegates enforcement authority and responsibility to the Coast Guard in cases where oil and hazardous substances are discharged into U.S. waters in quantities which may be harmful. In addition, the Act to Prevent Pollution from Ships (33 USC 1901 et seq.) limits the operational discharges of oil from ships and requires reception facilities to receive waste that cannot be discharged at sea. Finally, the Marine Protection, Research and Sanctuaries Act of 1972 (33 USC 1401 et seq.) requires Coast Guard surveillance of ocean dumping activities.

COTP Orders (33 CFR 160.111) are directed at individual vessels, and address short-term hazards. Any long term directive would require that federal rule making procedures be followed. COTP orders may involve establishing a vessel traffic routing

scheme or vessel size, speed, and draft limitations; restricting traffic movement to one direction and to certain times, and requiring vessels to be assisted by tugboats.

Enforcement of the Harbor and Navigation Code of the State of California is the responsibility of the Humboldt County Sheriff's Department and is funded by the State of California.

Recommendations

It is encouraged that Committee members and alternates, as well as the entire waterfront community, monitor compliance of provisions contained in the Harbor Safety Plan. Noncompliance should be reported to the committee for appropriate action.

REF: 14 CCR 802(b)(8)(A)

FUNDING AND COMPETITION

Present Condition

Funding

Funding for the majority of the recommendations will be from government agencies. Periodic soundings shall be conducted under the direction of the U.S. Army Corps of Engineers. Installation, movement, and repair of navigational aids shall be conducted by the U.S. Coast Guard.

The cost of hiring tugs is borne by the shipping company. The cost of maintaining Bar Pilots is borne by the Humboldt Bay Harbor, Recreation and Conservation District.

Procedural recommendations will not require funds to implement.

It is the responsibility of the shipping company and its vessel masters to be knowledgeable of procedures and rules of operation in Humboldt Bay, as described in this document.

The hazardous wave forecasting model (SWAN) for Humboldt Bay has been funded by the National Weather Service Forecasting Office whereas the CDIP Waverider buoy is funded by the Scripps institute of Oceanography.

Recommendations

Recommendation 1

The Committee recommends that Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 be amended to provide funding for all the recommendations put forth in this Plan.

Recommendation 2

Should funding not be available through the recommended entities the Committee requests that the recommendations be funded through OSPR revenues.

The OSPR will endorse the HSC's recommendations made in the Harbor Safety Plan; however, the OSPR cannot fund all of the recommendations within the Plan, nor can Lempert-Keene-Seastrand Oil Spill Prevention and Response Act of 1990 be amended to provide such funding. Should the HSC determine that more funding is required in the future, the HSC may prepare recommendations in the Plan, as part of the annual update for specific projects recommending a specific amount of funding for specific projects as

described in the Plan that could not get funded. The OSPR will consider these recommendations as part of its review to determine the source and feasibility of funding.

REF: 14 CCR 802(b)(10)(A), (B); (11)(A), (B)

Competition

The preceding rules, recommendations, and procedures have been compiled to create a harbor that can operate safely and with economic and regulatory feasibility.

The economic effects of this document will be felt most on barge shipping companies, as they are required to obtain escort tugs when transiting Humboldt Bay.

Humboldt Bay is one port; therefore there are no port to port restrictions in Humboldt Harbor.

Dock owners will be impacted financially by the cost of annual berth soundings. Maintenance of the berthing area and the dock itself are normal expenses incurred by the dock owner.

Changes/modifications of communications protocol shall not have a negative fiscal or negative competitive effect on the harbor or shipping companies.

S U M M A R Y

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SUMMARY OF HARBOR SAFETY COMMITTEE ACTIONS

Existing and proposed federal, state and local laws, regulations, and ordinances affecting the harbor area were reviewed and considered in the HSC's recommendations.

GEOGRAPHIC BOUNDARIES

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

HARBOR CONDITIONS

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

HARBOR DEPTH AND CHANNEL DESIGN

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

MONITORING THE IMPROVED CHANNELS

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

TSUNAMIS

The Harbor Safety Committee will participate in the development of the tsunami section of the County of Humboldt's Emergency Operations Plan.

Review by the Harbor Safety Committee prior to July 1 each year.

AIDS TO NAVIGATION

The Committee recommends that the Administrator identify long term O&M funding for the CalPORTS program and identify a source of funding for the capital costs.

Review by the Harbor Safety Committee prior to July 1 each year.

VESSEL ROUTING AND TRAFFIC PATTERNS

Vessel Routing – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Vessel Traffic Patterns – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

BEST MARITIME PRACTICES

General Anchorage – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Under Keel Clearance – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Tug Assist – Non Tank Vessels – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Safe Speed – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Small Craft – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Communications – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Tsunami Maritime Actions – Small Craft – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

Tsunami Maritime Actions – Precautionary Measures Ocean Going Ships/Barges – No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

VESSEL ANCHORAGE

No action required at this time.
Review by the Harbor Safety Committee prior to July 1 each year.

VESSEL TRAFFIC SERVICE

No action required at this time.
Review by the Harbor Safety Committee prior to July 1 each year.

TUG ESCORTS

No action required at this time.
Review by Harbor Safety Committee prior to July 1 each year.

PILOTAGE

No action required at this time.
Review by Harbor Safety Committee prior to July 1 each year.

COMMUNICATIONS

No action required at this time.
Review by the Harbor Safety Committee prior to July 1 each year.

CASUALTY DATA (2008-2013) WITHIN THE HUMBOLDT BAY AREA

No action required at this time.
Review by the Harbor Safety Committee prior to July 1 each year.

MOTOR VEHICLE BRIDGES

No action required at this time.
Review by the Harbor Safety Committee prior to July 1 each year.

MONITORING AND ENFORCEMENT

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

FUNDING AND COMPETITION

No action required at this time.

Review by the Harbor Safety Committee prior to July 1 each year.

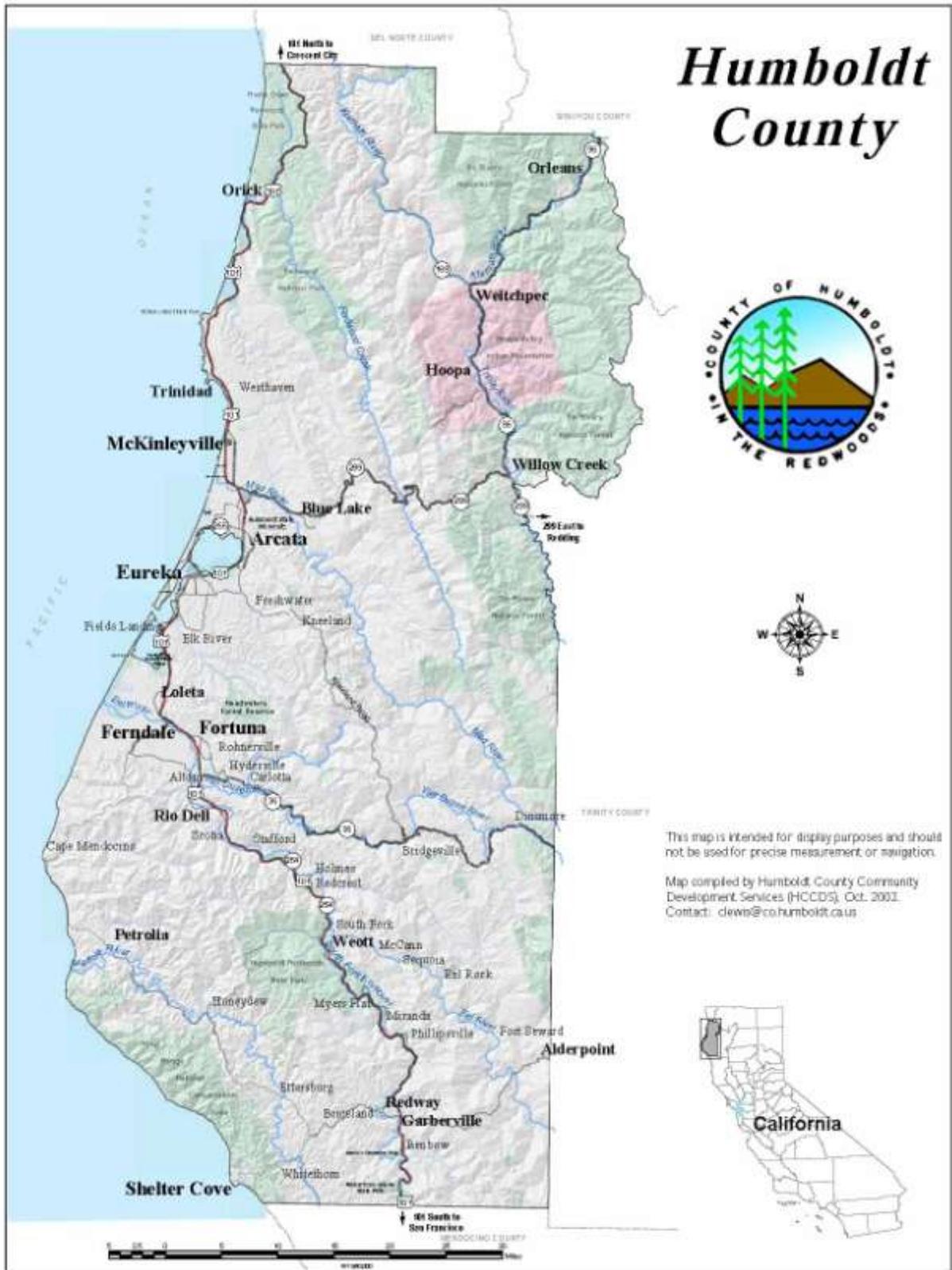
APPENDICES

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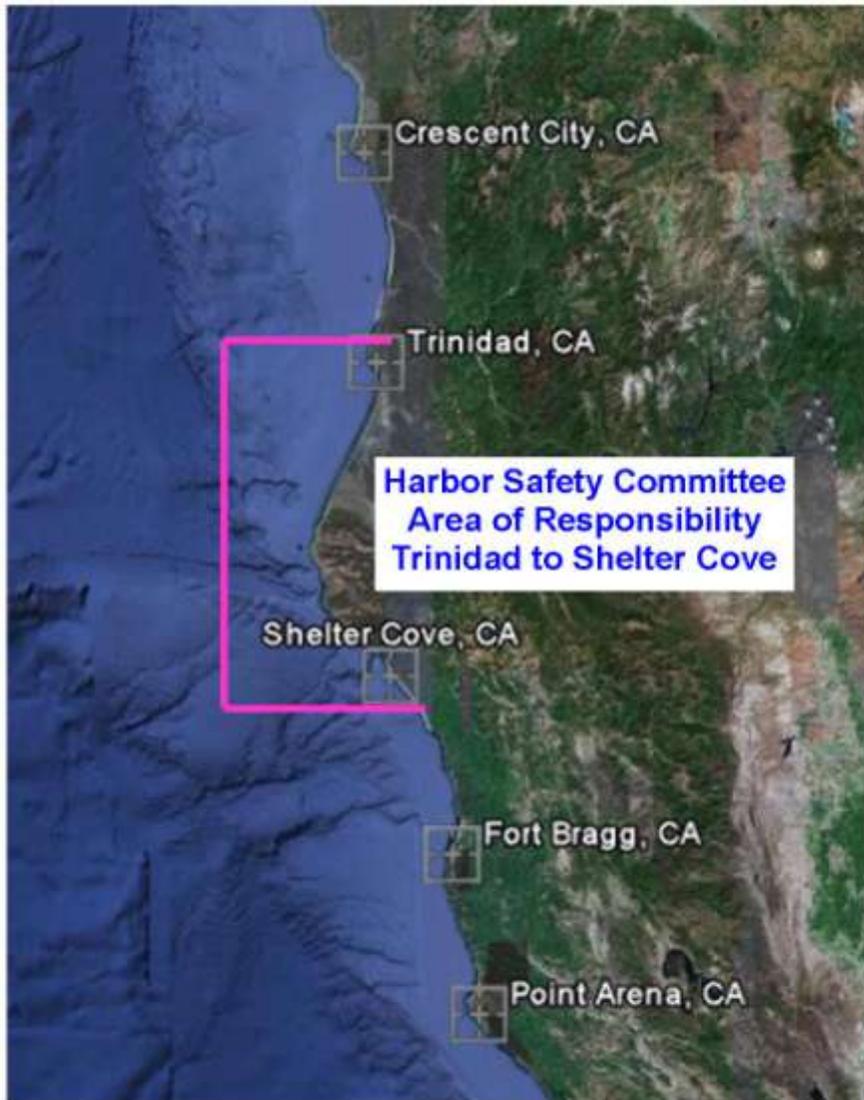
APPENDIX I

MAPS

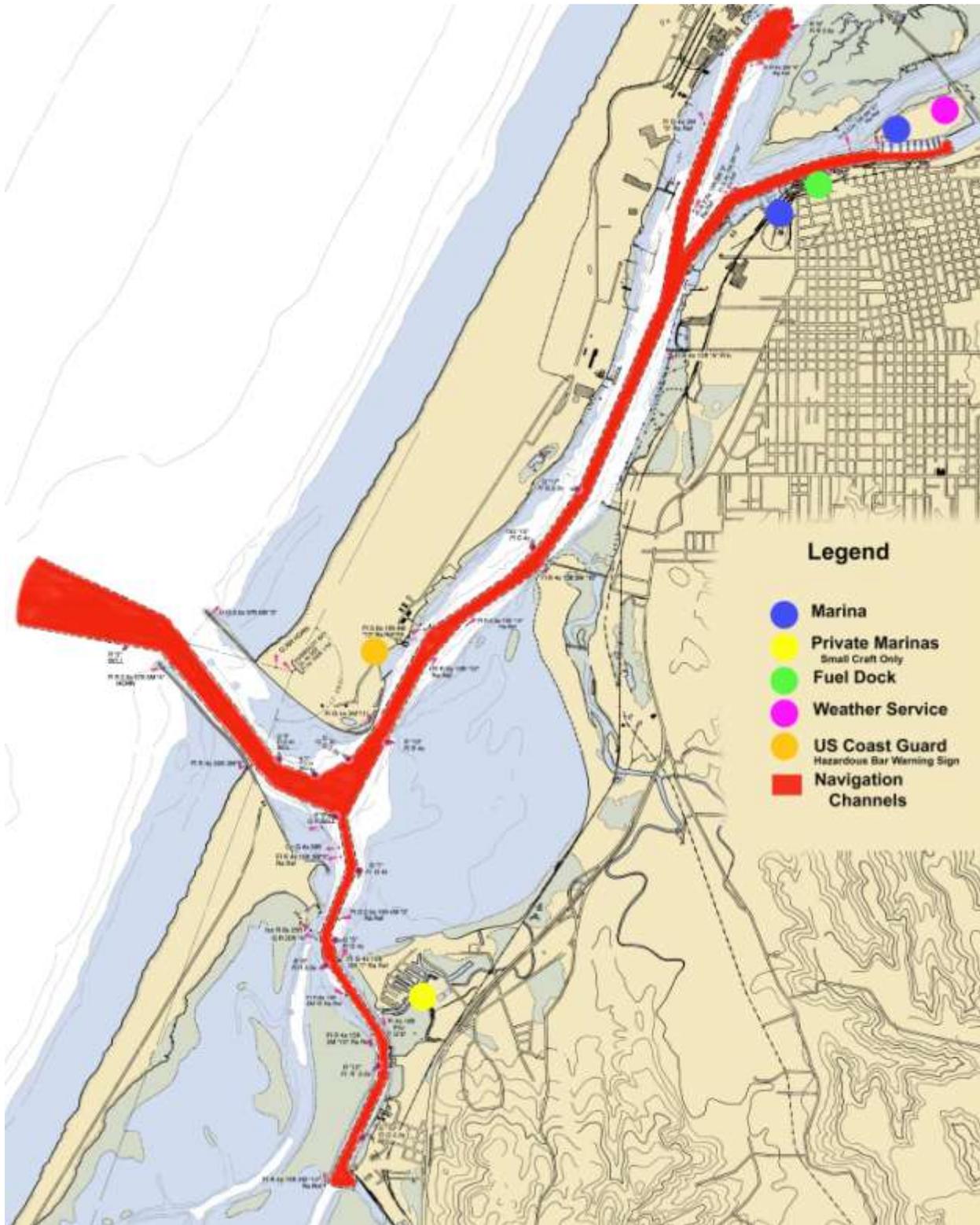
- I – 1 Location Map Humboldt
- I - 2 Map of Harbor Safety Committee Boundary
- I – 3 Map of Facilities in Humboldt Bay
- I - 4 Map of Humboldt Bay
- I – 5 Map of Trinidad Harbor
- I – 6 Map of Shelter Cove
- I – 7 Map of Cape Mendocino



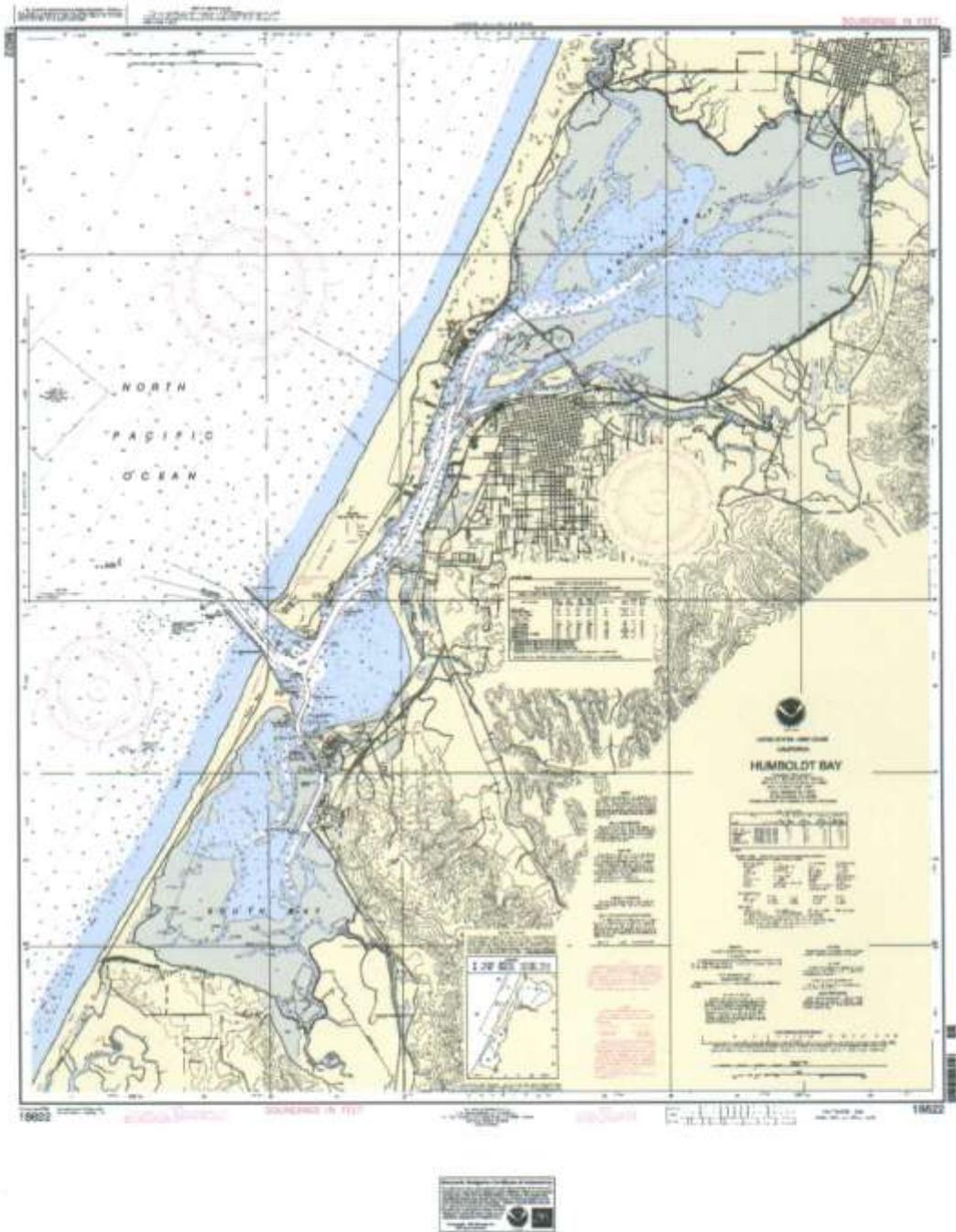
Appendix I – 1 : Location Map – Humboldt Area



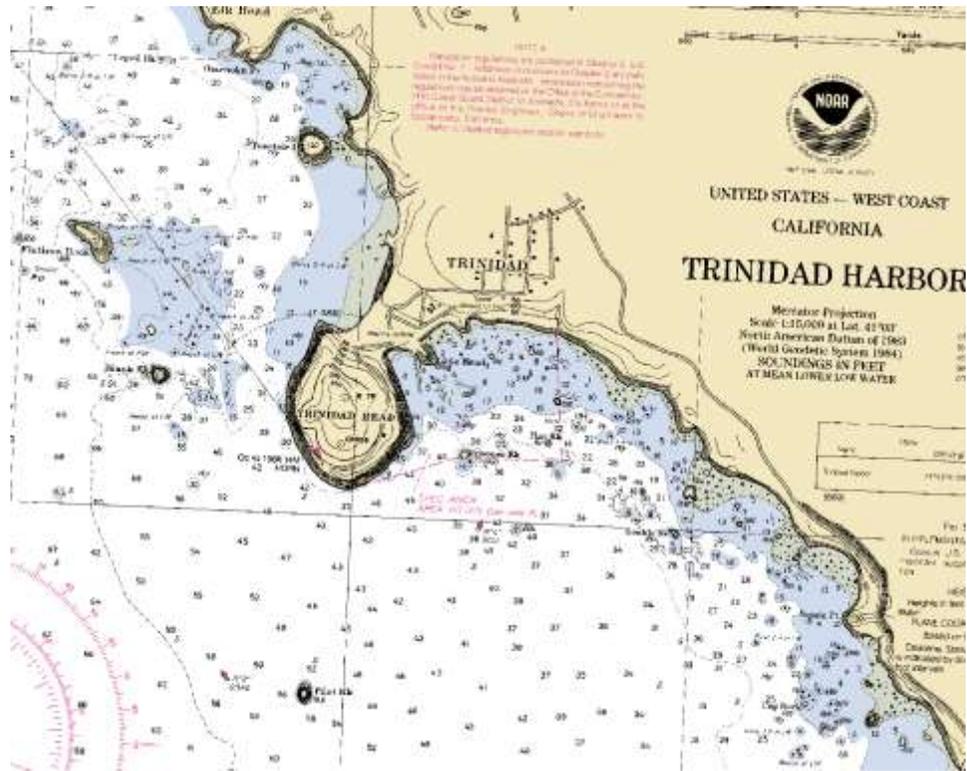
Appendix I – 2 : Harbor Safety Committee of the Humboldt Bay Area Boundary



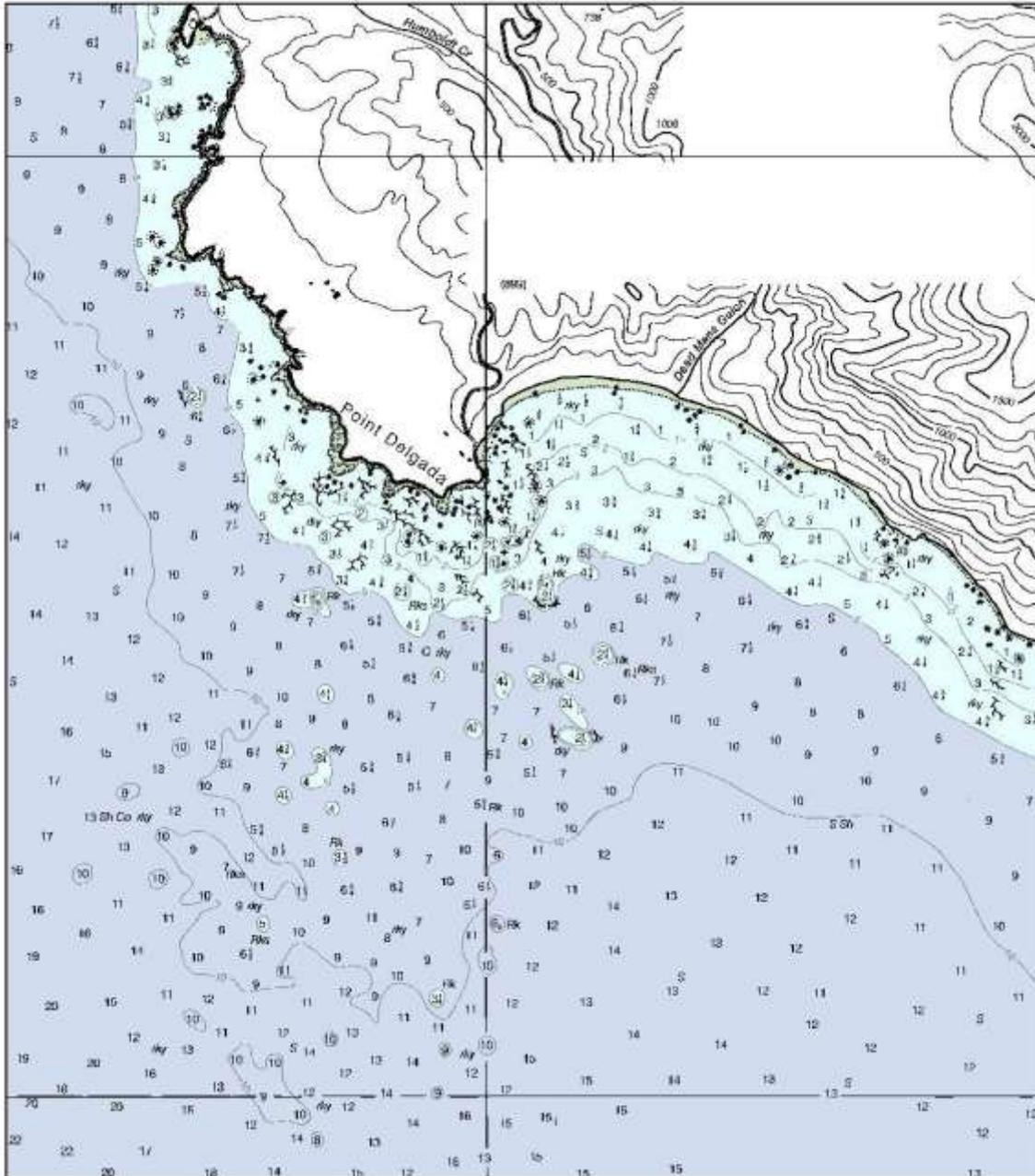
Appendix I – 3 : Humboldt Bay Area Facilities Map



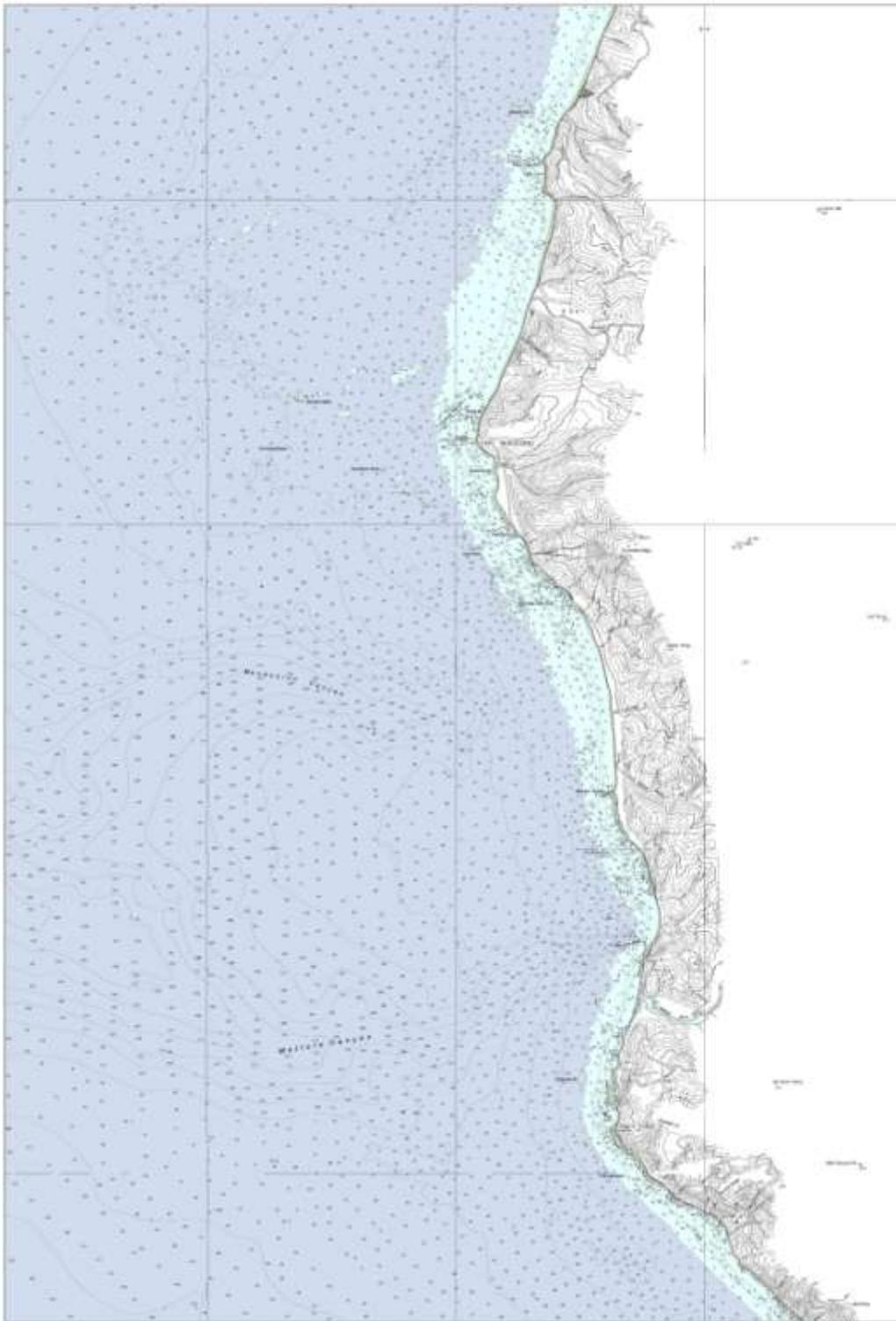
Appendix I – 4 : Humboldt Bay Area



Appendix I – 5 : Trinidad Harbor Area



Appendix I – 6 : Shelter Cove Area



Appendix I – 7 : Cape Mendocino Area

APPENDIX II

DFG - OSPR letter from Mr. Pete Bontadelli, Administrator, approving the originally submitted Harbor Safety Plan.

STATE OF CALIFORNIA—THE RESOURCES AGENCY

PETE WILSON, Governor

DEPARTMENT OF FISH AND GAME

1416 NINTH STREET
P.O. BOX 944209
SACRAMENTO, CA 94244-2090
(916) 445-9326



April 26, 1993

Mr. Don Tuttle, Chairperson
Harbor Safety Committee
Humboldt Bay Area
Department of Public Works
1215 Union Street
Arcata, California 95521

Dear Mr. Tuttle:

It is my pleasure to inform you that the Humboldt Bay Harbor Safety Plan (Plan) is approved in accordance with Section 8670.23 (e) of the Government Code. This approval is based upon the review of the following documents:

1. The Harbor Safety Committee (HSC) of the Humboldt Bay Area "Final Proposal Harbor Safety Plan" January 28, 1993; and,
2. The January 28, 1993 revision of the "HSC Response to OSPR Compliance Review of the Humboldt Bay Area Harbor Safety Plan", originally dated September 24, 1992.

The Office of Oil Spill Prevention and Response (OSPR) has determined that the Plan essentially complies with the draft regulations for HSC plans, addressed in Title 14 of the California Code of Regulations, sections 800 - 802 (once adopted). Additionally, the original Plan (dated September 24, 1993) was subject to a 45-day public review and comment period with a public workshop held in Eureka on December 9, 1992. As a result, no significant comments to the Plan were provided in oral testimony, nor were there any written comments submitted to the OSPR.

My congratulations go to the Humboldt Bay Area HSC for developing this Plan which will enhance the safe navigation and operation of vessels within the Humboldt Bay Area, while reducing the likelihood of an oil spill occurring. My personal thanks to you and the HSC for all of your hard work, dedication, and professionalism in preparing this Plan.

The next step in this planning process is to work closely with the HSC to bring the Plan to full regulatory compliance with the draft regulations and to implement the Plan in an expeditious manner.

Mr. Don Tuttle
April 26, 1993
Page Two

Enclosed is a list of deficiencies that still exist in the Plan that the HSC needs to further address so as to bring the Plan into full compliance. In order to help successfully implement this Plan, these deficiencies need to be addressed in the Plan's first annual review and update by July 1, 1993.

If the HSC feels that addressing the enclosed list of deficiencies by July 1, 1993 is not practicable, please provide an alternative schedule to the OSPR at the address in the letterhead above within two weeks of receipt of this letter.

Should you have any questions or concerns, please contact me at the letterhead address or telephone number or contact Ms. Cathi Slaminski at (916) 327-4724, or Mr. Carl Young at (916) 327-4699.

Once again, I would like to thank you and the HSC for your dedicated service to the State of California and a job well done.

Sincerely,



Pete Bontadelli
Administrator
Office of Oil Spill Prevention
and Response

Enclosure

cc: See Next Page

APPENDIX III

**Excerpt from Lempert-Keene-Seastrand Oil Spill Prevention and Response Act
Government Code section creating Harbor Safety Committees.**

**California Code of Regulations Title 14, Division 1. Subdivision 4, Chapter 3,
Subchapter 1, 800.0. - Harbor Safety Committees.**

Lempert-Keene-Seastrand Oil Spill Prevention and Response Act

TITLE 2. DIVISION 1.

Chapter 7.4. Oil Spill Response and Contingency Planning Article 1. General Provisions

GOVERNMENT CODE SECTION

8670.23. (a) The administrator shall establish Harbor Safety Committees for the Harbors of San Diego; Los Angeles/Long Beach; Port Hueneme; San Francisco, San Pablo, and Suisun Bays; and Humboldt Bay.

(b) The administrator shall appoint to each harbor safety committee, for a term of three years, all of the following members:

- (1) A designee of each of the port authorities within the harbor, except that the Harbor Safety Committee for the Harbor of San Francisco, San Pablo, and Suisun Bays shall have four designees.
- (2) A representative of tank ship operators, except that the Harbor Safety Committee for the Harbors of San Francisco, San Pablo, and Suisun Bays shall have two representatives.
- (3) A representative of the pilot organizations within the harbor.
- (4) A representative of dry cargo vessel operators, except that the Harbor Safety Committee for the Harbors of San Francisco, San Pablo, and Suisun Bays shall have two representatives.
- (5) A representative of commercial fishing or pleasure boat operators.
- (6) A representative of a recognized nonprofit environmental organization that has as a purpose the protection of marine resources.
- (7) A representative of the California Coastal Commission, except that for the Harbor Safety Committee for San Francisco, San Pablo, and Suisun Bays, the administrator shall appoint a representative of the San Francisco Bay Conservation and Development Commission.
- (8) A representative from a recognized labor organization involved with operations of vessels.
- (9) A representative of the Captain of the Port from the Coast Guard, the Corps of Engineers, and the Navy to the extent that each consents to participate on the committee.
- (10) A representative of tug or tank barge operators, who is not also engaged in the business of operating either tank ships or dry cargo vessels, except that the Harbor Safety Committee for San Francisco, San Pablo, and Suisun Bays shall have one representative of tug operators and one representative of tank barge operators, neither of whom shall also be engaged in the business of operating either tank ships or dry cargo vessels.
- (11) A harbor safety committee may petition the administrator with a request for the additional appointment of up to five at large members who are needed to conduct the harbor safety committee business and who reflect the makeup of the local maritime community. The approval of this petition shall be at the sole discretion of the administrator.

(c) The members appointed from the categories listed in paragraphs (1), (2), (3), (4), (8), and (10) of subdivision (b) shall have navigational expertise. An individual is considered to have navigational expertise if the individual meets any of the following conditions:

- (1) Has held or is presently holding a Coast Guard Merchant Marine Deck Officer's license.
- (2) Has held or is presently holding a position on a commercial vessel that includes navigational responsibilities.
- (3) Has held or is presently holding a shoreside position with direct operational control of vessels.
- (4) Has held or is currently holding a position having responsibilities for permitting or approving the docking of vessels in and around harbor facilities.

(d) The administrator shall appoint a chairperson for each harbor safety committee from the membership specified in subdivision (b). Each member of a harbor safety committee shall be reimbursed for actual and necessary expenses incurred in the performance of committee duties.

8670.23.1 (a) Each harbor safety committee established pursuant to Section 8670.23 shall be responsible for planning for the safe navigation and operation of tank ships, tank barges, and other vessels within each harbor. Each committee shall prepare a harbor safety plan, encompassing all vessel traffic within the harbor.

(b) The administrator shall adopt regulations for harbor safety plans in consultation with the committees of those harbors listed in Section 8670.23, and other affected parties. The regulations shall require that the plan contain a discussion of the competitive aspects of the recommendations of the harbor safety committee.

(c) In adopting regulations for harbor safety plans, the administrator shall give highest priority to the development of regulations concerning tugboat escorts as specified in Section 8670.17.2 and shall expeditiously adopt that portion of the regulations so that the Harbor Safety Committee for San Francisco, San Pablo, and Suisun Bays will be able to expeditiously comply with subdivision (b).

(d) The regulations shall ensure that each harbor safety plan includes all of the following elements:

- (1) A recommendation determining when tank vessels are required to be accompanied by a tugboat or tugboats, of sufficient size, horsepower, and pull capability while entering, leaving, or navigating in the harbor. The Harbor Safety Committee for San Francisco, San Pablo, and Suisun Bays shall give its highest priority to the adoption of tugboat escort recommendations and shall immediately adopt interim recommendations prior to the completion of the entire harbor safety plan. The administrator shall be guided by the recommendations of the Harbor Safety Committee when adopting regulations pursuant to Section 8670.17.2.
- (2) A review and evaluation of the adequacy of, and any changes needed in, all of the following:
 - (A) Anchorage designations and sounding checks.
 - (B) Communications systems.
 - (C) Small vessel congestion in shipping channels.
 - (D) Placement and effectiveness of navigational aids, channel design plans, and the traffic and routings from port construction and dredging projects.
- (3) Procedures for routing vessels during emergencies that impact navigation.
- (4) Bridge management requirements.

- (5) Suggested mechanisms to ensure that the provisions of the plan are fully and regularly enforced.
- (6) A recommendation as to whether establishing or expanding VTS systems within the harbors is desirable.
- (7) A recommendation for funding VTS systems and other projects.

(e) Each harbor safety plan shall be submitted to the administrator by December 31, 1991. The administrator shall review the plan for consistency with the regulations and shall approve the plans or give reasons for their disapproval.

(f) Upon approving the harbor safety plans, the administrator shall, in consultation with the harbor safety committees listed in Section 8670.23, implement the plans. The administrator shall adopt regulations necessary to implement the plans. When federal authority or action is required to implement a plan, the administrator shall petition the appropriate federal agency or the United States Congress, as may be necessary.

(g) On or before July 1 of each year, each harbor safety committee shall revise its respective harbor safety plan and report its findings and recommendations to the administrator concerning the safety of its harbor or harbors and any recommendations for improving vessel safety in the harbor or harbors by amending the provisions of the harbor safety plan, or through other means.

8670.23.2. (a) The Legislature hereby finds and declares that because the administrator must rely on the expertise provided by volunteer members of the harbor safety committees and be guided by their recommendations in making decisions that relate to the public safety, members of the harbor safety committees should be entitled to the same immunity from liability provided other public employees.

(b) Members of the harbor safety committees appointed pursuant to Section 8670.23, while performing duties required by this article or by the administrator, shall be entitled to the same rights and immunities granted public employees by Article 3 (commencing with Section 820) of Chapter 1 of Part 2 of Division 3.6 of Title 1. Those rights and immunities are deemed to have attached, and shall attach, as of the date of appointment of the member to the harbor safety committee.

8670.24. (a) The administrator shall evaluate all pilotage areas in the state by January 1, 1992. This evaluation must include all of the following:

- (1) The effectiveness of the state licensing program.
- (2) The policies and procedures for investigating pilot incidents by either the Coast Guard or the State Board of Pilot Commissioners for the Bays of San Francisco, San Pablo, and Suisun.
- (3) The feasibility and desirability of applying a surcharge in addition to other fees for pilotage for the purposes of providing expanded pilot training.

(b) The administrator will contact the various pilotage groups, the Coast Guard, and the maritime industry as part of his or her evaluation process.

CALIFORNIA CODE OF REGULATIONS

TITLE 14, DIVISION 1 SUBDIVISION 4, OFFICE OF OIL SPILL PREVENTION AND RESPONSE CHAPTER 3. OIL SPILL PREVENTION AND RESPONSE PLANNING SUBCHAPTER 1. HARBOR SAFETY COMMITTEES AND HARBOR SAFETY PLANS SECTIONS 800 - 802

Effective 2/9/05

800. DEFINITIONS

In addition to the definitions in Chapter 1, Section 790 of this Subdivision, the following definitions shall govern the construction of this subchapter. Where similar terms are defined, the following will supersede the definition in Chapter 1:

(a) "Vessels" means any watercraft or ship of any kind, including every structure adapted to be navigated from place to place for the transportation of merchandise or persons.

**NOTE: Authority cited: Section 8670.23, Government Code.
Reference: Sections 8670.3, 8670.21 and 8670.23, Government Code.**

800.5. HARBOR SAFETY COMMITTEES

(a) The Administrator shall create harbor safety committees for the harbors and adjacent regions of San Diego Bay; Los Angeles/Long Beach Harbor; Port Hueneme; San Francisco, San Pablo, and Suisun Bays; and Humboldt Bay. In consultation with each harbor safety committee, the Administrator shall determine its geographic region of responsibility which shall be clearly reflected in the committee's plan as described in Section 802(b)(2) of this Subchapter.

(b) In the event that a designee of a port authority is not able to participate as a harbor safety committee member due to military affiliations, the civilian counterpart for that harbor may serve in place of the port authority designee.

(c) All meetings of harbor safety committees, their subcommittees, workgroups or organizations, as defined in Government Code Section 54952, are subject to the open meeting requirements contained in Government Code Sections 54950 through 54962.

**NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code.
Reference: Section 8670.23, Government Code.**

800.6. HARBOR SAFETY COMMITTEE MEMBERSHIP

(a) The Administrator shall appoint to each harbor safety committee, for a term of three years, all of the following members and their alternates:

(1) A designee of each of the port authorities within the region, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region shall have four designees.

- (2) A representative of dry cargo vessel operators, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region may have two representatives.
- (3) A representative of tank ship operators, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region shall have one additional representative of either tank ship operators or marine oil terminal operators.
- (4) For the harbor safety committees for the Los Angeles/Long Beach Harbor region, Port Hueneme region, and Humboldt Bay region a representative of marine oil terminal operators.
- (5) A representative of tug or tank barge operators, who is not also engaged in the business of operating either tank ships or dry cargo vessels, except that the harbor safety committees for the San Francisco, San Pablo and Suisun Bay region and Humboldt Bay region shall have one representative of tug operators and one representative of tank barge operators, neither of whom is also engaged in the business of operating either tank ships or dry cargo vessels.
- (6) For the harbor safety committees for the San Francisco, San Pablo and Suisun Bay region, Los Angeles/Long Beach Harbor region and San Diego Bay region, a representative of scheduled passenger ferry or excursion vessel operators.
- (7) A representative of the pilot organizations within the region, except that the harbor safety committee for the Los Angeles/Long Beach Harbor region shall have two pilot representatives: one a designee of the Port of Los Angeles pilot organization and one a designee of the Port of Long Beach pilot organization. Additionally, the harbor safety committee for the Los Angeles/Long Beach Harbor region shall have one representative of mooring masters who represents all mooring masters operating within the committee's geographic area of responsibility.
- (8) A representative of a recognized labor organization involved with operations of vessels.
- (9) A representative engaged in the business of commercial fishing.
- (10) A representative of pleasure boat operators or a recreational boat organization.
- (11) A representative of a recognized nonprofit environmental organization that has as a purpose the protection of marine resources, except that the harbor safety committee for the Los Angeles/Long Beach Harbor region may have two representatives.
- (12) The United States Coast Guard Captain of the Port and a designee of each of the following federal agencies to the degree that each consents to participate on the committee: the United States Army Corps of Engineers, the National Oceanographic and Atmospheric Administration, and the United States Navy.
- (13) A designee of the California Coastal Commission, except for the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region, where the Administrator shall appoint a designee of the San Francisco Bay Conservation and Development Commission.

(b) A harbor safety committee may petition the Administrator with a request for new or additional membership positions for special needs to conduct ongoing harbor safety committee business and which reflect the makeup of the local maritime community. The qualifications for such positions shall be set either in committee bylaws or on the petition. The approval of such petitions shall be at the sole discretion of the Administrator.

(c) A harbor safety committee may petition the Administrator for the elimination of new or additional membership positions requested and approved pursuant to Subsection (b). The approval of such petitions shall be at the sole discretion of the Administrator.

(d) The members appointed from the categories listed in Subsections (a)(2), (3), (4), (5),(6), and (7) above shall have navigational expertise. An individual is considered to have navigational expertise if the individual meets any of the following conditions:

- (1) Has held or is presently holding a United States Coast Guard Merchant Marine Deck Officer's license.
- (2) Has held or is presently holding a position on a commercial vessel that includes navigational responsibilities.
- (3) Has held or is presently holding a shoreside position with direct operational control of vessels.
- (4) Has held or is currently holding a position having responsibilities for permitting or approving the docking of vessels in and around harbor facilities.

(e) The Administrator shall appoint a chairperson and vice chairperson, for a term not to exceed the balance of their current membership appointment, for each harbor safety committee from the membership specified in Subsection (a) above. The Administrator may withdraw such appointments at his or her sole discretion.

(f) Upon request of the committee chairperson, pursuant to the committee's bylaws, the Administrator may remove a member or alternate appointed under authority of Subsection (a) above.

**NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code.
Reference: Section 8670.23, Government Code.**

801. GENERAL PROVISIONS

(a) Each harbor safety committee shall be responsible for planning for the safe navigation and operation of vessels within its geographic region of responsibility. As part of meeting this responsibility, each committee shall prepare and submit to the Administrator its harbor safety plan which encompasses all vessel traffic within its region and addresses the region's unique safety needs.

(b) All harbor safety plans shall be consistent with both the California Oil Spill Contingency Plan and the National Contingency Plan.

(c) All harbor safety plans shall be in writing and shall include a reference to any federal, state or local laws or regulations if those laws or regulations were relied upon to develop the plan.

(d) Harbor safety plans which meet the requirements of this subchapter shall be implemented by the Administrator in consultation with the respective committee.

(e) On or before July 1 of each year, each harbor safety committee shall assess maritime safety or security within its region, including tank vessel safety, and shall report its findings and recommendations for improvements to the Administrator by amending its current

harbor safety plan or instituting other alternatives to address its findings. All plans shall be reviewed by the Administrator to ensure their compliance with this subchapter.

(f) The Administrator may direct a harbor safety committee to address any issue affecting maritime safety or security, as appropriate, and to report findings and recommendations on those issues.

**NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code.
Reference: Section 8670.23, Government Code.**

802. HARBOR SAFETY PLAN CONTENT

(a) All harbor safety plans shall be written in consideration of the best achievable protection standard as that term is defined in Chapter 1 of this subdivision.

(b) Each harbor safety plan shall include, at a minimum, a discussion of the following:

(1) Tug Escorts

(A) One section of the plan shall be dedicated to the usage of tug escorts in the committee's geographic region of responsibility.

(B) This section shall allow for a case-by-case determination of tug escort usage or need based on specified criteria which include, but are not limited to, all of the following factors:

1. the physical limitations of the tugs;
2. an analysis of commonly encountered weather and sea conditions including, but not limited to, wind, tidal and ocean currents;
3. the type of cargo carried by the tank vessel;
4. a determination of whether or not tug escorts are needed for unladen tank vessels; and
5. the effectiveness of tug escorts in steering and/or stopping assistance for heavily laden tank vessels given the geographic and navigational limitations of that region.

(C) This section shall also include, but not be limited to, all of the following:

1. an outline discussing tug boat capabilities when assisting a tank vessel;
2. a recommendation determining when tank vessels must be escorted by tug(s) while entering, leaving, or navigating in the region;
3. a determination of sufficient size, horsepower, and pull capacity of the tug(s) to assure maximum assistance capability;
4. a comprehensive inventory of the number and types of tugs available for tank vessel escort in each geographic region; and
5. an analysis, including factual data and studies relating to the analysis, which specifies the incidence and location of accidents and the effects of the absence or presence of tug escorts at the time of those accidents.

(D) Each plan shall address its method for performing a continued study of tug escorts, which will rely in part on relevant information solicited by the harbor safety committee from pilots, masters, representatives from towing industries and builders, and other interested parties.

(2) Geographic Region of Responsibility

This section shall provide a written description of each committee's geographic region of responsibility and shall include a large scale chart, or chartlet, illustrating the entire region. The geographic region of responsibility described and illustrated shall be the one approved by the Administrator as outlined in Section 800.5(a) of this Subchapter.

(3) Regional Harbor Conditions

This section shall provide:

(A) a description of existing and expected conditions of weather, tidal ranges, tidal currents (directions and velocities) and other factors which might impair or restrict visibility or impact vessel navigation;

(B) a description of the procedures for routing vessel traffic, and any contingency or secondary routing plans which may be used during construction and dredging operations;

(C) a description of limitations of current anchorages (designations, proximity to heavily used fairways or channels) and any plans, if developed, to address those limitations; and

(D) a description of the current channel design (navigable channel width and advertised dredged depth) and any proposed changes to these plans.

(4) Vessel Traffic Patterns

This section shall provide, to the greatest extent possible:

(A) A description of the types of vessels which call on the ports or facilities within the region; and

1. identification of the types of cargo transported on the vessels; and
2. a determination of the amount of oil annually (using a three year average) shipped into or from the ports or facilities within the region.

(B) a history and types of all accidents and near-accidents which have occurred within the region during the past three years and any corrective actions or programs taken to alleviate recurrences. For purposes of this subsection, "near-accident" shall mean all situations where a risk of collision as defined by 33 USC 2007 existed;

(C) an assessment of current safety problems or conflicts with small vessels, sailing vessels, or vessels engaged in fishing as it relates to

violation of Rule 9 (Narrow Channels Rule) of the Inland Navigational Rules Act (33 USC 2009);

(D) current procedures for routing vessels during emergencies or other contingencies which impact navigation;

(E) a review of existing and proposed federal, state and local laws, regulations or ordinances affecting the region to determine a need for any change;

(F) an assessment of the need for establishing or upgrading existing educational or public awareness programs for all waterway users.

(5) Aids to Navigation

This section shall:

(A) describe any fixed navigational hazards specific to the region and aids to navigation systems in place to minimize risk of contact with these hazards;

(B) evaluate the existing aids to navigation systems available to each region as established and maintained by the United States Coast Guard or other navigational aids as permitted by the United States Army Corps of Engineers, and determine the need for any changes; and

(C) evaluate current programs to determine accurate depth information in navigable channels, anchorages and berths used by tank vessels, and make recommendations necessary to increase the accuracy of such information.

(6) Communication

This section shall:

(A) review and evaluate the adequacy of current ship-to-ship and ship-to-shore communication systems used in the region;

(B) identify any low propagation, or silent areas within the region;

(C) if communication deficiencies exist, develop a strategy to address such deficiencies.

(7) Bridge Management Requirements

(A) This section shall assess the current schedule for bridge openings, the adequacy of ship-to-bridge communications, and the physical limitations affecting vertical and horizontal clearance.

(8) Enforcement

(A) This section shall include suggested mechanisms that will ensure that the provisions of the plan are fully, uniformly and regularly enforced.

(9) Project Funding

This section shall:

(A) provide recommendations for funding projects that the committee intends to recommend or initiate; and

(B) consider the imposition of user fees, and assess existing billing mechanisms as potential funding sources.

(10) Competitive Aspects

This section shall:

(A) identify and discuss the potential economic impacts of implementing the provisions of the harbor safety plan; and

(B) describe the significant differences in the restrictions that could vary from port to port within the region.

(11) Miscellaneous

(A) This section shall address any additional issues deemed necessary by the harbor safety committee that could impact safe navigation in the region including, but not limited to:

1. vessel pilotage;
2. vessel ballast procedures or requirements;
3. vessel mooring requirements;
4. navigation in reduced or restricted visibility; and
5. maintenance dredging necessary for safe vessel operation.

**NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code.
Reference: Section 8670.23, Government Code.**

**CALIFORNIA CODE OF REGULATIONS
TITLE 14, DIVISION 1
SUBDIVISION 4, OFFICE OF OIL SPILL PREVENTION AND RESPONSE
CHAPTER 4. VESSEL REQUIREMENTS.
SUBCHAPTER 4. TANK VESSEL ESCORT REGULATIONS
FOR HUMBOLDT BAY
SECTIONS 851.80 - 851.86**

Effective March 29, 1997

Article 1. General Provisions and Definitions.

851.80. Purpose and Scope.

The regulations in this subchapter set forth tank vessel escort requirements for tank vessels entering, shifting within, or leaving Humboldt Bay.

"Humboldt Bay" encompasses those harbor boundaries which include all submerged lands of Humboldt Bay (Inner Harbor); and the open water boundary defined as the area centered on the Humboldt Bay Sea Buoy and extending radially outward for a distance of one mile then landward to the perpendicular intersection with the north and south spits.

The escort tug requirements specify that tank vessels carrying as cargo a total volume of oil greater than or equal to 5,000 long tons or 5% of the vessel's deadweight tonnage, whichever is less, shall be escorted by a suitable escort tug(s).

The escort tug(s) shall be used to influence the speed and direction of travel of a tank vessel in the event of a steering or propulsion failure, thereby reducing the possibility of groundings or collisions and the risk of an oil spill from these tank vessels.

The Administrator shall review the tug/tank vessel matching criteria and other requirements of this subchapter within two years of the effective date of this subchapter. The review will include a survey of the tank vessel-related incidents in U.S. waters to determine the type of failures that have occurred, an assessment of tug technology and any advances made in design and power, and the escort tug-related rules and policies that are implemented by other coastal states and maritime organizations. At the conclusion of the review, the Administrator will determine whether it is necessary to modify the tug/tank vessel match criteria or any other requirements of this subchapter.

**Note: Authority: Sections 8670.17.2 and 8670.23.1, Government Code.
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.**

851.81. Definitions.

In addition to the definitions found in Government Code Section 8670.3 and Chapter 1, Section 790 of this subdivision, the following definition shall apply to this subchapter. Where similar terms are defined, the following will supersede the definition in Chapter 1:

(a) "Bona fide sister tug" means a tug which has not had its bollard pull capabilities verified by a member of the International Association of Classification Societies, but is

constructed and maintained with the same hull form, engines, type of propulsion, stability, maneuverability, speed, power, and endurance of a tested and certified escort tug.

Note: Authority: Sections 8670.17.2 and 8670.23.1, Government Code.
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.

851.82. Escort Tug Requirements for Tank Vessels.

(a) Escort tugs, alone or in combination, must have total ahead bollard pull in pounds greater than or equal to the tank vessel's deadweight tonnage. When required under this subsection and subsection 851.85(j)(2), additional escort tugs shall stand by during transit and be prepared to render assistance.

(b) All tankers transiting the waters of Humboldt Bay, carrying as cargo a total volume of oil greater than or equal to 5,000 long tons or 5% of the vessel's deadweight tonnage, whichever is less, shall use a minimum of one escort tug. For purposes of this subchapter, oil spill response vessels, and offshore supply vessels as defined in 46 USC 2101, are not required to engage escort tugs in accordance with this subchapter.

(c) All tank barges transiting the waters of Humboldt Bay, carrying as cargo a total volume of oil greater than or equal to 5,000 long tons or 5% of the vessel's deadweight tonnage, whichever is less, shall use at least one escort tug, in addition to the barge's line-haul tug. For purposes of this subchapter, oil spill response vessels, and offshore supply vessels as defined in 46 USC 2101, are not required to engage escort tugs in accordance with this subchapter.

Note: Authority: Sections 8670.17.2 and 8670.23.1, Government Code.
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.

851.83. Requirements for Escort Tug Crew Members.

Any escort tug used to comply with the requirements of this subchapter, must meet crew standards as follows:

(a) Escort tug operators shall, at a minimum, be duly licensed Operators of Uninspected Towing Vessels as set forth in Title 46, Code of Federal Regulations (CFR), Section 10.464.

(b) Escort tug crews shall have a minimum of two certified deck hands. An engineer, if employed, may not be included as a deck hand. This requirement does not preclude additional deck hands who are gaining experience for certification, but such deck hands cannot be used to meet the manning requirements of this section.

(c) Escort tug crews shall possess Coast Guard license(s)/document(s) appropriate for the escort tug and service.

Note: Authority: Sections 8670.17.2 and 8670.23.1, Government Code.
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.

851.84. Requirements for Escort Tugs.

All escort tugs approved for use under this subchapter shall be equipped with and shall maintain in good working order:

- (a) Primary and secondary VHF radios;
- (b) 300 feet of tag line;
- (c) Power line-handling equipment fore and aft for rapid, mechanically assisted deployment of lines. The primary winch shall be in the position best suited for the design of the particular vessel in escort service;
- (d) Tow line with a "safe working load" that is 2.5 times the certified bollard pull rating of the escort tug;
- (e) One working radar;
- (f) Fendering as follows:
 - (1) appropriate to absorb the impact inherent in hull-to-hull operations;
 - (2) located at both the bow and stern to act as pivot points when pulling away from the tank vessel;
 - (3) sufficient to assure that there are no exposed corners, large holes or metal parts which could inflict damage on the escorted vessel; and
 - (4) sufficient surface area to minimize sliding when working at an angle.

Note: Authority: Sections 8670.17.2 and 8670.23.1, Government Code.
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.

851.85. Requirements During Tank Vessel Escorts.

- (a) Escort tugs shall maintain a station-keeping distance from the tank vessel being escorted of no further than 1,000 feet ahead or aside, or 500 feet astern of the tank vessel while engaged in the escort activity.
- (b) An escort tug shall not simultaneously engage in the escort of more than one tank vessel.
- (c) The speed or speeds selected for the transit must permit stationing the escort tug to allow the escort tug to effectively influence the tank vessel's movement in the event of a casualty.
- (d) A tanker shall have sufficient and qualified line-handling-capable crew members standing by and available to immediately receive lines from each escort tug. In addition, the tanker shall comply with all applicable federal regulations relating to anchor readiness.
- (e) The line-haul tug for a tank barge shall have sufficient and qualified line-handling-capable deck hands standing by available to receive lines from each escort tug. When the tank barge is fitted with an emergency tow wire or comparable, adequate mechanical device, or the escort tug is made fast to the tank barge, crew transfers shall not be required.

(f) Tank vessels shall have sufficient and qualified direct supervision of line-handling-crew operations. Supervisors shall have direct radio communication capability with the bridge of the tank vessel or vessel towing a barge.

(g) The master of any tank vessel shall maintain, at all times for which escort tug services are required, direct two way radio communications on VHF-FM with the master of the escort tug on a channel agreed to by both the master of the tank vessel and the master of the escort tug providing escort services.

(h) Notwithstanding any other provision of this subchapter, all escort tugs in Humboldt Bay which meet the requirements of this subchapter for the escort of tank vessels shall have their bollard pull (ahead and astern) measured, except as provided in (i) below.

(1) Bollard pull measurements shall be verified by a member of the International Association of Classification Societies.

(2) Bollard pull measurements verified by a member of the International Association of Classification Societies in other ports of the State shall meet the requirements of this section, provided that evidence of the results of these measurements are on file with the Humboldt Bay Harbor District.

(3) Escort tug companies shall provide the Humboldt Bay Harbor District with the results of the bollard pull measurements verified pursuant to the provisions of this subchapter.

(4) Escort tugs whose bollard pull has not been measured and verified or are not within the scope of the definition of "bona fide sister tug", shall not be used for the escort of tank vessels in Humboldt Bay.

(i) An escort tug determined by the master/pilot to be a "bona fide sister tug" may be used with the same (ahead and astern) bollard pull as the certified sister tug.

(j) The braking force shall be re-measured after any modifications and/or repairs to the main engines, hull, shaft-drive line, or steering, that could affect the bollard pull. The new measurements must be registered with the Humboldt Bay Harbor District

(k) Escort tugs that submit to the Escort Tug Inspection Program, as described in Sections 851.8(a)(4)(B) and 851.23(a)(7)(B), can perform escort duties in any port in the state, if the tugs meet the requirements of the appropriate subchapter (i.e., Subchapter 1, San Francisco Bay Region; Subchapter 2, Los Angeles/Long Beach Harbor; Subchapter 3, Port Hueneme Harbor; Subchapter 4, Humboldt Bay; Subchapter 5, San Diego Harbor), of this Chapter 4 of the California Code of Regulations.

(l) Notwithstanding any other provision of this subchapter:

(1) The tank vessel master remains responsible for the safe navigation and maneuvering of the tank vessel in all circumstances. The requirements outlined in this subchapter are in addition to, and not a limitation of, any other responsibilities created by custom, law, or regulation.

(2) Where an emergency exists, the tank vessel master may adjust the minimum escort tug requirements contained in this subchapter. For purposes of this subchapter, an emergency is defined as any of, but is not limited to, the following:

(A) imminent and immediate danger to the tank vessel, its cargo or its crew;

(B) imminent and immediate danger to a marine terminal, service or escort tug;

(C) imminent and immediate danger to a vessel in the proximity of the escorted vessel; or

(D) any emergency declared by the United States Coast Guard Captain of the Port which would necessitate a modification to the provisions set forth in this subchapter.

Note: **Authority: Sections 8670.17.2 and 8670.23.1, Government Code.**
Reference: Sections 8670.17.2 and 8670.23.1, Government Code.

APPENDIX IV

REGULATIONS AND CAPTAIN OF THE PORT ADVISORIES

A. Code of Federal Regulation Title 33 Navigation and Navigable Waters Section 165.1195 Regulated Navigation Area; Humboldt Bay Bar Channel and Humboldt Bay Entrance Channel, Humboldt Bay, California.

B. COTP NOTICE 02-92; Enforcement of Navigation Rules in Humboldt Bay
Rule 9 - Navigation Rules for Narrow Channels.

Code of Federal Regulation Title 33

Navigation and Navigable Waters

33 CFR

§ 165.1195 Regulated Navigation Area; Humboldt Bay Bar Channel and Humboldt Bay Entrance Channel, Humboldt Bay, California.

(a) *Location.* The Regulated Navigation Area (RNA) includes all navigable waters of the Humboldt Bay Bar Channel and the Humboldt Bay Entrance Channel, Humboldt Bay, California.

(b) *Definitions.* As used in this section—

COTP means the Captain of the Port as defined in Title 33, Code of Federal Regulations, Section 1.01–30 and 3.55–20.

Sector means Coast Guard Sector/Air Station Humboldt Bay.

Sector Commander means the Commanding Officer of Coast Guard Sector/Air Station Humboldt Bay.

Hazardous material means any of the materials or substances listed in 46 CFR 153.40.

Humboldt Bay Area means the area described in the location section of this regulation.

Oil means oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

Station means Coast Guard Station Humboldt Bay.

Tank Vessel means any vessel that is constructed or adapted to carry, or that carries, oil or hazardous material in bulk as cargo or cargo residue.

(c) *Applicability.* These regulations apply to the owners and operators of tank vessels transporting oil or hazardous material as cargo within the Humboldt Bay Area.

(d) *Regulations.*

(1) In addition to the arrival and departure notification requirements listed in title 33 CFR, part 160, Ports and Waterways Safety—General, subpart C—Notifications of “Arrivals, Departures, Hazardous Conditions, and Certain Dangerous Cargoes”, the owner, master, agent or person in charge of a vessel to which this notice applies shall obtain permission to cross within four hours of crossing the Humboldt Bay Bar. Between 6:30 a.m. and 10 p.m., notification/requests for permission can be made to Station Humboldt Bay on VHF-FM Channel 16, or at (707) 443–2213. If between 10 p.m. and 6:30 a.m., or if unable to reach the Station, notification/requests for permission can be made directly to Sector/Air Station Humboldt Bay on VHF-FM Channel 16 or at (707) 839–6123.

(2) Permission for a bar crossing by vessels or towing vessels and their tows to which this regulation applies is dependent on environmental and safety factors, including but not limited to: Sea state, winds, visibility, size and type of vessel or tow, wave period, time of day/night, and tidal currents. The final decision to close the bar rests with Humboldt Bay Sector Commander or his designated representative. At a minimum, Humboldt Bay Bar Channel crossings by vessels subject to this advisory will generally not be permitted unless all of the following conditions exist: Proper permission to cross has been received, sea conditions at the bar are less than 6 feet, winds at the bar are less than 30 knots, the transit will take place during daylight hours, the vessel has only a single tow or no tow, the visibility at the bar is greater than 1,000 yards, and the vessel and tow are in proper operating condition.

(3) If the bar is closed to vessels to which this regulation applies, waiver requests will be accepted within four hours of crossing the entrance channel. If the waiver request is made between 6:30 a.m. and 10 p.m., the request should be made to Station Humboldt Bay on VHF-FM Channel 16, or at (707) 443–2213. If between 10 p.m. and 6:30 a.m., or if unable to reach the Station, the request can be made directly to Sector/Air Station Humboldt Bay on VHF-FM Channel 16 or at (707) 839–6123. Waiver requests must be made by the vessel master and must provide the following: A description of the proposed operation, the conditions for which the waiver is requested, the reasons for requesting the waiver, the reasons that the requester believes the proposed operation can be accomplished safely, and a callback phone number. The Station or Sector Watchstander receiving the request will brief the Officer

in Charge of the Station who will then brief the Sector Commander. The authority to grant waivers rests with the Sector Commander or his designated representative.

(4) In addition to the requirements in paragraphs (d)(1)–(3) of this section, vessels transporting liquefied hazardous gases or compressed hazardous gases in bulk as cargo into or out of Humboldt Bay are required to be aided by two assist tugs. If the vessel carrying the gases is towed, the assist tug requirement is in addition to the towing tug. The assist tugs shall escort the vessel through its transit and must be stationed so as to provide immediate assistance in response to the loss of power or steering of the cargo vessel, its towing tug, or loss of control over the tow.

(5) Vessels to which this regulation applies may be required by the Sector Commander or his designated representative to be escorted by a Coast Guard vessel during their transit. In addition, if a vessel master, agent, or pilot has concerns about the safety of a vessel's transit through the Humboldt Bay Entrance Channel, a Coast Guard escort may be requested. Requests for an escort should be directed to Station on VHF-FM channel 16 or at (707) 443–2213 between 6:30 a.m. and 10 p.m., or to Sector on VHF-FM channel 16 or at (707) 839–6123 if between 10 p.m. and 6:30 a.m.

(e) *Enforcement.* Acting as a representative of the Captain of the Port, the Humboldt Bay Sector Commander will enforce this regulation and has the authority to take steps necessary to ensure the safe transit of vessels in Humboldt Bay. The Sector Commander can enlist the aid and cooperation of any Federal, State, county, and municipal agency to assist in the enforcement of the regulation. All persons and vessels shall comply with the instructions of the Sector Commander or the designated on-scene patrol personnel. Patrol personnel comprise commissioned, warrant, and petty officers of the Coast Guard onboard Coast Guard, Coast Guard Auxiliary, local, State, and Federal law enforcement vessels. Upon being hailed by U.S. Coast Guard patrol personnel by siren, radio, flashing light, or other means, the operator of a vessel shall proceed as directed.

[CGD11–05–006, 70 FR 49492, Aug. 24, 2005]

U.S. Department
of Transportation
**United States
Coast Guard**



Commanding Officer Building 14
U. S. Coast Guard Coast Guard Island
Marine Safety Office Alameda, CA 94501
San Francisco Bay (510) 437-3073

COTPNOTE 02-92
APR 15 1992

CAPTAIN OF THE PORT, SAN FRANCISCO PUBLIC NOTICE 02-92

Subj: ENFORCEMENT OF NAVIGATION RULES IN HUMBOLDT BAY

PURPOSE: This notice provides a listing of the major deep draft channels in Humboldt Bay and adjacent waters which the Captain of the Port considers to be "narrow channels or fairways" within the meaning of the International and Inland Rules of the Road.

DISCUSSION: Rule 9, in both the International and Inland Rules of the Road, provides requirements for vessels navigating in the vicinity of narrow channels or fairways. Vessels and powerboats less than 20 meters (approximately 65 feet), all sailboats and vessels engaged in fishing shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. The term "shall not impede" means a small craft must keep well clear and not hinder or interfere with the transit of larger vessels. Small craft and fishing vessels shall not anchor or fish in narrow channels if large vessels or barges being towed are transiting. The "shall not impede" requirement does not change the traditional give-way or stand-on assignment between vessels.

Coast Guard enforcement efforts, combined with a public education and information program, are further intended to draw public attention to the serious hazards created when large vessels are impeded by smaller vessels. This effort should result in an improved level of navigational safety and reduce the risk of collisions, groundings and their potential consequences.

The listing of channels is not all inclusive, but it identifies areas where deep draft commercial and public vessels routinely operate. The Captain of the Port considers the following areas to be "narrow channels or fairways" for the purpose of enforcing the International and Inland Rules of the Road:

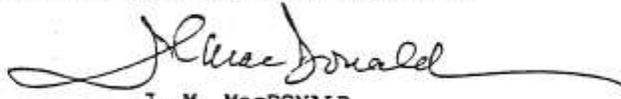
- a. Humboldt Bay Bar Channel in its entirety.
- b. Humboldt Bay Entrance Channel in its entirety
- c. Fields Landing Channel in its entirety.
- d. North Bay Channel in its entirety.

COTPNOTE 02-92
APR 15 1992

Subj: ENFORCEMENT OF NAVIGATION RULES IN HUMBOLDT BAY

- e. Eureka Channel; Outer Reach and Inner Reach in its entirety.
- f. Samoa Channel in its entirety.
- g. All other government maintained channels and turning basins.

Rules of the Road Enforcement: Timely reporting and enforcement of Rules of the Road infractions promotes safer navigation. Vessel masters, pilots and operators are encouraged to report incidents which merit investigation. Reports will be fully investigated and may result in license suspension or revocation proceedings or the assessment of civil penalties.



J. M. MacDONALD
Captain, U. S. Coast Guard
Captain of the Port

U.S. Department
of Transportation
United States
Coast Guard



NAVIGATION RULES

INTERNATIONAL—INLAND

—INLAND—

Steering and Sailing Rules

RULE 9

Narrow Channels

(a)(i) A vessel proceeding along the course of a narrow channel or fairway shall keep as near to the outer limit of the channel or fairway which lies on her starboard side as is safe and practicable.

(ii) Notwithstanding paragraph (a)(i) and Rule 14(a), a power-driven vessel operating in narrow channels or fairways on the Great Lakes, Western Rivers, or waters specified by the Secretary, and proceeding downbound with a following current shall have the right-of-way over an upbound vessel, shall propose the manner and place of passage, and shall initiate the maneuvering signals prescribed by Rule 34(a)(i), as appropriate. The vessel proceeding upbound against the current shall hold as necessary to permit safe passing.

(b) A vessel of less than 20 meters in length or a sailing vessel shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway.

(c) A vessel engaged in fishing shall not impede the passage of any other vessel navigating within a narrow channel or fairway.

(d) A vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel which can safely navigate only within that channel or fairway. The latter vessel shall use the danger signal prescribed in Rule 34(d) if in doubt as to the intention of the crossing vessel.

(e)(i) In a narrow channel or fairway when overtaking, the vessel intending to overtake shall indicate her intention by sounding the appropriate signal prescribed in Rule 34(c) and take steps to permit safe passing. The overtaken vessel, if in agreement, shall sound the same signal. If in doubt she shall sound the danger signal prescribed in Rule 34(d).

(ii) This Rule does not relieve the overtaking vessel of her obligation under Rule 13.

(f) A vessel nearing a bend or an area of a narrow channel or fairway where other vessels may be obscured by an intervening obstruction shall navigate with particular alertness and caution and shall sound the appropriate signal prescribed in Rule 34(e).

(g) Every vessel shall, if the circumstances of the case admit, avoid anchoring in a narrow channel.

APPENDIX V

HARBOR SAFETY COMMITTEE OF THE HUMBOLDT BAY AREA BY-LAWS

As Amended 17 March 2011

Article I: Name

Section 1. The Harbor Safety Committee of the Humboldt Bay Area (hereinafter referred to as the Committee).

Article II: Purpose

Section 1. The Committee is established pursuant to Section 8670.23 of the Government Code and Title 14, California Code of Regulations, Sections 800-802, and is responsible for planning for the safe navigation and operation of tank ships, tank barges, and other vessels within the harbor, and making recommendations to the Administrator of the Office of Spill Prevention and Response (OSPR), hereinafter referred to as the Administrator.

Article III: Membership

Section 1. Membership Categories

- a. Members shall be selected from local representatives of organizations or companies in the Humboldt Bay Area region whenever possible.
- b. The Committee shall consist of members and their alternates appointed by the Administrator as follows:
 1. One designee representing the port authority within the harbor;
 2. One representative of tank ship operators;
 3. One representative of the pilot organization within the harbor;
 4. One representative of dry cargo vessel operators;
 5. One representative of commercial fishing;
 6. One representative of pleasure boat operators;
 7. One representative of a recognized Tribal/nonprofit environmental organization that has as a purpose the protection of marine resources;
 8. One representative of the California Coastal Commission;
 9. One representative from a recognized labor organization involved with operations of vessels;
 10. One representative of tug or tank barge operators, neither of whom shall also be engaged in the business of operating either tank ships or dry cargo vessels;
 11. One representative from Local Law Enforcement;

12. One representative from Marine Oil Terminal Operators;
 13. One representative from Coast Guard Sector Humboldt Bay;
 14. One representative from each of the following: Captain of the Port from the U.S. Coast Guard; U.S. Army Corps of Engineers; the National Oceanographic and Atmospheric Administration, and the U. S. Navy, to the extent that each consents to participate on the committee.
- c. Appointees filling membership categories identified in items b1 through b12, above, are specified as appointed members.
 - d. Committee may petition the Administrator with a request for new or additional membership positions for special needs to conduct ongoing harbor safety committee business and which reflect the makeup of the local maritime community. The qualifications for such positions shall be set either in committee bylaws or on the petition. The approval of such petitions shall be at the sole discretion of the Administrator.
 - e. Committee may petition the Administrator for the elimination of new or additional membership positions requested and approved pursuant to Subsection d above. The approval of such petitions shall be at the sole discretion of the Administrator.

Section 2. Membership Qualifications

The members appointed from the categories listed in Section 1b (2), (3), (4), and (10) shall have navigational expertise. An individual is considered to have navigational expertise if the individual meets any of the following conditions:

- a. Has held or is presently holding a Coast Guard Merchant Marine Deck Officer's license;
- b. Has held or is presently holding a position on a commercial vessel that includes navigational responsibility;
- c. Has held or is presently holding a shore side position with direct operational control of vessels;
- d. Has held or is currently holding a position having responsibilities for permitting or approving the docking of vessels in and around harbor facilities.

Section 3. Term of Membership for Appointed Members

- a. A member shall be appointed for a three-year term.
- b. A member's appointment shall be terminated as a result of any of the following circumstances:

1. The member retires from, or otherwise leaves employment under which he/she was appointed. Members who leave their employer may, if qualified under their new employment, apply for the seat they vacated or, if qualified, apply for another Committee seat that becomes vacant.
 2. The member undergoes a change in work responsibilities which alters the constituency which he/she represents, or alters their qualifications for the position.
 3. The member voluntarily resigns for any reason.
 4. A member is removed by the Administrator for any reason under Section 6 below.
- c. A member impacted by any of the conditions identified in items 1-4 above is expected to submit their resignation to the Chair (with a copy to the Administrator) within five working days.
- d. Any incumbent completing his/her three-year term may re-apply.

Section 4. Alternates for Appointed Members

- a. The alternate representative shall be appointed by the Administrator. Only one alternate shall be appointed for each primary member, and only the appointed alternate is accorded proxy powers. The alternate shall be selected from the same membership category as the primary member, and shall meet the same qualifications. The appointed alternate may vote, participate in, or take any other action on behalf of the primary member consistent with the Committee's bylaws and any applicable statutory or regulatory provisions.
- b. An alternate may vote only in the absence of the primary member.
- c. Except as noted in Section 5d, below, an alternate's term expires when the primary member's term expires.
- d. When a primary members resigns or is removed, an alternate may serve until such time as a new primary member is appointed.
- e. When possible, the primary member should be allowed to recommend their alternate;
 1. If there is more than one applicant for a position, the primary member and the Administrator should consider the other applicants when selecting alternates. The Administrator shall consider diversity of organizations within each membership category when selecting alternates.

Section 5. Attendance of Appointed Members

- a. Attendance of scheduled Committee meetings is expected. The standard of attendance is determined as follows:
 1. For each appointed membership category team consisting of a primary

- member and alternate, missing three consecutive meetings is considered to be not meeting the standard of attendance.
2. For a primary member with no alternate, missing four consecutive meetings is considered to be not meeting the standard of attendance.
- b. The Committee Chair shall review the meeting attendance records on a regular basis and shall inquire about members and teams with excessive absences.
 - c. The Chair may make an exception to the attendance standards for a member experiencing extenuating circumstances.

Section 6. Member Removal

- a. Circumstances may arise which require that a Committee member voluntarily resign or be removed from their position. Such events include:
 1. Failing to meet attendance standards, as set in Section 5;
 2. Falsifying application materials;
 3. The member's term ending prematurely due to meeting one of the conditions described in Article III, Section 3, items b1 and b2.
- b. A member who demonstrates any of the three criteria listed above is expected to voluntarily tender his written resignation to the Chair (with a copy to the Administrator) within five working days of being informed of this condition. If the expected resignation is not forthcoming, the Chair shall privately contact the member, explain which bylaw(s) has been violated, and seek the member's resignation. If the request is not honored within ten working days, the Chair shall write to the member (with a copy to the Administrator), explaining which bylaw(s) has been violated and, again, request a resignation. If the resignation is not offered within 15 working days, the Harbor Safety Committee may request the Administrator in writing (with a copy to the member) of the situation, identify which bylaw(s) has been violated, and seek the Administrator's assistance in removing the recalcitrant member.
- c. The Chair shall announce at the next full meeting the resignation or removal of any member.

Article IV: Officers

Section 1. The Administrator shall appoint a Chairperson and vice chairperson, for a term not to exceed the balance of their current membership appointment, from the membership specified in Article III.

Section 2. An Executive Secretary (Secretariat) shall be contracted by the Administrator. The Secretariat shall serve as the Administrative staff to the Committee.

Article V: Subcommittees and Work Groups

Section 1. The Committee may establish Subcommittees and Work Groups, as it deems necessary. Meetings shall be duly noticed and open to the public in accordance with Article VII to receive maximum participation.

Section 2. The Chair of the Harbor Safety Committee shall appoint the chairperson of Subcommittees and Work Groups. The Chair may appoint Subcommittee members.

Section 3. Subcommittees should be composed of an uneven number of voting Committee members with no fewer than three people on a subcommittee. Vote by the majority of the subcommittee members present shall be necessary to pass a recommendation of the subcommittee. If a majority of Committee members are voting at a subcommittee meeting, that meeting should be noticed as a meeting of the full Harbor Safety Committee.

Section 4. Work Groups may be composed of any number of participants. Work Groups should operate by consensus of those present, including interested members of the public.

Section 5. Subcommittees and Work Groups may make recommendations to the full Committee, which will vote on the recommendations as detailed in Article VIII. Recommendations should be made in writing and provided to the Committee prior to any vote on the matter.

Article VI: Recommendations from Committee

Section 1. The Committee shall make recommendations or requests of the Administrator on rules, regulations, guidelines and policies on Harbor Safety. The Committee shall make recommendations or requests to other federal, state or local agencies.

Section 2. The Committee shall prepare and submit a Harbor Safety Plan and annual updates to the Administrator by June 30 of each year or as directed otherwise by the Administrator.

Article VII: Meetings

Section 1. Governing rules for meetings shall be the Ralph M. Brown Act (Open Meetings for Local Legislative Bodies), the Humboldt Bay Area HSC bylaws, and Robert's Rules of Order.

Section 2. Each Committee member and alternate shall be provided a copy of the Humboldt Bay Area HSC bylaws and the Harbor Safety Plan. Upon request, Committee members and alternates, as well as interested parties, shall be provided a copy of the Brown Act.

Section 3. The Committee normally meets bi-monthly at the Humboldt Bay Harbor District office.

Section 4. Quorum

A quorum of a simple majority of voting members excluding federal agencies must be present in order that business can be legally transacted. Should a quorum not be present the Committee can proceed as a Committee of the whole, but cannot take action on any item.

Section 5. Agenda for Meetings:

- a. An agenda drafted by the Secretariat in consultation with the Committee Chair shall be prepared for each meeting of the Committee. The agenda shall be distributed no fewer than seven (7) days prior to the scheduled meeting and shall comply with all provisions of the Brown Act.
- b. In accordance with the Brown Act, agendas for full Committee meetings shall be posted 72 hours in advance at the Secretariat's office. Posting shall be visible from the outside of the building.
- c. Agendas shall include a brief general description of each item to be discussed, including whether voting action is anticipated to be taken on an item.
- d. Each agenda item that requires Committee action shall include time for public comment.
- e. The Committee may take action on an item not appearing on the agenda by determining that an immediate need exists and it came to the attention of the Committee after the agenda was distributed. This determination must be approved by a two-thirds (2/3 rd) vote of all appointed Committee members, if less than two-thirds (2/3rd) of all appointed members are in attendance by a unanimous vote of those appointed members present.
- f. A Committee member or member of the public can discuss an item not on the agenda under New Business/Public Comments. However, no action by the Committee can be taken until such time as the item is duly noticed at a regular or special meeting, and time has been allotted to receive public input prior to Committee action.

Article VIII: Voting

Section 1. Voting

- a. The Humboldt Bay Area Harbor Safety Plan annual review shall be approved by two-thirds (2/3rd) of the appointed Committee members or their alternates.

- b. With the exception of items specified in Section 1a of this Article, Article VII, Section 5e and Article IX, passage of any item subject to a vote by committee members shall require a simple majority of appointed members, or their alternates present at a meeting. No action shall be taken on any item which is not on the agenda provided pursuant to Article VII, Section 5, except as allowed by Article VII, Section 5e.
- c. Due to the advisory nature of the Committee and its selected representatives, members shall not be excused from voting in case of potential conflict of interest.

Article IX: Bylaws Review, Acceptance and Amendments

Section 1. Enactment of Bylaws

To enact bylaws, the proposed bylaws must be:

- a. Included as an agenda item at a regular meeting
- b. Noticed to the public in accordance with Article VII, Section 5, of these bylaws.
- c. Be approved by a two-thirds (2/3rd) of the appointed Committee members or their alternates.

Section 2. Bylaws Status

The bylaws shall become effective after Committee approval and shall continue in force until amended or repealed.

Article X: Certification

I certify that these bylaws were approved by the Harbor Safety Committee of the Humboldt Bay Area on 17 March 2011, at Eureka, California, by a vote of 7 yea to 0 nay. This document is true and correct, and constitutes the official bylaws governing the Committee. These bylaws shall remain in force until amended or repealed in accordance with Article IX.

David Hull, Chair
Date: 17 March 2011

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APPENDIX VI

AIDS TO NAVIGATION

For positions and specific description refer to the most current Humboldt Bay Navigational Chart (18622); Point Arena to Trinidad Head Navigational Chart (18620); Trinidad Head to Cape Blanco Navigational Chart (18600); current Light Lists are also available via the internet at <http://www.navcen.uscg.gov/?pageName=lightLists>

Light List corrected through LNM week: 01/17

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
CALIFORNIA - Seventh District							
SAN FRANCISCO TO POINT ARENA (Chart 18840)							
385	Point Reyes Light	37-59-44.193N 123-01-23.358W	Fl W 5s	265	14	Cylindrical structure on top of square building. 37	HORN: 1 blast ev 30s (3s bl), operates continuously.
390	NOAA Environmental Buoy 46013	38-14-17.031N 123-19-26.606W	Fl (4)Y 20s		4	Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.
395	Bodega Head Lighted Whistle Buoy 30	38-17-08.000N 123-04-13.000W	Fl R 6s		4	Red.	
415	Arena Cove Lighted Bell Buoy A	38-54-39.209N 123-43-34.973W	Mo (A) W		4	Red and white stripes with red spherical topmark.	
420	Point Arena Light	38-57-17.127N 123-44-26.158W	Fl W 15s	155	14	Light House 115	
POINT ARENA TO TRINIDAD HEAD (Chart 18820)							
430	Albion River Lighted Whistle Buoy AR	39-13-36.641N 123-47-18.182W	Mo (A) W		4	Red and white stripes with red spherical topmark.	
435	Little River Bell Buoy LR	39-15-57.073N 123-49-02.512W				Red and white stripes with red spherical topmark.	
440	Mendocino Bay Whistle Buoy MB	39-17-51.930N 123-48-44.074W				Red and white stripes with red spherical topmark.	
445	NOAA Environmental Lighted Buoy 46014	39-14-00.097N 123-59-00.431W	Fl (4)Y 20s			Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.
SAN DIEGO TO CAPE MENDOCINO (Chart 18820)							
448	Dart Tsunami Warning Lighted Buoy Station 46411	39-20-24.000N 127-00-25.000W	Fl (4)Y 20s				Aid maintained by National Oceanic and Atmospheric Administration.
POINT ARENA TO TRINIDAD HEAD (Chart 18820)							
450	Point Cabrillo Light	39-20-54.893N 123-49-33.772W	Fl W 10s	81	22	Light House 47	Emergency light of reduced intensity when main light is extinguished.
455	Noyo Approach Lighted Whistle Buoy NA	39-25-55.071N 123-49-59.493W	Mo (A) W		4	Red and white stripes with red spherical topmark.	
465	Point Delgada Lighted Whistle Buoy 30	40-00-15.318N 124-04-51.909W	Fl R 6s		4	Red.	
470	Shelter Cove Entrance Bell Buoy 1	40-00-34.418N 124-03-35.407W				Green.	
478	Scraps Waverider Lighted Research Buoy 094	40-17-34.850N 124-44-04.740W	Fl (5)Y 20s			Yellow sphere with whip antenna.	Private aid.
485	Burns Reef Lighted Bell Buoy 40	40-26-45.035N 124-29-55.236W	Fl R 2.5s		5	Red.	
490 8130	Humboldt Bay Entrance Lighted Whistle Buoy HB	40-46-24.073N 124-16-13.558W	Mo (A) W		4	Red and white stripes with red spherical topmark.	
500	NOAA Environmental Lighted Buoy 46022	40-42-52.504N 124-31-39.073W	Fl (4)Y 20s			Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.
505	Scraps Waverider Lighted Research Buoy 100	40-53-17.940N 124-21-23.880W	Fl (5)Y 20s			Yellow sphere with whip antenna.	Private aid.
510	NOAA Environmental Lighted Buoy 46006	40-45-16.432N 137-27-50.745W	Fl (4)Y 20s			Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.
515	Pilot Rock Gong Buoy 2	41-02-37.848N 124-09-20.649W				Red.	

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks	
CALIFORNIA - Eleventh District								
POINT ARENA TO TRINIDAD HEAD (Chart 18820)								
520	Trinidad Harbor Bell Buoy 4	41-02-58.988N 124-08-37.598W				Red.		
TRINIDAD HEAD TO CAPE BLANCO (Chart 18800)								
525	Trinidad Head Light	41-03-06.857N 124-09-05.184W	Oc W 4s	193	14	Light House 25	Light obscured northward of 140°. HORN: 1 blast ev 30s (3s bl).	
530	Trinidad Head Lighted Whistle Buoy 42	41-03-03.297N 124-10-24.191W	Fl R 6s		4	Red.		
535	Turtle Rocks Bell Buoy 44	41-08-10.517N 124-11-47.082W				Red.		
540	READING ROCK LIGHT	41-20-24.916N 124-10-43.079W	Fl W 4s		98	3	NR on house.	
545	Crescent City Harbor Lighted Whistle Buoy 2	41-42-59.716N 124-11-47.898W	Fl R 6s			4	Red.	
550	Crescent City Entrance Light	41-44-11.012N 124-11-27.683W	Fl W 5s		55	9	On post 55	HORN: 1 blast ev 10s (1s bl), operates continuously.
555	BATTERY POINT LIGHT	41-44-39.000N 124-12-11.000W	Fl W 30s			White two story structure.	Restored historic light. Private aid.	
561	SANT GEORGE REEF LIGHT	41-50-14.000N 124-22-32.000W	Fl W 12s		146	Gray tower on rock.	Restored historic light Private aid.	
562	NOAA Environmental Lighted Buoy 46027	41-51-06.000N 124-22-54.000W	Fl (4)Y 20s			Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.	
OREGON - Thirteenth District								
565	Chetco River Approach Lighted Whistle Buoy CR	42-01-40.233N 124-17-01.746W	Mo (A) W		4	Red and white stripes.	No topmark will be shown on this aid as required by IALA standards due to weather.	
570	Pellico Bay Light	42-02-30.000N 124-15-45.000W	Fl (3)W 20s		141	White octagonal tower attached to building. 22	Private aid.	
575	Rogue River Approach Lighted Whistle Buoy R	42-23-37.546N 124-28-35.402W	Mo (A) W		4	Red and white stripes.	AIS: MMSI 993692038 (21). No topmark will be shown on this aid as required by IALA standards due to weather.	
580	Port Orford Entrance Lighted Buoy 1	42-43-17.523N 124-30-38.950W	Fl G 4s			4	Green.	
590	NOAA Environmental Lighted Buoy 46016	42-45-57.032N 124-49-58.856W	Fl (4)Y 20s			Yellow disc-shaped buoy.	Aid maintained by National Oceanic and Atmospheric Administration.	
595	Cape Blanco Light	42-50-13.288N 124-33-49.147W	Fl W 20s		245	25	White conical tower, with red roof and ball topmark. 59	Lighted throughout 24 hours.
CAPE BLANCO TO YAQUINA HEAD (Chart 18680)								
600	Coquille River Entrance Lighted Whistle Buoy 2	43-08-07.744N 124-27-50.660W	Fl R 4s			4	Red.	
610	Baltimore Rock Lighted Buoy BR	43-21-18.719N 124-22-58.439W	Fl Y 4s			3	Yellow.	
613	Scipps Institute Wave Recorder Lighted Buoy 46229/139	43-46-12.600N 124-32-54.720W	Fl (5)Y 20s			Yellow sphere shaped buoy.	Private aid.	
615	Coos Bay Approach Lighted Whistle Buoy K	43-22-14.975N 124-23-05.493W	Mo (A) W		5	Red and white stripes.	AIS: MMSI 993692040 (21). No topmark will be shown on this aid as required by IALA standards due to weather.	

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
ANACAPA PASSAGE (Chart 18728)							
ELK TO FORT BRAGG (Chart 18828)							
Noyo River							
8095	- ENTRANCE LIGHT 4	39-25-38.906N 123-48-36.056W	FI R 4s	17	4	TR on pile.	
8100	- ENTRANCE LIGHT 5	39-25-41.190N 123-48-37.266W	Oc G 4s	28	4	SG on pile.	
8101	- Sound Signal	39-25-41.190N 123-48-37.266W				On pile.	HORN: 1 blast ev 30s (3s bl), operates continuously.
8105	- DIRECTIONAL LIGHT	39-25-38.258N 123-48-27.135W	F W R G	17		On pile.	White light in center of channel (103.5°-106.5°). Red light when right of inbound channel (100°-103.5°). Green light when left of inbound channel (106.5°-110°).
8110	- LIGHT 8	39-25-38.293N 123-48-21.914W	FI R 4s	15	4	TR on pile.	
8115	- LIGHT 9	39-25-39.652N 123-48-20.374W	FI G 2.5s	15	3	SG on post.	
8116	- ENTRANCE SMALL BOAT WARNING LIGHT	39-25-39.644N 123-48-20.228W	Q Y	15	8	NR labeled ROUGH BAR on tower.	Lights flash when seas exceed eight feet in height. Lights extinguished for lesser sea conditions, but with no guarantee that bar is safe.
8120	- LIGHT 10	39-25-37.002N 123-48-20.431W	FI R 2.5s	15	4	TR on pile.	
8125	- LIGHT 12	39-25-26.310N 123-48-08.580W	FI R 4s	5	3	TR on pile.	
CALIFORNIA - Eleventh District							
HUMBOLDT BAY (Chart 18822)							
Humboldt Bay							
8130 490	- Entrance Lighted Whistle Buoy HB	40-46-24.073N 124-16-13.558W	Mo (A) W		4	Red and white stripes with red spherical topmark.	AIS: MMSI 993692035
8135	- Lighted Bell Buoy 2	40-45-56.803N 124-14-57.454W	FI R 4s		3	Red.	
8136	- ENTRANCE SMALL BOAT WARNING SIGN LIGHT Located at CG station.	40-45-58.878N 124-13-01.800W	Q Y		12 3		Lights flash when seas exceed six feet in height. Hazardous Bar Conditions Advisory will also be broadcast when seas exceed ten feet in height. Lights extinguished for lesser sea conditions, but with no guarantee that bar is safe.
8140	- APPROACH RANGE FRONT LIGHT	40-45-52.600N 124-13-53.338W	Q W		39	KRW on Dolphin.	Visible 4" each side of the range line. Horn: 2 Blasts ev 20s (2s bl-2s sl-2s bl-14s sl). Light and Horn operate throughout 24 hours.
8145	- APPROACH RANGE REAR LIGHT 150 yards, 105.3° from front light.	40-45-51.430N 124-13-47.704W	Oc W 4s		57	KRW on pile.	Visible 4" each side of the range line. Lighted throughout 24 hours.
8150	- ENTRANCE LIGHT 3	40-46-07.890N 124-14-19.552W	FI G 2.5s		37 4	SG on white cylindrical structure labeled NORTH.	
8155	- ENTRANCE LIGHT 4	40-45-52.560N 124-14-37.740W	FI R 2.5s		57 4	TR on white cylindrical structure labeled SOUTH.	HORN: 1 blast ev 10s (1s bl), operates continuously.

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
CALIFORNIA - Eleventh District							
HUMBOLDT BAY (Chart 18822)							
Humboldt Bay							
8165	- ENTRANCE RANGE FRONT LIGHT	40-45-05.517N 124-13-35.514W	Q G	22		KRW on Dolphin.	Visible 1.5" each side of the rangeline. Lighted throughout 24 hours.
8170	- ENTRANCE RANGE REAR LIGHT 269 yards, 140.3' from front light.	40-44-59.395N 124-13-28.821W	Oc G 4s	41		KRW on Dolphin.	Visible 1.5" each side of the rangeline. Lighted throughout 24 hours.
8175	- Lighted Bell Buoy 6	40-45-25.985N 124-13-50.621W	Fl G 4s		4	Green.	
8180	- LIGHT 6	40-45-23.742N 124-14-04.096W	Fl R 4s	30	3	TR on pile.	
8185	- Lighted Bell Buoy 7	40-45-21.024N 124-13-38.245W	Fl G 4s		4	Green.	
8190	- Lighted Bell Buoy 8	40-45-08.653N 124-13-30.223W	Q R		3	Red.	
8195	- Lighted Buoy 9	40-45-26.804N 124-13-25.369W	Fl G 2.5s		4	Green.	
8200	- Lighted Buoy 10	40-45-30.584N 124-13-10.225W	Fl R 4s		3	Red.	
8205	- LIGHT 11	40-45-35.492N 124-13-16.415W	Fl G 4s	35	4	SG on pile.	
8210	- LIGHT 12	40-45-54.196N 124-12-51.918W	Fl R 6s	15	4	TR on Dolphin.	
8216	- LIGHT 13	40-46-03.803N 124-12-55.339W	Fl G 6s	20	4	SG on pile.	
8220	- LIGHT 14	40-46-05.596N 124-12-38.696W	Fl R 2.5s	15	3	TR on pile.	
8225	- Lighted Buoy 16	40-46-28.412N 124-12-13.440W	Fl G 4s		4	Green.	
8230	- LIGHT 16	40-46-24.509N 124-12-07.573W	Fl R 4s	15	4	TR on pile.	
8235	- Lighted Buoy 17	40-46-45.430N 124-11-55.875W	Fl G 2.5s		3	Green.	
8237	DEL NORTE STREET PIER LIGHT A	40-47-26.000N 124-11-20.000W	Fl R 4s	10		On post.	Private aid.
8245	SAMOA CHANNEL LIGHT 2	40-48-07.871N 124-11-10.639W	Fl R 2.5s	15	3	TR on pile.	Ra ref.
8250	SAMOA CHANNEL LIGHT 3	40-48-33.245N 124-11-06.265W	Fl G 4s	15	4	SG on pile.	
8255	SAMOA CHANNEL LIGHT 4	40-48-50.160N 124-10-46.086W	Fl R 4s	15	3	TR on pile.	
8260	SAMOA TURNING BASIN LIGHT 6	40-49-00.889N 124-10-29.579W	Fl R 2.5s	15	3	TR on pile.	
8265	- LIGHT 19	40-48-13.424N 124-10-58.040W	Fl G 4s	20	4	SG on pile.	
8270	- LIGHT 21	40-48-26.130N 124-10-09.912W	Fl G 2.5s	15	3	SG on pile.	Ra ref.
8275	WOODLEY ISLAND MARINA LIGHT	40-48-25.230N 124-10-00.220W	Fl G 4s			SG on pile.	On floating breakwater. Private aid.
Hookton Channel							
8280	- Lighted Buoy 1	40-44-53.778N 124-13-20.820W	Fl G 4s		4	Green.	
8285	- LIGHT 2	40-44-56.676N 124-13-28.200W	Fl R 4s	15	3	TR on pile.	
8290	- LIGHT 3	40-44-38.453N 124-13-28.173W	Fl G 2.5s	20	4	SG on pile.	
8295	- RANGE FRONT LIGHT 4	40-44-32.945N 124-13-37.438W	Q R	20		KRW and TR on pile.	Visible all around; higher intensity on the rangeline.
8300	- RANGE REAR LIGHT 103 yards, 327.9' from front light.	40-44-35.501N 124-13-39.667W	Iso R 6s	30		KRW on pile.	Visible all around; higher intensity on the rangeline.

(1) No.	(2) Name and Location	(3) Position	(4) Characteristic	(5) Height	(6) Range	(7) Structure	(8) Remarks
CALIFORNIA - Eleventh District							
HUMBOLDT BAY (Chart 18822)							
Hookton Channel							
8305	- LIGHT 5	40-44-32.472N 124-13-30.198W	FI G 4s	15	4	SG on pile	
8310	- LIGHT 6	40-44-24.660N 124-13-33.834W	FI R 2.5s	15	3	TR on pile.	
8315	- LIGHT 7	40-44-26.255N 124-13-28.535W	FI G 4s	20	4	SG on pile.	
8320	- LIGHT 8	40-44-15.552N 124-13-25.254W	FI R 6s	15	4	TR on pile.	
8325	PACIFIC GAS AND ELECTRIC DIKE LIGHT	40-44-10.454N 124-13-12.219W	FI W 4s	18		Dolphin.	Private aid.
8330	- LIGHT 10	40-44-01.512N 124-13-14.028W	FI R 4s	15	3	TR on pile.	Ra ref.
8335	- Day beacon 9	40-44-04.289N 124-13-08.824W				SG on pile.	
8340	- LIGHT 12	40-43-52.074N 124-13-13.956W	FI R 2.5s	15	3	TR on pile.	
8345	- LIGHT 13	40-43-34.788N 124-13-19.398W	FI G 2.5s	15	3	SG on pile	
8350	- LIGHT 14	40-43-19.842N 124-13-34.218W	FI R 4s	15	3	TR on pile.	Ra ref.
ST. GEORGE REEF AND CRESCENT CITY HARBOR (Chart 18803)							
Crescent City Harbor							
8355	- Buoy 1	41-44-13.414N 124-12-49.291W				Green can.	
8360	- Lighted Whistle Buoy 2	41-42-59.716N 124-11-47.898W	FI R 6s		4	Red.	
545							
8365	- Lighted Whistle Buoy 4	41-43-34.415N 124-11-19.288W	FI R 4s		4	Red.	
8370	Crescent City Entrance Light	41-44-11.012N 124-11-27.683W	FI W 5s	55	9	On post 55	HORN: 1 blast ev 10s (1s bl), operates continuously.
8375	- Lighted Bell Buoy 6	41-44-14.414N 124-11-19.288W	FI R 2.5s		4	Red.	
8380	- Lighted Buoy 7	41-44-16.414N 124-11-23.288W	FI G 2.5s		4	Green.	
8385	CRESCENT CITY INNER BREAKWATER LIGHT 8	41-44-36.491N 124-11-17.826W	FI R 4s	30	5	TR on pile.	
8386	- LIGHT 9	41-44-41.300N 124-11-12.800W	FI G 2.5s	15	3	SG on pile.	
8387	- LIGHT 10	41-44-39.200N 124-11-08.700W	FI R 2.5s	15	3	TR on pile.	
8388	- LIGHT 11	41-44-43.900N 124-11-06.800W	FI G 4s	15	4	SG on pile.	
8390	- RANGE FRONT LIGHT	41-44-59.789N 124-11-21.113W	FI G 2.5s	23		KRG on pile.	Visible 4" each side of the rangeline.
8395	- RANGE REAR LIGHT 79 yards, 359.9° from front light.	41-45-02.133N 124-11-21.117W	Oc G 4s	39		KRG on pile.	Visible 4" each side of the rangeline.
LAKE TAHOE - Eleventh District							
LAKE TAHOE (Chart 18886)							
8403	LAKE TAHOE LONG PIER LIGHT	39-09-04.000N 120-09-25.000W	FI R 6s	30		On post.	Private aid.
8405	SUGAR PINE POINT LIGHT	39-03-40.518N 120-06-50.142W	FI W 4s	15	8	NR on post.	
Lake Tahoe							
8410	- Buoy A	39-13-10.277N 120-00-16.151W				White can with orange bands.	
8415	- Lighted Danger Buoy B	39-13-03.335N 120-00-36.230W	FI W 2.5s		3	White can with orange bands.	
8420	- Buoy C	39-13-13.278N 120-00-43.109W				White can with orange bands.	

APPENDIX VII
BOLLARD PULL CERTIFICATES

Associated Marine Surveying Co., Inc.
Marine Surveyors and Consultants

July 19, 2011

Mr. Gene Cole
 Knutson Towboat Company
 400 North Front Street
 Coos Bay, OR 97420

RE: T/B "KOOS KING"
 BOLLARD PULL TEST
 COOS BAY, OREGON
 OUR FILE: SO 1108

Requestor,

At the request of Mr. Gene Cole, Knutson Towboat Company, Coos Bay, Oregon, and for the account of TO WHOM IT MAY CONCERN, the undersigned did attend and conduct a Bollard Pull Test by the T/B "Koos King" at the former Weyerhaeuser Chip Facility, Coos Bay, Oregon on Tuesday, July 19, 2011. The scope and purpose of the survey was to determine the pulling ability of the mentioned vessel from the bow and from the stern. The pull was measured in pounds.

At 1630 hours, the undersigned did proceed to Tyree Oil Company fuel dock, Coos Bay, Oregon and boarded the T/B "Koos King". The vessel proceeded down river to the above mentioned facility where the testing commenced. The following was noted:

PARTICULARS OF VESSEL:

NAME	:	T/B "Koos King"
OFFICIAL NUMBER	:	662923
BUILT	:	1983 - Mid Coast Marine, Coos Bay, Oregon
HULL NUMBER	:	9911
DOCUMENTED LENGTH	:	65.0'
GROSS REGISTERED TONS	:	85
ENGINES	:	2 x Cummins KTA 38M Diesel Engines 1200 HP @ 2000 RPMs
PROPULSION	:	2 x "Caulidge" - 4 Blade Propellers - 70" x 69" Kort Nozzles
OWNER	:	Knutson Towboat Co. 400 N. Front St. Coos Bay, Oregon

55005 Fishery Rd PO Box 516 Coquille, OR 97423
Telephone - (541) 297-3158 Email - assocmarineco@gmail.com

Associated Marine Surveying Co. Inc.
Report of Survey: T/B "Koo's King" - Willard Pull Test - July 29, 2011

PARTICULARS OF DYNAMOMETER (HOOK SCALE):

Manufacturer	:	Rice Lake Weighing Systems
Hook Scale - Model:	:	R431-D3-100K-CD - S/N: 8373
Digital Reader - Model:	:	500 HE - S/N: 88-1126
Servicing/Calibration	:	Pacific Scale Company, Clackamas, Oregon
Date	:	July 17, 2011

PARTICULARS OF SURVEY:

At 1645 an eye spliced, nine (9") inch x two hundred (200') foot poly-nylon towing line was attached to a mooring cleat at the former Weyerhaeuser Chip facility in Coos Bay, Oregon. The mooring cleat was embedded in a large concrete foundation.

The line was attached to the hook scale by means of a thirty-five (35) ton shackle and the hook scale was thence attached to the stern towing bitt by means of a thirty-five (35) ton shackle and a one (1") wire rope eye to eye pendant.

At 1700 the T/B "Koo's King" began a monitored pull on the line. The engines were run up at 1975 to 2000 RPMs for approximately three (3) minutes. During the test the digital scale indicated a pull weight of a maximum of 67,285 pounds and a minimum of 65,120 pounds.

The T/B "Koo's King" then slacked off and the line, shackles, and hook scale were moved to the bow where the line was fed through the bow fairlead, over the bow bitt, and attached in the bow capstan in a similar fashion as above.

At 1716, the vessel began a monitored pull on the line. The engines were run up to near 2000 RPMs for approximately three (3) minutes. During the test the digital scale indicated a pull weight of a maximum of 37,510 pounds and a minimum of 36,083 pounds.

At 1730 with the testing complete, the vessel then proceeded to Knutson Towboat Company dock in Coos Bay.

River conditions at the time of testing:
High Tide - 1730 hours - 6.4 feet
River depth under keel - 40 to 41 feet

Weather conditions were clear and warm with an estimated wind speed of less than 15 knots.

Associated Marine Surveying Co. Inc.
Report of Survey: T/B "Kans King" - Bollard Pull Test - July 29, 2011

CERTIFICATION:

The undersigned marine surveyor does certify that a Bollard Pull Test was conducted by the T/B "Kans King" on the above date, location, and conditions as stated with the following noted:

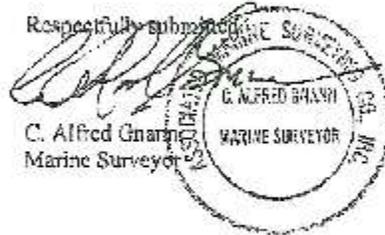
Vessel Ahead Pull Weight (Pounds): Maximum - 67,205 pounds

Vessel Astern Pull Weight (Pounds): Maximum - 37,510 pounds

The above survey report is hereby submitted and is rendered without prejudice TO WHOM IT MAY CONCERN.

Respectfully submitted,

C. Alfred Gnani
 Marine Surveyor



The above Report of Survey has been conducted with non-destructive techniques and sets forth the apparent condition of the vessel, testing equipment, and gear to the best of the undersigned's ability without the removal of portions of vessel structures and without the opening of vessel machinery (motors, engines, pumps, gears, or pumps) or the testing equipment for internal examination. Unless noted, all equipment to include navigational and communications was not examined for serviceability. The survey represents the undersigned's honest and unbiased opinion and the undersigned is not to be held responsible for any errors or omissions. No inaccuracies for items indicated as "reported to be", "said to be", "said to contain", or "not observed". Nor does the above Report of Survey create any liability of, warranties to, or warranties by the company or their employees arising out of the reliance on information contained herein. The above Report of Survey is based on visual or reported data created on the date of the survey and does not constitute knowledge of the condition of the vessel prior to, or subsequent to the date of the survey.



ABS Consulting
RISK CONSULTING DIVISION

MARINE SERVICES

ABS Consulting Inc.
16855 Northchase Drive
Houston, Texas 77060-8008 USA
Tel: (281) 877-6110 / Fax: (281) 877-6991

Page 1 of 1

Project ID Number	Report Number	Office Location	Date
1149525	S102405-MSI-B	SEATTLE, WA	19-NOV 2002

THIS IS TO CERTIFY that the undersigned Surveyor did attend, at the request of the owner's representative, attend the M.V. "HUMBOLDT" on 19 November 2002 at Aberdeen, Washington, in order to examine and report upon the testing as follows:

1. The vessel's propulsion equipment consists of two (2) D179TA Caterpillar Engines, developing 1430EHP (combined) at 1300 RPM.
2. The bollard pull was conducted in both the ahead and astern direction. The conditions for the test were as follows:
Current: .75 Knot(max)
Water Depth: 44 Feet (under keel)
Draft Forward: 8ft.
Draft Ast: 10ft.
3. A Rice Lake Weight Co. Strain Cell, Model Survivor 50HE, S/N 38-1126 calibrated 13 September 2002 was used in this test.
4. With the vessel reported to be operating at maximum continuous output, a sustained bollard pull of 40,500 pounds ahead and 29,300 pounds astern was achieved with a maximum ahead indication of 47,000 pounds.

This report is made without prejudice


J McDonald, Representative

RECEIVED

NOV 19 2002

H.R. & S.C.

524598

Condition, Damage, P&I, Machinery, & Cargo Surveys / Owner's Rep. / Class Record Reviews / Safe-Hull Cond. Assessment

"This certificate or report is granted or issued subject to the condition that its acceptance and signed and sealed and that no party herein shall be deemed to release the designer, manufacturer, dealer, supplier, receiver or possessor of any materials, articles, equipment and ABS Consulting Inc. shall be deemed to be limited to the acts and omissions of its employees, agents, and subcontractors. Under no circumstances whatsoever shall ABS Consulting Inc. be liable for any injury or damage to any person or property occurring by reason of negligent operation, misuse of or any defect in materials, machinery, equipment or other items other than those specifically named by ABS Consulting Inc. and acceptable liability conformity accepted testing standards, or defects not noted in documents reviewed by ABS Consulting Inc. and which are covered by this certificate or report.

ABS00N-1-701

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APPENDIX VIII

HUMBOLDT COUNTY DRAFT TSUNAMI PLAN TSUNAMI CONTINGENCY PLAN

February 2007

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GENERAL INFORMATION

B FORWARD

B-1 Plan Scope and Purpose

The Tsunami Contingency Plan primarily addresses the Humboldt Operational Area's planned response to a distant-source tsunami threat situation affecting Humboldt County. However, elements of this Plan regarding after-the-fact response procedures also apply to a local-source tsunami situation. This Plan establishes detailed procedures for control of populated areas along the Pacific Coast of Humboldt County which may be jeopardized by potential tsunamis. The purpose of this Plan is to minimize the loss of life and property through an organized notification and evacuation process and to provide for reentry into areas which may have been evacuated and/or damaged.

B-2 Plan Authority and Activation

This Plan will be used in conjunction with, and under the authority of, the County of Humboldt Emergency Operations Plan. The Tsunami Contingency Plan will be implemented upon the decision of the Director of Emergency Services (Humboldt County Sheriff) or the Director's designated representative. That decision will, most likely, be in response to distant-source tsunami information. The Director would also implement the response portions of this Plan after the occurrence of a locally-generated tsunami. The Humboldt County Sheriff's Department Office of Emergency Services will ensure the Tsunami Contingency Plan is current and will advise the Director on response procedures.

B-3 Public Access to Plan

This complete Plan contains sensitive material such as named representatives' personal contact information and emergency response agency contact information. It is not a public document in its complete form and is subject to restricted-use handling procedures. An edited hard-copy version deleting any restricted data only is accessible to anyone upon request and is made available through the Humboldt County Library System. An edited electronic version is also available on the Humboldt County web site (www.co.humboldt.ca.us). The County Emergency Operations Plan and other specific event contingency plans can also be accessed through the same sources.

B-4 Humboldt County Map

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C SITUATION

C-1 Tsunami Vulnerability

A tsunami is a series of water waves usually generated by displacement of the ocean floor. Each tsunami event consists of a number of separate surges of incoming water that may be separated by many tens of minutes. As a general rule, low-lying areas adjacent to the Pacific Ocean are vulnerable to the affects of tsunamis. Tsunamis may be generated by distant, major earthquakes along the Pacific Rim, by local strong earthquakes, and, less likely, by subterranean slumping (underwater landslides), by volcanic action, and by meteor strikes at sea. Although tsunami warning systems are improving, there may be little or no advance notice of an impending tsunami, so it is imperative that citizens be cognizant of those factors which could foretell of a tsunami's presence.

A tsunami generated by an earthquake along the Cascadia Subduction Zone or on other California North Coast faults could arrive at the closest coastal locations just minutes after the initial shock. The lack of warning time and the potentially larger waves may result in higher casualties than if it were from a distant tsunami source. For tsunamis originating at distant sources, the West Coast & Alaska Tsunami Warning Center will provide initial warning notification to local emergency response agencies in time to warn and evacuate threatened coastal areas (refer to section D-3).

In low lying areas along the Humboldt County coastline, strong shaking should be taken as a warning of a potential tsunami, and individuals should immediately move to higher ground. There may be no warning of a tsunami caused by slumping or meteor strike at sea other than the visual sighting of water draw-down, surge, or a loud roar from the ocean. Tsunamis may cause damage not only by high water levels but also from high velocity currents generated by successive pulses of water trying to enter and leave Humboldt Bay. All structures and marine activities within Humboldt Bay and near the shore may be vulnerable to rapidly moving, debris-strewn currents.

The greatest impact areas of the County are likely to be low-lying areas on the Samoa Peninsula, King Salmon and the region opposite the mouth of Humboldt Bay, the Eel River, Mad River, and Redwood Creek bottom areas, and the immediate coastlines along Humboldt Bay. Other coastal areas which could be affected are the lagoons on the northern coast and the Mattole River and Bear River bottom areas.

C-2 Historic Tsunami Record

Three tsunamis have been observed in Humboldt County in the past 150 years, although, there are no written records of tsunami damage in the County. Local Native American oral histories describe tsunami-like water intrusions in the northern Humboldt County area many meters in height and causing widespread death and destruction in low-lying coastal areas. Evidence of paleotsunamis are recorded at sites near Crescent City and Lagoon Creek in Del Norte County to the north with at least six events leaving significant deposits within the past 3000 years. Sand sheets interpreted as tsunami wash-over have been found at the south end of the South Spit on Humboldt Bay. Cores from Hookton Slough at the south end of Humboldt Bay show evidence

of both tsunami deposition and rapid subsidence associated with very large local earthquakes.

The 1964 tsunami generated by the great Alaskan earthquake caused a reported 18-foot rise above Mean Lower Low Water at Trinidad but no damage. Water rose over the ten-foot sea wall at the Eureka Boat Basin, and floating debris was deposited in Humboldt Bay. At least nine surges of water infilling and draining Humboldt Bay were reported over a 4.5-hour period with currents estimated at 14 knots near the bay entrance. This same tsunami series killed twelve people in Crescent City.

C-3 Tsunami Event Mitigation and Response Planning

The Humboldt County Emergency Operations Plan (EOP) addresses the planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies in or affecting Humboldt County. The EOP guides the overall actions of emergency responders and provides a response framework into which this Tsunami Contingency Plan will address specific tsunami-related response issues. This Tsunami Contingency Plan is a cooperative effort of all local, state, and federal agencies which are geographically available to respond or have an emergency response responsibility for the coastal areas of Humboldt County.

Any tsunami threat to Humboldt County is likely to also threaten neighboring coastal counties. Many area federal and state response agencies' jurisdictions overlap county boundaries, and their response efforts will be shared between counties. Response coordination between counties is vital for the effective management of resources and effort. Neighboring Del Norte County's Office of Emergency Services and Mendocino County's Mendocino Emergency Services Authority were consulted in the preparation of this Plan.

C-3-A Pre-Event Planning

In 1995, the California Department of Conservation, Division of Mines and Geology, produced Special Publication 115, "Planning Scenario in Humboldt and Del Norte Counties, California, for a Great Earthquake on the Cascadia Subduction Zone" (CSZ). Numerical modeling was performed and mapped the areas of potential damage and those low-lying coastlines likely to be flooded from a CSZ-earthquake of magnitude (M) 8.4. The scenario provides a regional pattern of ground shaking and other seismic hazards and a general picture of damage and lifeline disruption that will confront emergency response personnel. Special Publication 115 forms the basis for ongoing area earthquake and tsunami planning efforts.

The Redwood Coast Tsunami Working Group (RCTWG) was formed in 1996 to bring together representatives of various Humboldt, Del Norte, and Mendocino county government, business, non-profit, and service entities as an ad-hoc interagency tsunami education task force. The RCTWG strives to define the needs of local jurisdictions to mitigate the tsunami hazard as defined by the scenario in Special Publication 115. The primary concern of the RCTWG is that a coordinated, consistent tsunami program be developed for all coastal areas of the three counties. The RCTWG has been the catalyst for tsunami (and earthquake) planning efforts on the North Coast. The RCTWG has sponsored area workshops, information displays at local fairs, and members have provided a "voice" for North Coast counties at out-of-area conferences and

symposiums.

Tsunami hazard maps for a 20-mile coastal segment of Humboldt County were produced in 2004 by Dr. Lori Dengler, PhD, Geology Professor, and Jay Patton of the Humboldt State University Humboldt Earthquake Education Center. This project area includes the most populous and tsunami-vulnerable region of coastal Humboldt County between Trinidad and the southern Eel River Delta. Efforts are ongoing to expand the maps to other County population centers including Orick and Shelter Cove. The maps combine the results of past studies to depict the relative tsunami hazard and use a four-color scheme to represent relative tsunami risk for specific coastal areas. Members of the RCTWG provided end-user revision suggestions to the map-generation process to both simplify the product and to emphasize pertinent information. The maps are intended for educational purposes, to improve awareness of tsunami hazards, and to encourage responsible emergency planning efforts by illustrating the range of possible tsunami events based on the best currently available information. They are used in this Plan as a visual tool to reinforce the threat/hazard concept for effective tsunami-response planning. The maps do not predict specific affected areas for any single tsunami event. Rather, they provide a visual reference for those coastal areas likely to be impacted by a tsunami. (The Humboldt County Tsunami Hazard Maps are appended in section J of this Plan.)

C-3-B Pre-Event Public Education

This Plan concentrates on outlining procedures for response to a tsunami generated by a distant source. A locally-generated tsunami will not allow time for a coordinated evacuation of area citizens by emergency response personnel. Public safety planning for a locally-generated tsunami must depend on increased public awareness and tsunami education programs.

Persons on the beach and in low-lying coastal areas must understand they are at risk and what actions to take if they witness one or more of the following indicators:

- feel a reasonably strong nearby earthquake
- see the sea recede and expose the ocean floor
- see an approaching wall of water
- hear a loud roar like a train

The current recommendations are to evacuate to areas at least 100 feet above sea level on the open coast or at least two miles inland on low-lying ground – every foot upward or inland may make a difference.

Pamphlets describing the general California coastal tsunami hazard are located in public facilities (information kiosks, roadway rest stops, etc.) adjacent to the north-south route of Highway 101 through Humboldt County. Another pamphlet is widely distributed showing the projected tsunami run-up areas for the 20-mile segment of Humboldt County coastline between Trinidad and the Eel River Delta. Additional pamphlets showing specific high-probability tsunami danger areas of the coastline should be available by the end of 2006.

C-3-C Tsunami Signage

Local area state, county, and city government agencies are working to develop signage at tsunami-susceptible locations along the coastline and a public-awareness campaign to educate

the public about those signs. The following five signs are approved for use in California (see sign images in Section L-1):

Entering Tsunami Hazard Zone – placed on public roadways just prior to hazard zone entry
Leaving Tsunami Hazard Zone – placed on public roadways just after hazard zone exit
Tsunami Evacuation Route – placed on public roadways in direction of evacuation route travel
Evacuation Site – placed at evacuation destination locations
Tsunami Hazard Zone in case of earthquake go to high ground or inland – placed at various locations within the hazard zone

Specific sign location information is not yet published or in place for the Humboldt County coastline. That information should begin to appear during 2007.

C-3-D Tsunami Sirens

Local area county and city government agencies are working to develop a siren warning system for inhabited low-lying coastal locations. A large cache of sirens has been acquired. Efforts are underway to identify (1) siren placement sites, (2) local area partners (both public and private) for each site, (3) needed siren system components and their costs for each site, (4) funding sources, (5) the official procedures required for siren placement, and (6) the protocols needs for actual use of the siren system. Some sirens have been installed and tested, but, automated siren activation and coordination equipment is not yet in place. Many of the previously-mentioned actions will be addressed and additional siren installations will occur during 2007.

C-3-E Tsunami Event Notification Systems/Technology Improvements

West Coast and Alaska Tsunami Warning Center (WCATWC): Located in Palmer, Alaska, the WCATWC has the sole responsibility for issuing tsunami warnings to coastal locations of California, Oregon, Washington, British Columbia, and Alaska. (see section D-3 for a more complete description of WCATWC's role)

Pacific Tsunami Warning Center (PTWC): Located in Ewa Beach, Hawaii, the PTWC is responsible for issuing tsunami warnings to coastal locations in Hawaii and the rest of the Pacific Rim nations, including Mexico and South America.

Deep Ocean Assessment and Reporting of Tsunamis (DART): A real time distant tsunami detector system using buoys and bottom sensors installed in the open ocean. The system detects, measures, and transmits tsunami-related data via satellite telemetry. Its purpose is to confirm that a potentially destructive tsunami has been generated. A DART buoy is placed approximately 150 miles west-southwest of Cape Mendocino off Humboldt County, and the system continues to expand.

Consolidated Reporting of Earthquakes and Tsunamis (CREST): This program is upgrading regional seismic networks in Alaska, Washington, Oregon, California, and Hawaii to provide near real-time seismic information from the networks to the tsunami warning centers. Information is quickly and reliably exchanged between the various components to assist in the

rapid identification of a tsunami-generating event.

Real time Earthquake Notification Systems: Several earthquake notification systems are located in California, Oregon, and Washington. These systems provide preliminary earthquake epicenters and magnitudes within minutes of an event.

Later Wave Forecast Methodology (LWFM): A statistical model that uses coastal tide gage observations to forecast the extreme heights of later waves in Pacific-wide tsunamis for locations in the vicinity of real-time reporting tide gages. This system assists local emergency managers and responders by forecasting later tide- and tsunami-influenced wave heights.

C-3-F Public Alerting and Warning Systems

Distant earthquakes large enough to generate a tsunami with the potential to impact Humboldt County can be detected and the arrival time of the first waves estimated with sufficient reliability to provide early warning to people in the coastal areas. It is impossible with current technology to estimate wave heights, arrival times of subsequent waves, or the shape and duration a tsunami will assume at any specific location. However, informational data reporting observed wave heights of the tsunami at other coastal locations is forwarded by the West Coast & Alaska Tsunami Warning Center (WCATWC) to local agencies for immediate emergency response planning purposes. Projected wave heights derived from DART buoy observations may also be provided to local agencies.

The WCATWC is responsible for issuing tsunami information to local emergency management agencies along coastal areas in its area of responsibility (AOR) which includes California, Oregon, Washington, British Columbia, and Alaska. That information arrives via a variety of official sources and is very timely. The National Weather Service will reissue WCATWC Tsunami WARNING Bulletins (refer to section D-3) affecting the North Coast to the public via the Emergency Alert System (EAS). NOAA Weather Radio carries both Tsunami WATCH and WARNING Bulletins. Additional local public alerting and emergency procedures are then the responsibility of state and local government (refer to section D-2). The EAS will be used, and other agency-specific alerting and warning procedures, including emergency radio broadcasts, emergency highway signage, and loudspeaker announcements via emergency vehicle and low-flying aircraft, will be implemented.

Currently, a tsunami-specific warning system using emergency sirens is being planned for specific Humboldt County locations. Portions of that system may become operational by the end of 2006. An emergency warning system utilizing “reverse calling” through the public telephone system is being implemented for selected metropolitan areas of Humboldt County. That limited system is projected to be operational in mid-2006. Plans to extend the system to other cities and unincorporated areas of the County await further funding and initial system implementation results.

The emergency will last for a minimum of two hours after the last wave occurs or is estimated to occur. When emergency officials have determined that the affected area is safe for re-entry, the public will be officially notified using all alert methods available (refer to “All-Clear”, section E-6-B). The public will also be warned that hazardous currents and water surface disturbances may

continue in harbors and boating channels for several hours after the last tsunami. NOTE: If a damaging tsunami occurs, the “All-Clear” may not be announced for many hours or even days (refer to section E-6-B)

C-3-G Public Information Access

EDIS (Emergency Digital Information Service) is available for public access via the internet (www.edis.ca.gov). California emergency managers use EDIS to alert and inform the news media and the public by providing detailed information regarding the emergency. Local emergency public information announcements will be posted on EDIS.

Various tsunami web sites contain valuable information for local planning efforts and for current events. Some of the available web sites are listed below:

USGS Marine Survey Site: geopubs.wr.usgs.gov/open-file/of99-360/
West Coast and Alaska Tsunami Warning Center: wcatwc.gov/
Pacific Tsunami Warning Center: www.prh.noaa.gov/ptwc/
NOAA/PMEL Tsunami Site: www.pmel.noaa.gov/tsunami/

RESPONSE OPERATIONS

D CONCEPT OF OPERATIONS

D-1 Emergency Response Objectives

To provide for the rapid alerting and evacuation of people in low-lying areas in the event of a tsunami WARNING;
To minimize loss of life and property;
To provide for the care of displaced persons; and
To expedite the return to normalcy in tsunami-impacted areas.

D-2 Pre-Emergency Preparations

Humboldt County Operational Area (OA) response and support agencies plan and train for emergency tsunami operations. They identify needed equipment and other resources and pre-position them for an optimum response to emergency situations. OA agencies coordinate their training conferences and exercises to ensure a seamless integration during actual response operations. The Tsunami Contingency Plan is reviewed annually in accordance with guidelines in the Humboldt County Emergency Operations Plan.

The West Coast & Alaska Tsunami Warning Center monitors seismic activity throughout the Pacific basin and provides tsunami information as needed by area emergency response agencies through a variety of warning methods. The primary public warning agency on the North Coast is the National Weather Service (NWS) using the Emergency Alert System and NOAA Weather

Radio. The Humboldt County Sheriff's Department Dispatch Center, which also serves as an area Warning Point for other agencies, monitors the National Warning System (NAWAS), the California Warning System (CALWAS), and the California Law Enforcement Terminal System (CLETS) on a continuous basis. The Dispatch Center and the Office of Emergency Services (OES) also have direct contact with State OES through the Operational Area Satellite Information System (OASIS). Upon receipt of a verified Tsunami Watch Bulletin or a Tsunami Warning Bulletin, the Sheriff's Office Dispatch Center will activate various local alert systems (refer to section D-4). A diagram of the Tsunami Warning System is shown below:

(INSERT DIAGRAM)

D-4 West Coast & Alaska Tsunami Warning Center Notification System

The West Coast & Alaska Tsunami Warning Center's (WCATWC) area of responsibility (AOR) consists of the coastal and offshore areas of California, Oregon, Washington, British Columbia, and Alaska. The WCATWC will broadcast within its AOR one or more of five tsunami-related messages/bulletins to emergency agencies after the occurrence of a significant earthquake anywhere in the Pacific Ocean basin.

The messages/bulletins are generally classified as "information" or "alert." The Information Message and the Information Bulletin are readily recognizable with the word "information." They give general information about the occurrence of non-tsunami generating earthquakes of less than magnitude 7.0 or for larger earthquakes whose location is such that they pose no tsunami threat to the AOR. The following are alert bulletins: Advisory Bulletin, WATCH Bulletin, and WARNING Bulletin. They give more specific information about earthquakes greater than magnitude 7.0 which could have or have generated a tsunami. All alert bulletins require special attention and handling procedures by the alert bulletin recipients.

Specific information is included in all messages/bulletins including earthquake epicenter, magnitude, time of occurrence, bulletin coverage area, and follow-up actions by the WCATWC. Tsunami estimated times of arrival at specific points could also be noted along with any reported observations of tsunami affects.

In actual practice, WATCH Bulletins and WARNING Bulletins are included in the same message. This procedure allows receiving agencies to monitor the progression of the tsunami event over time for better response planning. In many cases, the only difference between a WATCH Bulletin and a WARNING Bulletin for a specific site is the projected time of arrival of tsunami waves at that site (see section D-3-B).

D-4-A "Information" Message/Bulletin

INFORMATION MESSAGE: A message issued for earthquakes below magnitude 6.5 strongly felt along coastal areas of the AOR. Its purpose is to rapidly inform residents that there is no tsunami danger.

INFORMATION BULLETIN: Bulletins issued for earthquakes less than warning

threshold but greater than magnitude 6.5 which are not likely to trigger a tsunami. Unless further information is gathered on tsunami generation, only one Information Bulletin is used for an event.

D-4-B “Alert” Bulletins

ADVISORY BULLETIN: A message issued when a major earthquake has occurred outside the WCATWC AOR prompting the Pacific Tsunami Warning Center (PTWC) located in Hawaii to issue a tsunami warning for their AOR which includes the entire Pacific Ocean basin. The event is either far enough away so that no WCATWC AOR region is within a watch/warning or the tsunami poses no threat to the WCATWC AOR. Advisories are updated hourly as PTWC issues bulletins and can be upgraded to a watch or warning if necessary.

WATCH BULLETIN: An alert issued to areas outside the warned area. The area included in the WATCH Bulletin is based on the magnitude of the earthquake. For earthquakes over magnitude 7.0, the watch area is one hour tsunami travel time from the warning zone boundary. For earthquakes over magnitude 7.5, the watch area is three hours tsunami travel time from the warning zone boundary. The WATCH Bulletin will either be upgraded to a WARNING Bulletin in subsequent bulletins or will be cancelled depending on the severity of the tsunami.

WARNING BULLETIN: Indicates that a potentially damaging tsunami is imminent and that coastal locations in the warned area should prepare for flooding. The initial WARNING Bulletin is typically based on seismic information alone. Earthquakes within the WCATWC AOR over magnitude 7.0 trigger a warning covering the coastal regions within two hours tsunami travel time from the epicenter. When the magnitude is over 7.5, the warned area is increased to three hours tsunami travel time from the epicenter. For earthquakes outside the WCATWC AOR, warnings are only issued for earthquakes greater than magnitude 7.5 and for those locations within three hours tsunami travel time of the leading edge of the wave. As tidal gauge data showing the tsunami is recorded, the WARNING Bulletin will either be cancelled, expanded incrementally, or expanded to cover the entire WCATWC AOR in the event of a major tsunami.

NOTE: “Confusion Factor” ...

The Pacific Tsunami Warning Center (PTWC) in Hawaii is responsible for tsunami warnings in the greater Pacific Ocean basin. The PTWC’s much larger AOR overlaps with the WCATWC’s AOR. In some instances, the PTWC may issue an “alert” message for a Western Pacific earthquake, and the WCATWC may issue an “information” message to the West Coast for the same event. Since these messages are released to the public by both agencies, the possibility for confusion exists in their interpretation. ***NOTE: This passage may be deleted before Plan finalization, as the PTWC and the WCATWC have changed procedures to help alleviate confusion.***

D-5 Emergency – Contingency Plan Activation

NOTE: It is imperative that this Plan be implemented immediately upon receipt of a WATCH Bulletin or a WARNING Bulletin.

Advisory Bulletins do not require immediate Plan activation. But, Advisory Bulletins may contain pertinent information which would assist the planning process for the possible bulletin upgrade to WATCH or WARNING. Therefore, all Advisory Bulletins should be reviewed carefully and, when applicable to the local area, preparations should begin for the possible receipt of a WATCH or WARNING Bulletin including notification of key emergency management personnel.

The public communications capabilities now in effect allow for almost instant public notification of Tsunami WATCH and WARNING Bulletins. In many cases, the public will be notified at the same time (or, shortly thereafter) as are emergency response agencies (refer to section C-3-C). Public emergency response agencies must immediately and actively assume public information responsibilities to ease public concerns.

This Tsunami Contingency Plan will be activated by the Director of Emergency Services (Humboldt County Sheriff) or the Director's designated representative when a confirmed Tsunami WATCH or WARNING Bulletin has been received over official channels or when a locally generated tsunami is a strong possibility. The Director may also officially declare a local emergency.

Tsunami WATCH and WARNING Bulletins received by the local Warning Point (Sheriff's Dispatch Center) will be rebroadcast / communicated to other local emergency response agencies and affected major entities. Any cancellation notices received will also be rebroadcast / communicated to all agencies / entities previously notified.

After receipt of a Tsunami WATCH or WARNING Bulletin, or in response to the strong possibility of a locally generated tsunami, applicable portions of the Humboldt County Emergency Operations Plan (EOP) will be activated by the Director. Activation of the Emergency Alert System will be coordinated with the National Weather Service. Immediate communications will be established and coordination efforts begun with State OES, Del Norte County OES, and Mendocino County Mendocino Emergency Services Authority. Local law enforcement and fire personnel and other emergency response agency personnel will alert the public in low-lying areas, provide movement advice, and traffic control for evacuation (refer to sections E and F). The United States Coast Guard (USCG) will alert moored and underway water traffic along the Humboldt County coastline. The USCG, the California Department of Forestry & Fire Protection, the California Highway Patrol, and the Civil Air Patrol will assist with airborne warning assets. Preparations for handling displaced persons and animals will begin following procedures established in the EOP.

All public safety personnel will cease warning and movement activities within the projected tsunami hazard area one hour prior to the tsunami estimated time of arrival (ETA) and report to designated command posts located outside primary traffic control perimeters. Warning activities by aircraft and broadcast media will continue.

If tsunami waves are received along the Humboldt County coastline, no entry by anyone will be made into affected areas, or into areas which may have been evacuated, until those areas have been free of tsunami waves for at least two hours. If no tsunami waves are received for two hours after the last wave arrival, or, if no tsunami waves are received for two hours after the

predicted ETA, the WARNING Bulletin will be cancelled. Initially, only emergency responders will be allowed access into the affected areas for search and rescue and damage assessment purposes (refer to “Restricted Access”, section E-6-A). The general public will not be granted access into the affected areas until the “All-Clear” is announced (refer to section E-6-B).

All emergency actions in response to tsunami affects will be in accordance with those procedures established in the EOP.

D-6 “Time-Minus” Concept Implementation

Cooperating response agencies should implement the “Time-Minus” concept to ensure prioritized, critical field operations are conducted at time intervals which allow for their completion. The “T-Minus” times can be used in conjunction with a practical checklist for “what” to accomplish “when”. Overall “Command-level” response operations “T-minus” benchmarks will be coordinated through the County Emergency Operations Center.

The below is a simple example of a “T-minus” implementation for a distant-source tsunami event:

T-zero: Projected time of initial tsunami wave arrival
T-30 min: All responder personnel shall leave danger areas
T-1 hour: All identified road closures shall commence
T-3 hours: Tsunami Warning Bulletin issued
T-6 hours: Tsunami Watch Bulletin issued
“T-Minus” times must be correlated to actual time to avoid confusion.

The implementation of the “T-Minus” concept is obviously dependent on how distant is the source of the tsunami. A tsunami originating in Japan (at least 10 hours travel time) will allow much more preparation time than will a tsunami originating in Alaska (at least 4 hours travel time). The closer the source of a tsunami event, the more “T-Minus” tasks which will require immediate implementation. For the closest-source tsunami events, only some basic response operations may be possible.

D-7 Tsunami Siren Activation

All tsunami siren activations will be coordinated through the National Weather Service on Woodley Island. Tsunami siren activations will be accompanied by EAS and NOAA Weather Radio broadcasts clearly specifying the area for which the broadcast is applicable. Siren soundings will, when possible, be closely coordinated with contiguous counties and with the State.

D-8 Coastal Observation Points

Coastal observation points will be established for real-time reports of tsunami wave impacts to those viewable areas. Personnel assigned to observation locations shall have direct communications capabilities with the OA Emergency Operations Center and with any applicable local Command Post. Required reports include any observable wave actions (or lack thereof), any observable wave affects including inundation limits, and damage reports (especially

infrastructure such as roads and bridges). Any reports of observed human life-threatening situations shall take priority.

The following observation points will be established:

Location	Responsible Agency
Freshwater Lagoon Lookout Pt.	Orick VFD
Trinidad Harbor	Trinidad PD/VFD
Clam Beach Vista Point	Sheriff's Office/CHP
Fort Humboldt	Eureka FD/PD
Herrick Rd at Hwy 101	Sheriff's Office/CHP
Table Bluff	CA Dept. Fish & Wildlife
Centerville Beach	Ferndale PD/VFD
Mattole Rd. at ocean	Petrolia VFD
Shelter Cove	Shelter Cove FD

Additional observation points may be established as needed and shall be in locations deemed safe from potential tsunami impacts. Personnel assigned to those additional locations shall have the same direct communications capabilities as at pre-designated sites. Possible additional observation points for consideration include the following sites:

Big Lagoon
Patrick's Point
Moonstone Beach
Central Ave. near Bella Vista
Courthouse roof
Samoa Pulp Mill roof
Bell Hill
Cape Mendocino near Ocean House

Where possible, observers shall be provided with video recording equipment to capture the scene. Credentialed media personnel shall be afforded access to any restricted observation point locations.

D-9 Multi-Agency Aircraft Operations

All aircraft operations occurring during a tsunami event will be coordinated between the agencies operating the aircraft. The primary role of any agency's air asset is to locate and warn people of the impending danger. The agencies with aircraft immediately available in the Operational Area are the United States Coast Guard, the California Highway Patrol, the California Department of Forestry & Fire Protection, and the Humboldt County Sheriff's Office Air Auxiliary. These agencies will follow a pre-arranged asset allocation, altitude guidance, and communications plan. Any additional air assets from other agencies coming into the OA will immediately follow the same plan.

D-9-A Controlled Air Space

A previously-approved Multi-Agency Air Operations Plan will be activated upon the request and concurrence of the agencies involved. If needed, the CDF Fortuna Command Center will notify

the Federal Aviation Administration (FAA) of the disaster at hand and establish a Temporary Flight Restriction (TFR) surrounding the area. The CDF Fortuna Command Center will also file a Notice to Airmen (NOTAM) through the FAA warning all pilots about the heavy air traffic which will be operating in the area and request them to stay clear.

Note: There are two Class E airfields with light commercial traffic operating within Humboldt and Del Norte Counties. A TFR may not be able to restrict those aircraft. The “See and Avoid” doctrine will be in effect at all times.

D-9-B Air Space Coordinator

To direct response, civilian, and media air traffic, the CDF will dispatch an Air Tactical Group Supervisor (ATGS) in a CDF aircraft to circle in the vicinity of the incident at 4,500 feet AGL. The ATGS’s call sign will be “Air Command” and will monitor both Tactical (Air-to-Air) and Command (Air-to-Ground) frequencies. Aircraft arriving to assist in the multi-agency effort will check-in with “Air Command” 12 miles from the control area and must receive clearance prior to 7 miles from the control area to enter. Altitudes, airspeed restrictions, current barometric pressure in use by all aircraft, and an advisory of other traffic in the area will be issued to the arriving aircraft.

During certain times of the year, CDF may not have an aircraft to use as an air space coordinating platform. In these instances, CHP will provide a Cessna 206 aircraft hangered at Benton Field in Redding, CA, to fill this role (40 minute ETA). A CDF ATGS would embark in the Cessna 206 to serve as the Air Space Coordinator.

D-9-C Aircraft Radio Communications Frequencies

The CDF Fortuna Command Center (call sign “Ground Control”) will serve as the air coordinator until the ATGS arrives on scene. Prior to launch, all air assets will contact the CDF Fortuna Command Center via land-line to receive patrol tasking and to provide aircraft identifiers (see section E-4).

Aircraft will maintain inter-aircraft communications and will self-announce on the Air-to-Air frequency listed below as needed. The Air-to-Air frequency will also be used to maintain communications with “Air Command”.

Air-to-Air (Tactical):	xxx.xxx VHF
Air/Ground-to-Ground (Command):	xxx.xxx

D-9-D Altitude Assignments

Multi-agency aircraft patrolling the coast in a defined control area will fly at the following assigned altitudes. The Air Tactical Group Supervisor will assign the altimeter setting to use at aircraft check-in upon arrival to the control area.

Air Command:
Orbits in vicinity of incident at 4,500 feet AGL

Rotor Wing Aircraft:

Northbound: 250 feet MSL
Southbound: 750 feet MSL

Fixed Wing Aircraft:

Northbound: 1,500 feet MSL
Southbound: 2,500 feet MSL

D-9-E Fuel Availability Locations

Jet aircraft fuel is available at the following locations:

JP-8	Lat/Long
USCG Air Station Humboldt Bay	N40 59 / W124 06
USCG Point Arena Fuel Farm	N38 57.5 / W123 44.4

Note: PRIST anti-icing agent included in fuel

Jet A	Lat/Long
Crescent City Airport	N41 47 / W124 14
Arcata Airport	N40 59 / W124 06
Kneeland CDF Base	N40 43 / W123 55
Rohnerville CDF Base	N40 33 / W124 08
***Eel River CDF Work Camp (Redway, CA)	N40 08.6 / W123 49.3
Howard Forest CDF Base (Willits, CA)	N39 20.8 / W123 18.97
Ukiah Airport	N39 08 / W123 12

Note: *** rotary-wing only

D-10 Post-Emergency Operations

All post-emergency operations in response to tsunami affects will be in accordance with those procedures established in the Humboldt County Emergency Operations Plan.

E NOTIFICATION PROCEDURES

Emergency response agencies will use all means available to notify the public within and adjacent to their jurisdictions. Notification methods include activation of the Emergency Alert System, activation of the County Tsunami Siren Warning System, and using surface, air, and

water assets to visually alert and to sound both verbal and noise alarms. A telephone “reverse calling” system for the cities of Eureka and Fortuna is scheduled for implementation sometime during early 2006. That system will greatly improve the capability of those cities to warn affected area residents. There are no areas of the Humboldt County coastline which are currently covered by a siren warning system. However, a siren warning system is being planned and could be partially operational by the end of 2006.

E-1 Message Verification

Care must be taken to ensure the authenticity of a tsunami event message, as the implementation of local area tsunami response actions will immediately affect many agencies and a large portion of the area population. Initial notification messages received through secure channels shall be acted upon immediately. Any messages received through non-secure channels such as the telephone shall be verified prior to taking action.

E-2 Advisory Bulletin Procedure

Upon receipt of an Advisory Bulletin, the Sheriff’s Dispatch Center will determine whether or not a tsunami may eventually affect the Humboldt Operational Area (OA). Note that the initial bulletin may not have enough information to make such a determination, so, subsequent bulletins should be carefully reviewed. If it is determined that a tsunami may eventually threaten the OA, the Sheriff’s Dispatch Center will immediately notify the Director of Emergency Services (Sheriff) or the Director’s designated representative and the Office of Emergency Services Program Coordinator for further instructions. The Sheriff’s Dispatch Center may be directed to implement the Emergency Alert List (EAL) as promulgated in the Humboldt County Emergency Operations Plan in order to provide as much advance notification as possible to area agencies.

E-3 WATCH Bulletin and WARNING Bulletin Emergency Contact Procedure

Upon receipt of a WATCH Bulletin or WARNING Bulletin, the Sheriff’s Dispatch Center will immediately notify the Director of Emergency Services (Sheriff) or the Director’s designated representative and the Office of Emergency Services (OES) Program Coordinator. The Director or the Director’s authorized representative will confirm the tsunami threat and authorize further response procedures be implemented. The Dispatch Center will also concurrently implement its Warning Point responsibilities and notify other local area agencies listed in this Plan’s Emergency Contact List. The Director will authorize at least a Level 2 activation of the Emergency Operations Center and will order the Dispatch Center to implement the Emergency Alert List (EAL) as promulgated in the Humboldt County Emergency Operations Plan.

Responding OES personnel will, with prior arrangement, assist the Dispatch Center in its notification responsibilities. Any OES assistance with Warning Point responsibilities will be limited and strictly coordinated between the Dispatch Center and OES. Responding OES personnel may assume all EAL notification responsibilities as they become operational.

E-3-A WATCH Bulletin Specifics

A confirmed-threat WATCH Bulletin will begin the emergency response activation process.

Public agencies will begin the public notification process and prepare for possible emergency evacuations should a WARNING Bulletin be received.

A WATCH Bulletin does not automatically trigger activation of the Emergency Alert System (EAS). The Director of Emergency Services, in consultation with the National Weather Service, will make any EAS activation decisions based on the individual situation. Any needed public information broadcasts describing the situation will begin as soon as possible. Those broadcasts will include the probable “next steps” including field notifications and possible evacuation procedures.

E-3-B WARNING Bulletin Specifics

A confirmed-threat WARNING Bulletin does trigger automatic activation of the Emergency Alert System (EAS). Public emergency response agencies will begin emergency notification and evacuation procedures.

E-4 WATCH Bulletin and WARNING Bulletin Emergency Contact List

NOTE: This contact list contains restricted information and is deleted from any public access copies of the Tsunami Contingency Plan.

*** (INSERT EMERGENCY CONTACT LIST) ***

E-5 Tsunami Siren Warning System Activation Procedure

Actual activation of the County Tsunami Siren Warning System is the responsibility of the National Weather Service on Woodley Island following the protocol determined between the NWS and the County Director of Emergency Services (Sheriff). All activations of the system will be in conjunction with applicable EAS broadcasts.

For a distant-source tsunami event, upon receipt of a WARNING Bulletin or three hours from the first estimated tsunami wave arrival, whichever occurs first, the siren warning system will be activated. The activation of the siren warning system for a near-source tsunami event will occur immediately once the magnitude of the event and its threat are recognized.

Siren activations will be generally made at the following intervals:

3 hours from the first estimated tsunami wave arrival

2 hours from the first estimated tsunami wave arrival

1 hour from the first estimated tsunami wave arrival

30 minutes from the first estimated tsunami wave arrival

Sirens will sound continuously for three minutes during each activation.

Siren activations will consist of the following signals:

Actual Tsunami Warning:	continuous 3 minute wailing tone
Cancellation or Re-Entry::	3 short blasts of a uniform tone
Test:	3 short blasts of a uniform tone

It is important to note that a siren activation should not be associated with an immediate evacuation. The siren's only purpose is to bring attention to the situation – persons hearing a siren should seek additional information and instructions via radio, television, or the internet. DO NOT CALL 911.

E-6 WARNING Areas and Responding Agencies

Responding Agency	WARNING Area
Arcata Police Department Arcata Volunteer Fire Dept. (HSU Police Dept. assist)	Manila, Tyee City, vicinity of Canal School and Arcata Bottoms (West of line of roadblocks) (coordinate with CHP, Samoa-Peninsula Fire, and Sheriff)
California Dept. of Fish & Wildlife	Table Bluff to Eel River beach area (coordinate with BLM, Loleta Fire, and Sheriff)
California Dept. of Forestry & Fire Protection	Airborne surveillance of inundation areas (coordinate with CAP, CHP, and USCG) and provide vehicles and personnel to support other agency assignments as needed.
California Dept. of Parks and Recreation (in cooperation with Redwood National Park)	Beaches at Gold Bluffs, Stone Lagoon, Dry Lagoon, and Big Lagoon; Agate Beach, Patrick's Point State Park, (coordinate with CHP, Orick VFD, Sheriff, Trinidad PD/VFD, and RNP)
California Dept. of Transportation	Personnel and material support for roadblocks (coordinate with APD, CHP, EPD, and Sheriff)
California Highway Patrol	Highway 101 access to Big Lagoon Park, Trinidad harbor, Luffenholz Beach, Moonstone Beach, Clam Beach, areas between Arcata and Eureka, and areas south of Eureka to Hookton Rd. (coordinate with APD, CA Parks, CalTrans, EPD, HC Public Works, Humboldt Fire Dist 1, RNP, Sheriff, TPD, and US Fish & Wildlife).

Airborne notification of beach areas (coordinate with CAP, CDF, and USCG)

Civil Air Patrol

Airborne surveillance of inundation areas (coordinate with CDF, CHP, and USCG)

Eureka Police Department
Humboldt Bay Fire
Eureka Public Works Department

Area from Eureka Slough North of 2nd St and West of Broadway to Elk River (coordinate with CHP, Humboldt Bay Fire 1, and Sheriff)

Ferndale Police Department
Ferndale Volunteer Fire Dept.

West of Dillon Rd; West of Meridian Rd along Port Kenyon Rd; West of Russ Lane North of Centerville Rd; Centerville Beach (coordinate with BLM and Sheriff)

HSU Police Dept. see Arcata Police Dept.

Humboldt Bay Harbor Recreation & Conservation District

Harbor District facilities including Woodley Island Marina, Foot of Park St. in Eureka, King Salmon Beach, Fields Landing Boat Yard, Redwood Dock in Samoa, and Shelter Cove (coordinate with EFD/EPD, SCVD, Sheriff, SPFD, and USCG)

Humboldt County Public Works Dept.

Personnel and material support for roadblocks (coordinate with Sheriff); access to Big Lagoon Park, Trinidad Scenic Drive, Luffenholz Beach, Moonstone Beach, Little River, Clam Beach, North Spit, and Centerville Beach Park (coordinate with APD, BLM, CHP, EPD, FPD, Sheriff, State Parks, and TPD)

Humboldt County Sheriff's Office

Beaches at mouth of Redwood Creek and area west of Orick, Big Lagoon, Trinidad Park, Patrick's Point to Trinidad Scenic Drive, Luffenholz Beach, Moonstone Beach, Little River, Clam Beach, Clam Beach to Mad River, Mad River to near south end of North Spit, King Salmon, Fields Landing, South Spit to Table Bluff, Loleta bottoms, Eel River to Centerville Beach Park, Centerville Beach Park south to Cape Mendocino area, Bear River beach, Ocean Ranch south to Mattole

	River (coordinate with all agencies as OES)
Resident Deputy, Shelter Cove	Shelter Cove harbor and beach area (coordinate with BLM and Shelter Cove Fire Dept.)
Humboldt Bay Fire 1	Outlying areas of Eureka including Humboldt Hill, Field's Landing, King Salmon, Elk River, Pine Hill, and along the low-lying areas northeast of Humboldt Bay (coordinate with CHP, EFD, and Sheriff).
Loleta Volunteer Fire Dept.	Eel River bottom areas from Eel River to Table Bluff including Eel River Dr.; portions of Tompkins Hill Rd. north of Hookton Rd. to College of the Redwoods (coordinate with BLM and Sheriff)
Manila Community Services District	XXXXXXXXXXXXXXXXXXXX
Orick Volunteer Fire Dept.	Orick Valley areas and Freshwater Lagoon inland areas (coordinate with CHP, RNP and State Parks, Sheriff)
Petrolia Volunteer Fire Dept.	Cape Mendocino to Punta Gorda beach areas (coordinate with BLM and Sheriff)
Samoa-Peninsula Fire District	Fairhaven and Samoa. Assist with environs on North Spit including Manila (coordinate with APD, BLM, Sheriff, USCG)
Shelter Cove Fire Department	Shelter Cove area west of Upper Pacific Rd.; Shelter Cove Beach south to No Pass; Black Sands Beach north to Gitchell Creek (coordinate with BLM and Resident Sheriff's Deputy)
Trinidad Police Department Trinidad Volunteer Fire Department	Trinidad harbor and beach area (coordinate with CHP, Sheriff, and State Parks)
U. S. Bureau of Land Management	Southern end of North Spit,

South Spit to Table Bluff, Centerville Beach Park south to Cape Mendocino area, Mattole River south to Shelter Cove (coordinate with FPD, Loleta Fire, Petrolia Fire, Samoa-Peninsula Fire, Shelter Cove Fire, Sheriff, and USCG)

U. S. Coast Guard

Moored and underway water traffic; Southern end of North Spit (coordinate with BLM, Samoa-Peninsula Fire and Sheriff); Airborne surveillance of inundation areas (coordinate with CAP, CDF, and CHP); VHF Ch. 16 announcements (coordinate with Sheriff OES and NWS)

U. S. Fish and Wildlife Service

Southern Humboldt Bay area (coordinate with BLM, CHP, and Sheriff)

U. S. National Weather Service

Emergency Alert System notifications (coordinate with Sheriff's OES and USCG); NOAA Weather Radio information

U. S. Redwood National Park (in cooperation with State Parks)

Freshwater Lagoon and beach areas, Hidden Beach, and Gold Bluffs Beach (coordinate with CHP, Orick VFD, State Parks, and Sheriff)

E-7 "Access" Announcements

Two different and distinctly separate access announcements are possible. It is very important that responders understand the difference between the two announcements and that the correct access announcement is communicated to the public. Airborne surveillance and response operations are exempt from access restrictions.

E-7-A Emergency Responder "Restricted Access"

The "Restricted Access" announcement is for emergency response personnel only and shall be promulgated through official communications systems. This announcement does not apply to the general public. It advises when it is safe for search and rescue and official damage assessment teams to re-enter the area. Emergency response personnel re-entering an evacuated area should be aware of the expected tidal heights/times and the possibility of unstable water fluctuations in the aftermath of a significant tsunami event. If tsunami waves occur in the area, the "Restricted Access" announcement for emergency response personnel will generally be given two hours after the last significant wave passes. Other conditions may require local authorities to

delay the “Restricted Access” announcement.

E-7-B General Public “All-Clear”

If no tsunami was generated, a general public “All-Clear” announcement will be given two hours after the estimated time of arrival of the initial projected wave. All persons will be allowed to re-enter the evacuated area.

If a tsunami was generated, the evacuation zone will remain in effect until at least two hours after the last significant wave passes AND after local authorities have assessed the situation. The general public “All-Clear” announcement will not be given until local authorities are satisfied the area is secure. If extensive damages occur, it may be many hours or even days before the public is allowed back into the damage area.

E-8 Public Emergency Broadcast Announcement Samples

Public emergency broadcasts will take many forms. The Emergency Alert System will announce warning information over all radio and television stations. NOAA Weather Radio will broadcast warnings. In those areas covered by a “reverse calling” system, telephones located in tsunami-threat areas will be called with a warning message. Public safety agencies will patrol all streets located in tsunami-threat areas and use public address systems to announce a warning message. Time permitting, public safety officers will go door-to-door in those threat areas.

Some sample messages are listed as guidelines for both wide-area and field use. They may be modified in any way to facilitate a message broadcast.

Note: These public announcements will only be implemented upon the specific order of the Director of Emergency Services (Sheriff).

E-8-A Sample Press Release or In-Depth Public Announcement

NOTICE: These sample message notes are primarily intended for Tsunami WATCH announcements and for Tsunami WARNING announcements to the public. However, the notes may be used in any order or modified to suit the situation for any public announcement. All announcements should be timely and updated often as the situation changes.

a. A major earthquake occurred in the vicinity of _____ at _____ Pacific (Std./Daylight) Time. The West Coast & Alaska Tsunami Warning Center has confirmed the location and magnitude of the earthquake as large enough to generate a tsunami and with the potential to generate a tsunami.

b. It is not possible to predict exactly where the tsunami waves will strike, how many waves there will be, or their magnitude. Present technology can only confirm that a tsunami has been generated and can predict about what time the first tsunami wave should arrive in our area. The estimated time of arrival for the first tsunami wave is about _____ Pacific (Std./Daylight) Time.

- c. As a result, the Humboldt County Director of Emergency Services (Humboldt County Sheriff) has declared a Local Emergency and has asked that people stay off the beaches, not travel by watercraft, and evacuate low-lying coastal areas.
- d. Area law enforcement, fire, and other emergency response personnel are currently warning people of the danger in the areas potentially threatened by the tsunami.
- e. The areas that are (threatened/being evacuated) are the entire Humboldt County coastline below the _____-foot elevation, the Arcata Bottoms, the Samoa Peninsula, the North and South Spits, the Humboldt Bay lowlands area from Second Street to the bay and from Broadway to the bay, Indian Island and Woodley Island in Eureka, King Salmon, Fields Landing, the Loleta Bottoms, and the Ferndale area west of Dillon and Meridian Roads.
- f. The California Penal Code, Section 409.5, provides for the closing of threatened areas and makes it a misdemeanor to stay in an area, or knowingly enter an area, after receiving notice to evacuate.
- g. If no tsunami waves are received for two hours after the estimated time of arrival, roadblocks will be removed AFTER THE “ALL-CLEAR” IS ANNOUNCED.
- h. If tsunami waves are received, the public will not be permitted to enter the evacuated areas until (1) after a two-hour period has passed in which no tsunami waves are received, and (2) after emergency personnel have completed an assessment of the area (following the “Restricted Access” announcement), and (3) AFTER THE “ALL-CLEAR” IS ANNOUNCED.
- i. No one can predict how many waves will be received in a tsunami event or the interval between the waves. It is possible for damaging waves to arrive for many hours. Remember, the twelve people lost in the 1964 Crescent City tsunami were people who had been evacuated but then returned to the area before the “All-Clear” was announced. They were caught in subsequent tsunami waves and killed.
- j. The tsunami may not strike the Humboldt County coastline. But, it is better to take precautions now for a few hours than to have people injured or killed.
- k. Stay tuned to your Emergency Alert System station for further information and instructions.

E-8-B Sample Public Address Field Announcement

Public safety personnel using response vehicles in the field should first sound a siren or other noise-generating device to attract attention before beginning each announcement over the vehicle public address system. The message should be repeated. They should move the vehicle a short distance and then repeat the process until all persons in the entire threat area are warned.

“A tsunami warning has been issued for the Humboldt County coastline. Tsunami waves are expected to arrive at approximately _____ Pacific (Std./Daylight) Time. All persons in tsunami-threat areas should move to areas of safety.”

F EVACUATION PROCEDURES

Should the Director of Emergency Services (Sheriff) order an evacuation of person from projected inundation areas, Operational Area (OA) response agencies shall coordinate their operations through the OA Emergency Operations Center.

F-1 Responding Agency Traffic Control Responsibilities

Designated responding federal, state, and local agencies will assume responsibility for establishing and manning roadblocks at selected traffic control points adjacent to tsunami-prone impact areas along the Humboldt County coastline. Each agency will ensure contingency plans are in effect and personnel are trained for their roadblock assignments. Coordination of those agencies' emergency response actions will be through the Humboldt County Director of Emergency Services (Humboldt County Sheriff) and the Office of Emergency Services (OES). The Sheriff's Department will establish a field Command Post at the junction of Highway 101 and Elk River Road just south of Eureka. Any deviations from planned response assignments due to the situation or for any other reason are to be immediately communicated to the OES.

Roadblocks are not to stop traffic until one hour prior to the projected estimated time of arrival (ETA) of the initial tsunami. Should the Director determine that the danger of a tsunami is imminent, notification will be made to immediately establish roadblocks. Some identified major roadblocks will require the presence of uniformed law enforcement officers.

Each agency will ensure that personnel manning roadblocks understand that no entry by anyone is to be made back into evacuated areas until two hours after the ETA if no tsunamis are detected AND after the "All Clear" message has been promulgated. If tsunamis are detected, no entry by anyone, including emergency responders, is to be made back into evacuated areas until the area is free of tsunamis for two hours AND after the "Restricted Access" message has been promulgated. After the "Restricted Access" message, only emergency responders will be allowed back into the evacuated areas. (Refer to "Access" Announcements, section E-6.) Airborne surveillance and response operations are exempt from access restrictions.

All emergency response agency personnel participating in ground notification efforts will leave all evacuation areas 30 minutes prior to the ETA of the projected initial tsunami wave arrival time. Announcements to leave threatened areas will be made over all available official communications systems.

F-2 Agency Communications

All intra-agency communications will remain the same and not change from those used in normal operations.

Specific inter-agency communications information will be promulgated at the time of the emergency by the Humboldt County EOC.

Radio –

Specific frequencies will be designated for multi-agency command and tactical usage. The following four frequencies are available for immediate use:

CALCORD	xxx.xxx
NALEMARS	xxx.xxx
OES1	xxx.xx
OES2	xxx.xx

Phone –

Inter-agency landline, cell, and satellite phone numbers will be designated for use between responding agencies and the Humboldt County EOC.

F-3 Responding Agency Traffic Control Assignments

[NOTE: An asterisk (*) identifies those control points requiring the presence of a uniformed law enforcement officer.]

Agency	Control Point	Stop Traffic
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Arcata Police Department; Arcata Volunteer Fire Department; HSU Police Department – provide response vehicles and uniformed law enforcement personnel to warn and/or evacuate all persons to higher ground from the Mad River and Arcata Bottoms area including northern Humboldt Bay to the Samoa Bridge on the North Spit. Place signs and barricades and establish and man roadblocks at the following locations:

Canal School	Westbound
Mad River and Lanphere Roads	Westbound
Foster Avenue at Dolly Varden Rd.	Westbound
Bay School Rd. at Dolly Varden Rd.	Westbound
Vaissade Rd. at “V” Street	Westbound
Samoa Road at Old Samoa Road	Westbound & Southbound

California Dept. of Fish & Wildlife – provide response vehicles and personnel to warn and/or evacuate all persons to higher ground from the beach areas between Table Bluff south to the Eel River. Place signs and barricades and man roadblocks at the following location:

Table Bluff Rd. at South Jetty Rd.	Northbound
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California Dept. of Forestry & Fire Protection – Provide aircraft to patrol the Humboldt County

coastline and to advise persons in danger zones via loud haler to seek higher ground. Coordinate flight operations with the CHP, HCSAA, and USCG through the EOC. (NOTE: The local CDF Unit has air and wheeled assets and personnel which could be available for use where needed at varying locations along the Northern California coastline. CDF assets will be assigned as needed.)

Humboldt County coastline

Beach areas

California Dept. of Parks & Recreation – in cooperation with Redwood National Park, Orick VFD, and Trinidad PD/VFD, provide response vehicles and personnel to warn and/or evacuate all persons to higher ground from the Gold Bluffs Beach at the Del Norte County line south to Redwood Creek, the Stone Lagoon and Dry Lagoon beaches, Agate Beach, Patrick’s Point beaches, Trinidad beaches, and Little River beaches (see “U. S. Redwood National Park” in this section). Place signs and barricades and man roadblocks at the following locations:

Davidson Road at top of bluff	Westbound
Stone Lagoon beach access	Beach traffic
Dry Lagoon beach access	Beach traffic
Patricks Point beach access	Beach traffic

California Dept. of Transportation – provide personnel to place signs (including activation of fixed and portable electronic warning notice signs) and barricades and to establish and man roadblocks at the following locations (uniformed law enforcement officers will also be present):

*Hwy 101 at South edge of Orick	Southbound
*Hwy 101 at Freshwater Lagoon	Northbound
*Hwy 101 at entrance to Big Lagoon Park	Northbound & Westbound
*Hwy 101 at Westhaven Road	Southbound & Westbound
*Hwy 101 at Airport Road	Northbound
*Hwy 101 at South “G” St. (Arcata)	Southbound
*East (ocean) end of Samoa Bridge (Eureka)	Westbound
*Hwy 101 at Elk River Road	Southbound
*Hwy 101 at Humboldt Hill Road	Northbound & Southbound
*Hwy 101 at Fields Landing	Northbound

- *Hwy 101 at King Salmon Northbound & Southbound
- *Hwy 101 at Tompkins Hill Rd. Southbound
- *Hwy 101 at Hookton Road Northbound
- *SR211 at Fernbridge Westbound

California Highway Patrol – provide response vehicles and uniformed law enforcement personnel to establish and man roadblocks at the below listed locations. Provide aircraft to patrol the Humboldt County coastline and to advise persons in danger zones via loud haler to seek higher ground. Coordinate flight operations with the CAP, CDF, and USCG through the EOC.

- *Hwy 101 at South edge of Orick Southbound
- *Hwy 101 at Freshwater Lagoon Northbound
- *Hwy 101 at entrance to Big Lagoon Park Northbound & Westbound
- *Hwy 101 at Westhaven Road Southbound & Westbound
- *Hwy 101 at Airport Road Northbound
- *Hwy 101 at South “G” St. (Arcata) Southbound
- *East (ocean) end of Samoa Bridge (Eureka) Northbound
- *Hwy 101 at Tompkins Hill Road Southbound
- *Hwy 101 at Hookton Road Northbound & Westbound & Eastbound

Eureka Police Dept., Eureka Fire Dept., Eureka Public Works Dept. – provide response vehicles and personnel to warn and/or evacuate all persons within the areas listed below (coordinate outlying areas of Eureka with Humboldt Bay Fire 1). Provide personnel to place signs and barricades at the following locations:

All areas from Eureka Slough to Elk River Road North of Second St. and West of Broadway

- *Hwy 101 at “V” St. (Eureka) Northbound

Ferndale Police Department, Ferndale Volunteer Fire Department – provide response vehicles

and to warn and/or evacuate all residents in tsunami-susceptible areas in the southern Eel River delta to higher ground. Assist County Public Works with signs and barricades and in establishing and manning roadblocks at the following locations:

Port Kenyon Rd. at Meridian Rd.	Westbound
Port Kenyon Rd. at Dillon Rd.	Northbound
Centerville Rd. at Russ Ln.	Westbound & Northbound

HSU Police Department – see Arcata Police Department

Humboldt Bay Harbor, Recreation, and Conservation District – notify all tenants and guests of the tsunami threat posture at Harbor District facilities in the following locations: Woodley Island Marina in Eureka, Foot of Park Street in Eureka, King Salmon Beach, Fields Landing Boat Yard, Redwood Dock in Samoa, and Shelter Cove Bluff, Breakwater, and Ramp. Provide personnel to place signs and barricades and to warn and/or evacuate persons at Woodley Island Marina including establishing a roadblock at the entrance to Woodley Island.

Humboldt County Public Works Department – provide personnel to place signs and barricades and to establish and man roadblocks at the following locations:

Hufford Rd. at Hwy 101 in Orick	Westbound
King Salmon Ave. at Hwy 101	Westbound
Fields Landing Ave. at Hwy 101	Westbound
Table Bluff Rd. at top of bluff	Beach traffic
Eel River Dr. at Cannibal Rd.	Westbound
Copenhagen Rd. and Hawks Hill Rd.	Westbound & Southbound
Port Kenyon Rd. at Meridian Rd.	Westbound
Port Kenyon Rd. at Dillon Rd.	Northbound
Centerville Rd. at Russ Ln.	Westbound & Northbound
Mattole Rd. at Ocean House	Southbound
Mattole Rd. at McNutt Gulch	Northbound

Humboldt County Sheriff’s Office – provide response vehicles and personnel to warn and/or evacuate all persons to higher ground from the King Salmon area west of Hwy 101, from the Fields Landing area west of Hwy 101, and from the Humboldt Bay Mobile Estates at Spruce Point.

(1) Establish one or more field Command Post at the following location(s):

*Hwy 101 at Elk River Road Southbound

*Hwy 101 at Humboldt Hill Road Northbound

(2) Provide response vehicles and uniformed law enforcement personnel to establish and man roadblocks at the following locations:

*Hwy 101 at Elk River Road Southbound

*Hwy 101 at Humboldt Hill Road Northbound

(3) Provide four-wheel drive response vehicles and uniformed law enforcement personnel to travel the wave slope and warn persons to evacuate from the following beach areas (listed north to south):

Little River to Mad River Beach traffic

Mad River to North Jetty Beach traffic

South Jetty to Eel River Beach traffic

Eel River to False Cape Beach traffic

Humboldt County Sheriff’s Air Auxiliary – provide aircraft to patrol coastline and provide assessment information to the County EOC. Coordinate flight operations with the CDF, CHP, and USCG through the EOC.

Humboldt County coastline Beach areas

Humboldt Bay Fire 1 – provide response vehicles to warn and/or evacuate all residents in tsunami-susceptible areas in the outlying areas of Eureka including Humboldt Hill, Field’s Landing, King Salmon, Elk River, and Pine Hill. Coordinate with CHP, Eureka Fire/Police/Public Works Departments, and Sheriff’s Office.

Loleta Volunteer Fire Department – provide response vehicles to warn and/or evacuate all

residents in tsunami-susceptible areas in the northern Eel River delta to higher ground. Assist County Public Works with signs and barricades and in establishing and manning roadblocks at the following locations:

Eel River Dr. at Cannibal Rd.

Westbound

Copenhagen Rd. and Hawks Hill Rd.

Westbound & Southbound

Orick Volunteer Fire Department – in cooperation with CHP, RNP and State Parks, and the Sheriff’s Office, provide response vehicles and personnel to warn and/or evacuate threatened coastal and river residents of the Orick Valley and the inland areas of Freshwater Lagoon.

Petrolia Volunteer Fire Department – provide response vehicles and personnel to warn and/or evacuate all coastal residents between Capetown (Bear River) and Cooksie Creek from low-lying areas to higher ground. Assist County Public Works with signs and barricades and in establishing and manning roadblocks at the following locations:

Mattole Road near Ocean House

Southbound

Mattole Road near McNutt Creek

Northbound

Lighthouse Rd. at Stansberry Creek

Westbound

Samoa-Peninsula Fire Department – provide response vehicles and personnel to warn and/or evacuate all persons on the North Spit between the Samoa Bridge and the U. S. Coast Guard Station to higher ground to the east of Humboldt Bay.

Shelter Cove Fire Department – in cooperation with the Sheriff’s Office and BLM, provide response vehicles and personnel to warn and/or evacuate all coastal residents from low-lying areas to higher ground in all areas east of Upper Pacific Rd including Black Sands Beach north to Gitchell Creek and Shelter Cover Beach to the south. Place signs and barricades and establish and man roadblocks at the following location:

One block west of Upper Pacific Rd.

Westbound

Trinidad Police Department, Trinidad Volunteer Fire Department – provide response vehicles and uniformed law enforcement personnel to warn and/or evacuate all persons from the Trinidad harbor and beach area. Place signs and barricades, establish and man roadblocks at the following locations:

Trinidad harbor area

Beach traffic

U. S. Bureau of Land Management – provide response vehicles and personnel to warn and/or evacuate all coastal residents from low-lying areas to higher ground from the Eel River south past Centerville Beach and along the Lost Cost Trail between Cooksie Creek and Black Sands Beach.

U. S. Coast Guard – provide response vehicles and personnel to warn and/or evacuate all persons from the southern end of the North Spit to higher ground to the east of Humboldt Bay. Initiate VHF Ch. 16 announcements (coordinate information with NWS). Provide aircraft to patrol the Humboldt County coastline and provide assessment information to the County EOC. Coordinate flight operations with the CDF, CHP, and HCSAA through the EOC. NOTE: Coast Guard Group Humboldt Bay responsibilities include the entire coastlines of Humboldt, Del Norte, and Mendocino Counties. Group Humboldt Bay response operations should be coordinated with all three county EOCs for optimum response coverage.

U. S. Fish and Wildlife Service – provide response vehicles and personnel to warn and/or evacuate all persons from the Humboldt Bay National Wildlife Refuge and the adjacent southern portions of Humboldt Bay to higher ground.

U. S. National Weather Service – in cooperation with Sheriff’s Office OES, ensure Emergency Alert System is activated and appropriate messages are transmitted via all local broadcast media. Coordinate with USCG on information for VHF Ch. 16 announcements.

U. S. Redwood National Park – in cooperation with California Dept. of Parks & Recreation and the Orick VFD, provide response vehicles and personnel to warn and/or evacuate all persons between the Del Norte County line and Freshwater Lagoon low-lying areas to higher ground (see “California Dept. of Parks & Recreation” in this section). Assist CHP and SO with Hwy. 101 corridor traffic control between the Del Norte County line and the Freshwater Lagoon area.

F-1 Evacuation Routes

(Under Development)

Note: It is the intent of this plan to identify and map traffic flow routes to safe areas for all Humboldt County coastal areas. Generally, those evacuation routes will follow an easterly direction away from the coastline and will end in safe areas where there is no danger of tsunami waves. Safe areas are currently identified by the color white on the various Humboldt County Tsunami Hazard Maps (see section J).

All persons in low-lying coast areas should be aware of the need to immediately evacuate to higher ground when a strong earthquake is felt. The current recommendations are to evacuate to areas at least 100 feet above sea level on the open coast or at least two miles inland on low-lying ground – every foot upward or inland may make a difference.

G SEARCH AND RESCUE PROCEDURES

Except for the use of airborne assets, no search and rescue operations shall commence until after receipt of the “Restricted Access” announcement for emergency responders only (see section E-6). All search and rescue operations shall be in accordance with the standard operating procedures of the agency involved. All search and rescue operations shall be coordinated with the Humboldt County Emergency Operations Center to ensure any required additional resource assignments are prioritized and based on need.

H INITIAL RECONNAISSANCE/ASSESSMENT PROCEDURES

Except for the use of airborne assets and reports from Observation Points, no initial reconnaissance/assessment operations shall commence until after receipt of the “Restricted Access” announcement for emergency responders only (see section E-6). Initial reconnaissance/assessments should, if possible, be conducted at low tide. Emergency response personnel re-entering an evacuated area should be aware of the expected tidal heights/times and the possibility of unstable water fluctuations in the aftermath of a significant tsunami event. All initial reconnaissance/assessment operations shall be conducted by the agency responsible for field notifications for that area. Initial reconnaissance/assessment results shall be immediately communicated to the Humboldt County Emergency Operations Center for accounting and for response prioritization planning.

I POST-TSUNAMI EVENT ACTIONS

After confirmation of the final tsunami wave occurrence, and, during the “Restricted Access” phase of response operations, emergency management operations will begin transition from the Response Phase into the Recovery Phase. All Recovery Phase actions will be guided by the Humboldt County Emergency Operations Plan, Part 4.

J HUMBOLDT COUNTY TSUNAMI HAZARD MAPS*

The following listed Humboldt County Tsunami Hazard Maps* and usage information pages are provided for Plan clarification purposes only. The maps are generated using information compiled from past studies and formatted for easy reference. They should not be construed as official government documents nor do they have any official government approval for their use. The maps are, however, the most up-to-date and comprehensive display documents available for the covered area tsunami hazard.

The Humboldt County Tsunami Hazard Maps* are the work product of Dr. Lori Dengler and

Jason R. Patton of the Humboldt State University Humboldt Earthquake Education Center and can be electronically accessed at:
www.humboldt.edu/~geodept/earthquakes/rctwg/toc.html

Overview of the Humboldt Bay tsunami hazards mapping project and methodology – “Mapping Humboldt County’s Tsunami Hazard”

Humboldt Bay Hazard Map

Map 1: Westhaven to McKinleyville

Map 2: McKinleyville to Arcata

Map 3: Arcata to Eureka – northern Samoa Peninsula

Map 4: Eureka to Fields Landing – southern Samoa Peninsula

Map 5: Mouth of the Bay – south spit

Map 6: South Bay to Eel River Mouth

Map 7: Southern Eel River basin – Ferndale

Map 8: Eel River basin – Fortuna

*Dengler, L., Ludy, B., Patton, J., 2003, Relative tsunami hazard maps, EOS Transactions American Geophysical Union, vol. 84, no. 46, Suppl., Abstract No. OS22b-1162.

*Patton, J., Dengler, L., Ludy, B., 2004, GIS-based relative tsunami hazard maps, Humboldt County, California, Geological Society of America, GSA Abstracts with Programs Vol. 36, No. 4, Abstract No: 72235.

K HUMBOLDT COUNTY TSUNAMI EVACUATION MAPS

(Under Development)

L APPROVED TSUNAMI SIGNS

Entering Tsunami Hazard Zone



Leaving Tsunami Hazard Zone



Tsunami Evacuation Route



Evacuation Site



Tsunami Hazard Zone



APPENDIX IX DOCK ADDRESS SYSTEM

Humboldt Bay Berth Codes									
Port Area	UNLOC	Channel	Commonly Known as	AIS Destination Code	AIS Destination Code	Degrees, Minutes & Seconds		Degrees, Decimal Minutes	
				(with Dock Identifier)	(USCG Minimum Required)	N Latitude	W Longitude	N Latitude	W Longitude
Humboldt Bay	EKA	North Bay Channel	Zerlang Dock/Boat Yard	US EKA NBC 11	EKA NBC 11	40° 47' 44.4"	124° 11' 34.0"	40° 47.740	124° 11.567
Humboldt Bay	EKA	North Bay Channel	Unocal Dock	US EKA NBC 12	EKA NBC 12	40° 47' 46.0"	124° 11' 34.0"	40° 47.767	124° 11.233
Humboldt Bay	EKA	North Bay Channel	Unocal Dock Ramp	US EKA NBC 12-A	EKA NBC 12-A	40° 47' 46.1"	124° 11' 08.9"	40° 47.767	124° 11.158
Humboldt Bay	EKA	North Bay Channel	Kuper Dock 2	US EKA NBC 13	EKA NBC 13	40° 47' 52.0"	124° 11' 32.4"	40° 47.867	124° 11.540
Humboldt Bay	EKA	North Bay Channel	Schneider Dock	US EKA NBC 14	EKA NBC 14	40° 47' 50.5"	124° 11' 12.0"	40° 47.842	124° 11.200
Humboldt Bay	EKA	North Bay Channel	Schneider Ramp	US EKA NBC 14-A	EKA NBC 14-A	40° 47' 51.5"	124° 11' 07.6"	40° 47.860	124° 11.128
Humboldt Bay	EKA	King Salmon Channel	Gila	US EKA KSC 1	EKA KSC 1	40° 44' 11.4"	124° 13' 11.5"	40° 44.180	124° 13.182
Humboldt Bay	EKA	King Salmon Channel	EZ Landing	US EKA KSC 3	EKA KSC 3	40° 44' 12.0"	124° 13' 05.0"	40° 44.200	124° 13.083
Humboldt Bay	EKA	King Salmon Channel	Johnny's Marina	US EKA KSC 5	EKA KSC 5	40° 44' 14.3"	124° 13' 02.3"	40° 44.238	124° 13.038
Humboldt Bay	EKA	Fields Landing Channel	Humboldt Bay Forest Products	US EKA FLC 2	EKA FLC 2	40° 43' 57.6"	124° 13' 06.3"	40° 43.960	124° 13.108
Humboldt Bay	EKA	Fields Landing Channel	Woody's Other Dock	US EKA FLC 4	EKA FLC 4	40° 43' 46.1"	124° 13' 11.0"	40° 43.768	124° 13.183
Humboldt Bay	EKA	Fields Landing Channel	South Bay Marina	US EKA FLC 6	EKA FLC 6	40° 43' 41.5"	124° 13' 13.7"	40° 43.692	124° 13.228
Humboldt Bay	EKA	Fields Landing Channel	Eureka Fisheries	US EKA FLC 8	EKA FLC 8	40° 43' 39.0"	124° 13' 15.5"	40° 43.650	124° 13.258
Humboldt Bay	EKA	Fields Landing Channel	County Boat Ramp	US EKA FLC 10-A	EKA FLC 10-A	40° 43' 34.0"	124° 13' 16.0"	40° 43.567	124° 13.267
Humboldt Bay	EKA	Fields Landing Channel	Fields Landing Boat Yard	US EKA FLC 12	EKA FLC 12	40° 43' 26.0"	124° 13' 22.8"	40° 43.433	124° 13.380
Humboldt Bay	EKA	Fields Landing Channel	Fields Landing Terminal	US EKA FLC 14	EKA FLC 14	40° 43' 24.4"	124° 13' 24.2"	40° 43.407	124° 13.403
Humboldt Bay	EKA	Hookton Channel	Hookton Slough Boat Dock	US EKA HC 2	EKA HC 2	40° 40' 38.6"	124° 13' 18.4"	40° 40.643	124° 13.307

Humboldt Bay Berth Codes									
Port Area	UNLOC	Channel	Commonly Known as	AIS Destination Code	AIS Destination Code	Degrees, Minutes & Seconds		Degrees, Decimal Minutes	
				(with Dock Identifier)	(USCG Minimum Required)	N Latitude	W Longitude	N Latitude	W Longitude
Humboldt Bay	ACV	Mad River Slough	Mad River Slough Boat Ramp	US ACV MR 1-A	ACV MR 1-A	40° 51' 54.7"	124° 09' 01.9"	40° 51.912	124° 09.032
Humboldt Bay	ACV	Arcaia Channel	Sanctuary Boat Ramp	US ACV AC 2-A	ACV AC 2-A	40° 51' 22.2"	124° 09' 54.6"	40° 51.370	124° 09.910
Humboldt Bay	ACV	Eureka Slough	Target Boat Ramp	US ACV ES 2-A	ACV ES 2-A	40° 48' 19.8"	124° 08' 32.0"	40° 48.330	124° 08.838
Humboldt Bay	ACV	Eureka Inner Reach	1091 Berth	US ACV IR 32	ACV IR 32	40° 48' 35.0"	124° 09' 05.5"	40° 48.583	124° 09.082
Humboldt Bay	ACV	Eureka Middle Channel	Wylot Dock	US ACV MC 7	ACV MC 7	40° 48' 54.6"	124° 09' 27.5"	40° 48.908	124° 09.458
Humboldt Bay	ICR	Samoa Channel	Simpson Chip Export Dock	US ICR SC 1	ICR SC 1	40° 48' 55.0"	124° 11' 26.0"	40° 47.917	124° 11.433
Humboldt Bay	ICR	Samoa Channel	Redwood Terminal Berth 2	US ICR SC 3	ICR SC 3	40° 48' 12.4"	124° 11' 18.6"	40° 48.207	124° 11.310
Humboldt Bay	ICR	Samoa Channel	Unmanned HO Dock	US ICR SC 5	ICR SC 5	40° 48' 28.1"	124° 11' 16.0"	40° 48.468	124° 11.261
Humboldt Bay	ICR	Samoa Channel	Aquaculture Terminal Dock	US ICR SC 7	ICR SC 7	40° 48' 41.0"	124° 11' 11.0"	40° 48.683	124° 11.183
Humboldt Bay	ICR	Samoa Channel	Redwood Terminal Berth 1	US ICR SC 9	ICR SC 9	40° 48' 59.6"	124° 10' 53.0"	40° 48.993	124° 10.883
Humboldt Bay	EKA	Eureka Middle Channel	Johnson Dock	US EKA MC 1	EKA MC 1	40° 48' 31.4"	124° 10' 15.7"	40° 48.523	124° 10.262
Humboldt Bay	EKA	Eureka Middle Channel	Bates Dock	US EKA MC 3	EKA MC 3	40° 48' 35.1"	124° 10' 09.0"	40° 48.585	124° 10.150
Humboldt Bay	EKA	Eureka Middle Channel	Fleming/Stamland Dock	US EKA MC 5	EKA MC 5	40° 48' 37.7"	124° 10' 05.0"	40° 48.628	124° 10.083
Humboldt Bay	EKA	Eureka Inner Reach	Woodley Island Marina	US EKA IR 1	EKA IR 1	40° 48' 25.3"	124° 10' 00.0"	40° 48.422	124° 10.000
Humboldt Bay	EKA	Eureka Inner Reach	Eureka Public Marina	US EKA IR 2	EKA IR 2	40° 48' 13.0"	124° 10' 45.0"	40° 48.217	124° 10.717
Humboldt Bay	EKA	Eureka Inner Reach	Eureka Public Marina Ramp	US EKA IR 2-A	EKA IR 2-A	40° 48' 14.5"	124° 10' 34.5"	40° 48.242	124° 10.575
Humboldt Bay	EKA	Eureka Inner Reach	Commercial St. Dock	US EKA IR 4	EKA IR 4	40° 48' 17.2"	124° 10' 29.0"	40° 48.287	124° 10.483
Humboldt Bay	EKA	Eureka Inner Reach	Ice Plant	US EKA IR 6	EKA IR 6	40° 48' 19.0"	124° 10' 22.3"	40° 48.317	124° 10.372
Humboldt Bay	EKA	Eureka Inner Reach	Coast Seafoods	US EKA IR 8	EKA IR 8	40° 48' 19.5"	124° 10' 20.0"	40° 48.325	124° 10.333
Humboldt Bay	EKA	Eureka Inner Reach	Fishermens work area Dock	US EKA IR 10	EKA IR 10	40° 48' 20.3"	124° 10' 14.0"	40° 48.338	124° 10.233
Humboldt Bay	EKA	Eureka Inner Reach	C St. Dock	US EKA IR 12	EKA IR 12	40° 48' 20.7"	124° 10' 12.6"	40° 48.345	124° 10.213
Humboldt Bay	EKA	Eureka Inner Reach	Boardwalk	US EKA IR 14	EKA IR 14	40° 48' 21.2"	124° 10' 08.0"	40° 48.353	124° 10.133
Humboldt Bay	EKA	Eureka Inner Reach	F St. Loading Dock	US EKA IR 16	EKA IR 16	40° 48' 22.1"	124° 10' 01.3"	40° 48.368	124° 10.022
Humboldt Bay	EKA	Eureka Inner Reach	Cato Dock	US EKA IR 18	EKA IR 18	40° 48' 22.4"	124° 09' 45.0"	40° 48.373	124° 09.800
Humboldt Bay	EKA	Eureka Inner Reach	J st. Dock	US EKA IR 20	EKA IR 20	40° 48' 22.7"	124° 09' 45.3"	40° 48.378	124° 09.750
Humboldt Bay	EKA	Eureka Inner Reach	Old Cato Dock (K St.)	US EKA IR 22	EKA IR 22	40° 48' 22.6"	124° 09' 42.2"	40° 48.379	124° 09.703
Humboldt Bay	EKA	Eureka Inner Reach	Adams Dock	US EKA IR 24	EKA IR 24	40° 48' 22.8"	124° 09' 40.5"	40° 48.380	124° 09.675
Humboldt Bay	EKA	Eureka Inner Reach	Bornie Goal Guest Dock	US EKA IR 26	EKA IR 26	40° 48' 24.6"	124° 09' 33.7"	40° 48.410	124° 09.562
Humboldt Bay	EKA	Eureka Inner Reach	HSU Crew Dock	US EKA IR 28	EKA IR 28	40° 48' 29.2"	124° 09' 20.6"	40° 48.487	124° 09.343
Humboldt Bay	EKA	Eureka Inner Reach	Samoa Bridge Boat Ramp	US EKA IR 30-A	EKA IR 30-A	40° 48' 30.0"	124° 09' 16.0"	40° 48.500	124° 09.267
Humboldt Bay	EKA	Eureka Outer Reach	Dock B	US EKA OR 2	EKA OR 2	40° 48' 05.0"	124° 10' 58.4"	40° 48.083	124° 10.973
Humboldt Bay	EKA	North Bay Channel	Samoa Boat Ramp	US EKA NBC 3-A	EKA NBC 3-A	40° 46' 19.0"	124° 12' 45.0"	40° 46.317	124° 12.750
Humboldt Bay	EKA	North Bay Channel	Chevron Dock	US EKA NBC 4	EKA NBC 4	40° 46' 41.2"	124° 11' 46.6"	40° 46.687	124° 11.777
Humboldt Bay	EKA	North Bay Channel	Eureka Airport	US EKA NBC 5	EKA NBC 5	40° 46' 46.0"	124° 12' 31.0"	40° 46.767	124° 12.517
Humboldt Bay	EKA	North Bay Channel	Dal Norte St. Pier	US EKA NBC 6	EKA NBC 6	40° 47' 26.8"	124° 11' 20.9"	40° 47.447	124° 11.348
Humboldt Bay	EKA	North Bay Channel	Fairhaven Terminal	US EKA NBC 7	EKA NBC 7	40° 47' 18.5"	124° 11' 41.0"	40° 47.308	124° 11.683
Humboldt Bay	EKA	North Bay Channel	Preston Properties	US EKA NBC 8	EKA NBC 8	40° 47' 34.4"	124° 11' 16.4"	40° 47.573	124° 11.273
Humboldt Bay	EKA	North Bay Channel	Kuper Dock 1	US EKA NBC 9	EKA NBC 9	40° 47' 38.0"	124° 11' 33.0"	40° 47.633	124° 11.550
Humboldt Bay	EKA	North Bay Channel	Eureka Forest Products	US EKA NBC 10	EKA NBC 10	40° 47' 41.2"	124° 11' 16.0"	40° 47.687	124° 11.267

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APPENDIX X

TASKS

TASKS FOR 2017/2018

- **Identify Long Term O & M Funding for Humboldt Bay PORTS®**
- **Needs assessment of shipping channel modifications**
- **Work with Humboldt County Office of Emergency Services in the development of the Tsunami Plan**
- **Work with ACP on Abandoned Vehicles/Vessels/Debris Abatement Program**
- **Debris Management Plan**
- **Encourage Congress to Fully Fund O & M Dredging in Humboldt Bay**
- **Monitor and Advise on Planning and Implementation of a Marine Highway Program**
- **Work with United States Coast Guard on Bar Closures**

ONGOING ISSUES SUPPORTED BY THE HARBOR SAFETY COMMITTEE OF THE HUMBOLDT BAY AREA

- **Initiate Long-Term Shoal management feasibility study with USACE**
- **Continue support for PORTS® real time oceanographic program for Humboldt Bay**
- **Continuing support of education for boater safety (USCG Auxiliary, EXPO, PSA's, etc.)**
- **Continually monitor maintenance dredging and charting**
- **Updating safety brochures**

COMPLETED TASKS

Item - Description	Year Completed
Best Maritime Practices for Barges and Ships – Tsunamis (revised)	2017
Best Maritime Practices for Small Craft – Tsunamis (revised)	2017
Pilotage – U.S. Coast Guard Captain of the Port shall notify the Port Authority and the Humboldt Bay Bar Pilots altering movement of any vessel arriving or departing Humboldt Bay.	2013
Aids to Navigation - Letter of support to Scripps Institution of Oceanography Coastal Data Information Program Waveriders	2012
Aids to Navigation – Humboldt Bay Bar/Entrance Camera	2011
Best Maritime Practices for Small Boat Activities	2010
Monitoring the Improved Channels - OSPR sent a letter to U.S. Army Corps of Engineers to perform items “a-d” as part of a program to determine and portray accurate depths for Humboldt Bay.	2009
Aids to Navigation - Hazardous wave forecasting model now in use.	2008
Monitoring the Improved Channels – OSPR sent a letter to the California Transportation Commission to fund the local share of the Long Term Sediment Management program through proposition 1B funds.	2008
Vessel Routing and Traffic Patterns – Implementation of AIS for northern California Coast	2008
Vessel Anchorage – In cooperation with the Area Contingency Plan Committee, Pre-identify information necessary for responding to requests for Places of Refuge	2008
Vessel Pilotage – Humboldt Bay navigation simulation update	2008
Vessel Pilotage – Humboldt Bay maximum vessel simulation and analysis	2008

Aids to Navigation – Dock Address System completed **2007**

Item - Description **Year Completed**

Aids to Navigation – Chart naming conventions standardized **2007**

Aids to Navigation – Hookton Channel Light 1 replaced with Hookton Channel Lighted Buoy 1 **2005**

Aids to Navigation - NOAA Tide and Current Survey for Humboldt Bay completed. New tide information reflected in 2006 tide books and charts. **2004**

Vessel Anchorage - Anchoring ordinance establishing rules and regulations regarding anchoring inside Humboldt Bay **2004**

Vessel Routing and Traffic Patterns - Harbor Safety Brochure information on general vessel/navigation rules of the road. **2003**

Aids to Navigation - Lighted ranges now lit for a longer period of time. **2002**