Hawai‘i Boater’s
Hurricane Safety Manual

Tsunami Section Included
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Hurricanes are the most severe of all tropical storms and have great potential for widespread destruction in Hawai‘i. This was demonstrated in 1982 by Hurricane Iwa and in 1992 by Hurricane Iniki. Total damages in Hawai‘i from Iwa were estimated at $2.50 million and from Iniki at $2.4 billion. Hurricanes impact coastal areas in particular, especially harbors and marinas, where they cause widespread damage to boats and marine facilities. The University of Hawai‘i Sea Grant Extension Service—in cooperation with the Hawai‘i Department of Land and Natural Resources, Division of Boating and Ocean Recreation—has developed this manual to give Hawai‘i’s boaters the information they need to protect their lives and property when a hurricane or other severe storm threatens. The manual also includes a section on tsunami, another potential threat to boaters and the marine community in Hawai‘i. The procedures provided herein have been coordinated with county and state Civil Defense agencies.

Most hurricanes that impact Hawai‘i originate off the coasts of Central America or southern Mexico and then move in a west-northwest direction toward the Hawaiian islands. They often dissipate before they reach the islands or pass to the south. Storms that do not strike the islands can still cause significant damage through high surf and heavy rain/land slide conditions. On occasion, hurricanes strike Hawai‘i, causing considerable damage. Hurricane Iwa in 1982 and Hurricane Iniki in 1992 were especially destructive, causing billions of dollars in damage, especially on Kaua‘i. In addition to the considerable damage on land, boats in the harbors were hit hard, with many of them tossed onshore like toys and completely destroyed. In the aftermath of these great storms, many members of the boating community felt that they needed specific guidelines for action—especially since, with Hawai‘i sitting in the Central Pacific hurricane corridor, the probability of another hurricane striking the islands is great.

This manual provides a summary of the actions boaters and other members of Hawai‘i’s marine community may want to take before, during, and after a severe storm, especially a hurricane. It is intended to assist in preparing for and mitigating the effects of hurricanes, other severe storms, and tsunami. It includes information on these events and their dangers, provides guidelines to develop a personal preparedness plan, and lists emergency assistance information (that is, phone numbers, radio frequencies, and evacuation shelter locations). The statements, recommendations, and procedures contained in this manual may be modified or supplemented to meet the specific needs or requirements of individual boat owners. It is intended that this manual complement state and county codes and ordinances, whose provisions shall prevail in the event of a conflict.
Acknowledgements

The information in the Hawai’i Boaters Hurricane Safety Manual was gathered on behalf of the Hawai’i Department of Land and Natural Resources, Division of Boating and Ocean Recreation by the University of Hawai’i Sea Grant Extension Service. Sea Grant conducted a series of workshops in each county that included participation by representatives from county, state, and federal emergency response agencies and members of Hawai’i’s marine community. Their input and review comments were invaluable and constitute most of the local information provided in the manual.

The editor of this manual was John Clark, a local writer who was born and raised in Hawai’i. Clark is the author of a series of four books on Hawaiian beaches published by the University of Hawaii Press and is recognized as an authority on beaches and water safety. He is also a battalion chief with the Honolulu Fire Department.

Special thanks also go to Donald W. Pybas of the Florida Sea Grant College Program, Gainesville. Pybas is the editor of several books and pamphlets on hurricane preparations and response for the boating community and is one of the nation’s leading authorities on the subject.

We’d also like to thank Ward Graessle of the Ocean Surveys and Management Company; Karen Tanoue and April Kam of the University of Hawai’i’s Water Resources Research Center; and Ito Design Associates.

Photo Credits

On The Cover: On September 11, 1992, Hurricane Iniki whipped through Hawai’i and caused about $2.4 billion property damage. Hurricane force winds of more than 165-mph tossed vessels around like toy boats. Photo by Ward Graessle

Page 1: Satellite photos provide information on a hurricane’s intensity and any changes in intensity. The brunt of Hurricane Iniki hit the island of Kaua’i the hardest. Photo by National Oceanic and Atmospheric Administration/National Weather Service

Page 21: On April 1, 1946, an earthquake in the Aleutian Islands, Alaska, generated a tsunami that traveled across the Pacific Ocean and struck the island of Hawai’i. The unexpected catastrophic waves resulted in property damage of $26 million (1946 dollars) and 159 human fatalities. Photo by National Oceanic and Atmospheric Administration/EDIS (photo insert) The 1946 tsunami completely destroyed a clubhouse on Kamehameha Avenue, Hilo, Hawai’i. Buildings on the ocean-side of the main street were torn from their foundations, washed across the road, and smashed against structures on the other side of the street. Photo by U.S. Army Corps of Engineers
Glossary of Severe Weather Terms

Advisory
A periodic statement issued by the National Weather Service updating information on severe weather conditions such as storms, high surf, high winds, and hurricanes, including watches and warnings. Special advisories may be given any time a significant change in weather occurs or any time a change in the advisory previously released occurs.

Calm
The absence of apparent movement in the air.

Category
Classification of hurricane strength based on wind speed in miles per hour. Category 1: 74 to 95 mph (64 to 82 knots); category 2: 96 to 110 mph (83 to 95 knots); category 3: 111 to 130 mph (96 to 113 knots); category 4: 131 to 155 mph (114 to 135 knots); and category 5: 156 mph (135 knots) or greater.

Gale
A sustained wind of 39 to 54 miles per hour (34 to 47 knots).

High surf advisory
A statement issued by the National Weather Service when surf heights of 10 feet or more occur on the north and west shores or when surf heights of 6 feet or more occur on the south and east shores.

Hurricane
A storm with distinct rotary circulation at the surface of the ocean with sustained winds of 74 miles per hour (64 knots) or more.

Small craft advisory
A statement issued by the National Weather Service when any type of significantly strong or sustained winds up to 38 miles per hour (33 knots) or sea conditions threaten a coastal area or channel. During trade wind conditions these advisories are normally issued when winds reach 23 mph (20 knots) in coastal waters and 29 mph (25 knots) in channels. During all other wind conditions these advisories are normally issued when winds reach 23 mph (20 knots).

Squall
A strong wind of sudden onset and short duration.

Storm surge
Abnormally high, wind-driven surf that rises above normal high tide or high surf levels and inundates coastal areas, eroding beaches and destroying shoreline roads and structures.

Tornado
A violently rotating column of air extending down from a cumulonimbus cloud or thunderstorm.

Tropical cyclone
The general term for all cyclonic circulations (storms rotating counterclockwise) originating over tropical waters and classified by form and intensity to include tropical disturbances, tropical depressions, tropical storms, and hurricanes.
**Tropical depression**
A storm with distinct rotary circulation at the surface of the ocean with sustained winds of 38 miles per hour (33 knots) or less.

**Tropical disturbance**
A moving body of thunderstorms that maintains its identity for 24 hours or more.

**Tropical storm**
A storm with distinct rotary circulation at the surface of the ocean with sustained winds of 39 to 73 miles per hour (34 to 63 knots).

**Tsunami**
A series of ocean waves that are set in motion by great disturbances in the earth's crust. These disturbances are normally earthquakes or natural events associated with earthquakes, such as volcanic eruptions and explosions that vertically displace the water column in the ocean.

**Typhoon**
A severe tropical cyclone in the Western Pacific (west of the International Date Line).

**Warning**
A message issued to alert the community that a hurricane or other severe storm condition is expected in a specific area within 24 hours. Actions to protect life and property should be taken immediately.

**Watch**
A message issued to alert the community that a hurricane or other severe storm condition poses a possible (but uncertain) threat to a specific coastal area within 36 hours. Preliminary precautions should be taken.

**Water spout**
A tornado occurring over water.
Part 1

NOAA-11
9/11/92
2358Z

Thermal Data
Hurricane
Iniki

Kauai

Hawaii

Hurricane Information
General Hurricane Information

Origin

Most Central Pacific hurricanes originate in the warm, tropical waters near the coasts of Central America or southern Mexico and then move west-northwest. Many of them dissipate as they encounter unfavorable atmospheric and oceanic conditions such as cooler water, but those that survive follow a conventional path that brings them across the Central Pacific toward the Hawaiian islands. In Hawaiian waters, they usually pass below or south of the islands and tend to veer northwest below or beyond Kaua‘i. Fortunately, most of them remain far enough away to spare us their severe effects. Hurricanes also originate outside of the conventional corridor described above. Some of them form closer to Hawai‘i, while a few, like Iwa, even originate far to the southwest.

Season

The official hurricane season in Hawai‘i is from June 1 through November 30. Most Central Pacific hurricanes occur in July, August, and September, but they may occur as early as May and as late as December. During some years, many hurricanes occur, whereas in others, few or none. There is no way to tell in advance how active a season will be.

Characteristics

A hurricane is a type of tropical cyclone, an atmospheric disturbance that originates over tropical waters with winds that rotate in a counterclockwise direction. Tropical cyclones are classified by form and intensity and include tropical disturbances, tropical depressions, tropical storms, and hurricanes. When the sustained wind speed in a tropical cyclone reaches 74 miles per hour (64 knots), it is classified as a hurricane.

Stated simply, hurricanes are giant whirlwinds in which air moves in a large, tightening spiral around a calm center of extremely low pressure—the eye of the hurricane. In the Northern Hemisphere, the wind circulation is counterclockwise and reaches maximum velocity in a circular band extending outward 20 to 30 miles from the rim of the eye. Near the eye winds may gust to more than 200 miles per hour (174 knots). Winds of 39 miles per hour (34 knots) and greater can extend 200 miles or more in all directions from the center of the hurricane. The entire storm dominates the ocean surface and lower atmosphere over thousands of square miles.

The eye, within the spiral structure of the storm, is unique to hurricanes. In the eye, winds are light and skies are clear or partly cloudy. However, this is a deceptive calm, bordered as it is by maximum-force winds and
torrential rains. Many people have been injured or killed when they ventured out from a safe shelter during the calm of the hurricane's eye, only to be caught in the maximum-force winds at the far side of the eye which blow in the opposite direction from the winds in the leading half of the storm. These winds are responsible for flying debris, one of the greatest dangers during a hurricane.

Hurricanes are extremely dangerous because they combine the multiple effect of violent winds, torrential rains, abnormally high surf, and storm surge. Each of these weather phenomena alone is hazardous, but in combination they pose a serious threat to life and property. In Hawai‘i, hurricane winds, especially when accelerated by local terrain, are very damaging to all types of vegetation and structures. Hurricane rains can cause landslides and flash floods. High surf, from hurricanes, reaches the islands while the storms are still several hundred miles away, causing dangerous conditions along the coast. When hurricanes approach or strike the islands, abnormally high, wind-driven surf inundates coastal areas, eroding beaches and destroying shoreline roads and structures. Storm surge presents the greatest danger of the hurricane to boaters and others in low-lying coastal areas, however. As the hurricane moves across a coastal area, it may create a storm surge that will make the ocean rise 10 feet or more above the normal high tide level, and if the storm surge is accompanied by high surf, coastal lowlands may be severely flooded and battered.

**Movement**

In their conventional corridor, hurricanes move to the west-northwest, pushed along by surface winds. In the Central Pacific they move slowly, usually 15 miles per hour or less, and are often stationary for short periods of time. As they move farther north from the Equator, their forward speed tends to increase and at middle latitudes may exceed 50 miles per hour in extreme cases. Although hurricanes normally follow an established path that carries them to the south of Hawai‘i, their behavior is erratic. It is this measure of unpredictability and the extended geographical effects of high surf, heavy rains, and landslides that necessitate taking precautionary measures when a tropical storm is in the Central Pacific.

During the hurricane season, the National Weather Service maintains a constant watch over any tropical disturbance which could develop into a destructive storm. Once a disturbance becomes a tropical depression, the National Weather Service begins issuing advisories. When the depression reaches tropical storm strength, it is given a name. Advisories are then issued every six hours, detailing the storm's location, intensity, speed, and direction of travel. As a hurricane moves closer to Hawai‘i, the National Weather Service plots and projects its path and may increase media broadcasts.
General Precautionary Measures for Boaters

The key to protecting boats from hurricanes or any severe threatening weather is planning, preparation, and timely action. The following precautionary measures are meant for use as guides only. Each boat owner needs a plan unique to the type of boat, the local boating environment, and the weather conditions likely to occur in that region. The following preparatory and precautionary measures are issued as guidelines for use by the boating community. While these precautionary measures may not be applicable to everyone in all instances, it is anticipated that common sense and good judgment will prevail in determining which measures should be used.

1. **Hurricane Plan.** Your Hurricane Plan should be written. Prior to hurricane season, develop a detailed plan of action that includes (a) securing your boat in the marina or harbor, if permitted; removing your boat from the marina or harbor; or taking your boat to a previously identified hurricane refuge and (b) identifying and assembling equipment and supplies. Keep your Hurricane Plan with your equipment and supplies, and practice it before hurricane season to ensure that it works. Determine how valuable equipment will be removed from the boat and how long it will take to do it. You will need to have an accurate estimate of the time and work involved.

2. **Plan Implementation When You’re Away.** Arrange for a friend to carry out your Hurricane Plan if you are out of town during hurricane season.

3. **Responsibilities.** Check your lease or storage agreement with management personnel of the marina, harbor, or storage area. Know your responsibilities and liabilities as well as theirs. Make sure they have the name and telephone number of the person you have designated to care for your boat in your absence.

4. **Records.** Consolidate your records, including copies of insurance policies; recent photos of your boat; boat registration; equipment inventory; lease agreement with the marina, harbor, or storage area; and telephone list of appropriate authorities such as the harbor master, Coast Guard, and your insurance agent. Take them with you after securing your boat. You may need them after the hurricane when you return to check on your boat.

5. **Inventory.** Keep a list of the items from your equipment inventory that you took off the boat. Items of value should be marked so they can be readily identified.

6. **Final Provisions.** When a hurricane is impending and you have made your final anchoring, mooring or storage provisions, remove all portable equipment such as canvas, sails, dinghies, radios, cushions, biminis, and roller furling sails. Lash down everything you cannot remove, such as tillers, wheels, and booms. Make sure the electrical system is shut off, unless you plan to leave the boat in the water. Remove the battery to eliminate the risk of fire or other damage, unless the battery is needed to run automatic bilge pumps.
Specific Precautionary Measures for Boat Owners

In addition to the general precautionary measures which should be taken no matter where you plan to leave your boat during a hurricane or other severe weather, the following specific precautionary measures should be taken depending on the situation.

**Trailer Boats**

1. If your boat can be trailered away from the shoreline and placed in a safe area, then part of your Hurricane Plan should be to identify the vehicle and the trailer to be used to move the boat. Be sure your tow vehicle is powerful enough to move your boat and your trailer is in good working condition. Too often a flat tire, frozen bearings, or a broken axle will prevent an owner from moving a boat.

2. Once at a safe place, lash your boat to the trailer and place blocks between the frame members and the axle inside each wheel. Owners of lightweight boats, after consulting with the manufacturer, may consider letting half the air out of the tires and then filling the boat one-third full of water to help hold it down. The blocks will prevent damage to the springs from the additional weight of the water.

3. Secure your boat with heavy lines to fixed objects. Because hurricane winds rotate and change direction, try to pick a location that allows you to secure it from four directions. Anchors screwed in the ground can serve as fixed objects for your lines.

**Non-trailer Boats**

Non-trailerable boats are usually large boats berthed in a marina or a harbor. Owners need to select one of the following three options, each of which requires a different strategy, to protect their boat:

1. Secure the boat in its berth.
2. Moor the boat in a previously identified safe area.
3. Haul the boat out of the water.

*Note that running from the hurricane is not listed as an option and is not recommended except for large commercial vessels.*

**Boats Remaining in a Berth**

1. Double all lines. Rig crossing spring lines fore and aft. Attach the lines high on the pilings to allow for the storm surge. Make sure the lines are secured and will not slip off the pilings. Inspect the pilings and choose those that seem the strongest and tallest and most properly installed.

2. Cover all the lines at the rough points to prevent fraying as a result of chafing. Wrap the lines with tape, heavy plastic bottles, rubber hoses, or similar items. Install fenders to protect the boat from striking the pier, pilings, and other boats.

3. Assess the attachment of the primary cleats, winches, and chocks. They should have substantial back plates and be secured by adequate-sized bolts, preferably ones made of stainless steel.
4. Make sure batteries are fully charged and able to run automatic bilge pumps for the duration of the storm. Consider providing backup batteries. Turn off or disconnect all electrical devices except the bilge pumps.

5. Do not stay aboard. After you have secured the boat, leave the area and seek shelter in a safe haven.

**Boats Remaining in an Offshore Mooring**

1. Double your anchor lines and set port and starboard anchors both fore and aft.

2. Cover all the lines at the rough points to prevent fraying as a result of chafing. Wrap the lines with tape, heavy plastic bottles, rubber hoses, or something similar.

3. Assess the attachment of the primary cleats, winches, and chocks. They should have substantial back plates and be secured by adequate-sized bolts, preferably ones made of stainless steel.

4. Make sure batteries are fully charged and able to run automatic bilge pumps for the duration of the storm. Consider providing backup batteries. Turn off or disconnect all electrical devices except the bilge pumps.

5. Do not stay aboard. After you have secured the boat, go ashore and seek shelter in a safe haven.

**Boats Hauled Out of the Water**

1. Determine the safest haven for your boat and make arrangements to move it there. When selecting a safe location, be sure to consider whether storm surge could rise into the area.

2. Wherever you choose to locate your boat for the duration of the hurricane, lash your boat to its cradle with heavy lines and consider, based on the weight of the boat, adding water to the bilge to help hold it down.

3. Never leave your boat in davits or on a hydrolift.
Hurricane Plan for Boat Owners

All boat owners should take the time and effort to develop a Hurricane Plan to protect themselves and their property. Marine-related facilities, service organizations, and insurance companies consider it reasonable to expect boat owners to take necessary actions to secure and protect their boats. The following information should be considered when developing a Hurricane Plan.

Prior to Hurricane Season

1. Make sure your vessel is in sound condition. This includes the hull, deck hardware, rigging, ground tackle, machinery, and electronics. Absentee owners should arrange for a boatyard haulout or a supervised inspection of the boat prior to hurricane season. The inspection should include making sure the batteries are charged, the bilge pumps are operational, and all equipment is secured.

2. Enhance the watertight integrity of your boat, both above and below the water line. Seal portlights, deadlights, companion ways, and hatches, using duct tape if necessary. Shut sea cocks and cap off or plug unvalved through-hull fittings such as sink drains.

3. Inspect the vessel's deck hardware in light of planned mooring arrangements. Assess the size and structural attachment of the primary chocks, cleats, bitts, bollards, and winches. These high-load/high-stress points should have substantial backing plates and should be secured with bolts of adequate size.

4. Give special attention to the mooring lines to prevent them from chafing. Consider using a double neoprene hose, a proven example of successful chafing gear, or a firehose.

5. Use double lines for storm moorings, whether at dock or otherwise. The second set of lines should be a size larger than the normal lines, including spring lines at a dock.

6. Purchase necessary materials—such as additional lengths of mooring lines, screw anchors, fenders, fender boards, chafing gear, and anchors—ahead of time. These items may not be readily available during the hurricane season or just prior to a hurricane.

7. If the boat is to be unattended during the hurricane season, haul it into a storage yard or leave it on its trailer. If the boat is not trailerable, arrangements should be made for wet storage at a marina or harbor.

8. Make up an inventory of all vessel equipment. Note the items that are to be removed from the boat if you implement your Hurricane Plan. Keep one copy of the inventory on the boat, a second copy at home, and, if appropriate, a third copy at the office.
9. For wet berthing locations, ensure that seawalls and docks are sound, mooring bits and cleats secure, and dock pilings and dolphins in good condition.

10. At private berthing and dock facilities in residential areas, coordinate safety and mooring plans with neighbors and other boat owners in the area.

11. Get copies of harbor or marina facilities' own hurricane plans and procedures for boats at their facilities and keep them with your personal Hurricane Plan. Check with the local Civil Defense offices for copies of preparedness information.

12. If your Hurricane Plan calls for moving your boat from its current berthing location, rehearse your planned boat movement, including an actual visit to the alternate docking, mooring, or anchoring location.

13. If your plan calls for moving your boat from its current berthing location to an inland waterway, know your boat's navigation requirements, including bar and bridge restrictions at different times.

14. Make a list of reputable salvage operators and repair facilities in your area. Include the list in your Hurricane Plan.

15. Be sure that your family and crew members are familiar with your Hurricane Plan in advance and how they can contact you or your designated representative or agent.

16. Make sure that your plan includes a quick response to protecting your boat if a hurricane watch is announced. Moving a boat, stripping sails, derigging, and anchoring in high winds and stormy seas may be extremely difficult and at times impossible.

17. Make copies of your Hurricane Plan and keep one on the boat and one at home.

18. Make sure the insurance policy on your boat is current. Read the policy thoroughly. It should contain some helpful information in regard to your actions if your boat does sustain hurricane-related loss or damage. Be sure you understand what is covered and what is not and your duties as a boat owner.

Prior to the Hurricane

1. If your plan calls for moving your boat, do it before or as soon as a Hurricane Watch is issued by the National Weather Service. A Hurricane Watch is issued when hurricane conditions pose a possible but uncertain threat to a specific coastal area within 36 hours. If you do move your boat, make sure of the following:

✓ Fuel tanks are full.
✓ Fuel filters are clean.
✓ Batteries are charged.
✓ Bilges are clean.
✓ Cockpit drains are free and clear.
✓ Fire-fighting equipment is operational.
✓ Lifesaving equipment is accessible and in good condition.
2. If your plan does not call for moving your boat, remove or secure all deck gear, portable gear, portable radios, radio antennas, outriggers, fighting chairs, deck boxes, bimini tops and side canvas/curtains, sails, booms, dorades, extra halyards, canister rafts, and dinghies. Make sure you secure all hatches, ports, companionways, lazarettes, and sailboat rudders. Remember that you may need the dinghy to take line ashore.

3. Wherever your boat is moored, assume that it will be subject to storm surge that is 5 to 10 feet greater than normal tidal movement and adjust your lines accordingly. High surf and hurricane surge will precede the estimated time of arrival of the hurricane. For boats in rivers or canals, the best mooring location is in the center of the river or canal where double mooring lines can be secured to both shores, port and starboard, fore and aft.

4. Do not raft boats together at moorings or docks, especially if larger and smaller boats are involved. The probability of damage to the boats is greater than if they are moored singly.

5. If the boat must remain dockside at a harbor or marina, use or install heavy duty fender boards (2" x 6") on a bare center piling to prevent or at least reduce damage. Lines should be doubled or even tripled where necessary to hold a boat in the center of a berth or off a seawall or dock pilings.

6. Do not attempt to move your boat once a Hurricane Warning has been issued. Leave your boat and initiate protective actions for yourself and your family. A Hurricane Warning is issued when the National Weather Service expects hurricane conditions within 24 hours or less.

**During the Hurricane**

1. Do not stay aboard the boat during a hurricane. If you have taken all the precautionary measures in your Hurricane Plan, you have done all that can be done in anticipation of the storm.

2. Stay in a protected place or designated shelter. Attend to the safety of your family, home, and other personal property.

3. Stay tuned to news broadcasts and weather advisories concerning the hurricane so you will know when the danger has passed.

**After the Hurricane**

1. Check your boat as soon as possible after the All Clear announcement is made. Be aware that there may be extensive damage in the area and that you may not be able to reach your boat due to downed power lines, blocked roads, and flooding in low-lying areas.

2. If you moored your boat in a river where it was blocking traffic, move it as soon as possible. If other boats cannot navi-
gate past you, their operators may cut your mooring lines and let your boat drift, possibly causing more damage than the hurricane.

3. If your boat was damaged, be sure to check for fuel leaks or the odor of fuel.

4. If your boat was damaged and its security breached, take action to re-secure it as soon as possible. Looters will take advantage of any damaged boat if given the opportunity.

5. Report any non-storm-related theft, vandalism, or damage to a boat to the police or the appropriate law enforcement agency. Record the incident number and obtain a copy of the report as soon as possible to substantiate insurance claims or Internal Revenue Service (IRS) property loss reports.

6. If the boat was damaged, take immediate action to save the boat and its equipment and to prevent further loss or damage. This action on the part of the boat owner is a requirement of all insurance policies. Boat owners are expected to take those actions that prudent uninsured persons would take to save their property. Take photographs of the damage once the boat is secured.

7. If the boat appears to be unrepairable and a total loss, make arrangements to remove the hull from any navigable waterway as required by government authorities. Your boat should be hauled to a storage yard or salvage facility. Take photographs of the damage before the boat is moved.

8. If salvage removal of your boat is required, emergency or otherwise, and you are unable to contact your insurance agent or the harbor or marina representative, screen the salvage contractor for competence and evaluate his estimated cost. Read the contract carefully and know where your boat is going and how secure the site is. Before the boat is hauled away, remove as much equipment as you can, make an itemized list of the equipment that remains, and take photographs of the damage.

9. When damage to your boat is repairable, make immediate arrangements to have the boat moved to a reputable repair yard. Obtain estimates and agree on the work to be done before authorizing the repairs.
Hurricane Plan for Other Members of the Marine Community

Harbor and marina operators, boat builders, boat dealers, and boat repair yards should consider the following information in developing a Hurricane Plan for their facilities.

Prior to Hurricane Season

1. Develop a written Hurricane Plan and distribute it to all employees. Because facility personnel will have their own family and property concerns to attend to, they must be made aware of their work-related responsibilities so they can plan accordingly.

2. Know your physical plant facilities, operational services, equipment, and standard operating procedures. Make assignments of personnel to be responsible for areas and operations of the facility. Designate team units and key people to manage them.

3. Review your Hurricane Plan with co-tenants and subcontractors in multiple-occupancy facilities.

4. Review your facility's operations during the hurricane season and consider ordering supplies, stocks, and boating inventory items accordingly to keep exposure damage as minimal as possible.

5. Consider the number of permanent, transient, new, or brokered boats that you may be responsible for at any time during the hurricane season. In the event of an approaching hurricane, you will need to determine how you and your staff can secure these boats in place or move them to a safer inland site.

6. Keep a current list of all the boats in your care and their owners, captains, or caretakers, including their home and business phone numbers and addresses. Consider requiring boat owners to file a Hurricane Plan with you.

7. Conduct a complete facility housekeeping field day sometime in the spring or just prior to the start of hurricane season to clean up all open areas and structures within your facility. The cleanup should include but not be limited to the following:
   a. Removing all debris, trash, and unnecessary items from open areas
   b. Storing or securing all materials and supplies
   c. Servicing, as necessary, building walls, roofs, windows, doors, docks, piers, wharfs, slipfingers, pilings, electrical and lighting installations, fuel and natural gas supply and equipment, portable and fixed fire-fighting equipment, mobile lifts, hydrolifts, and railways

8. Order and stock extra equipment and supplies for emergencies, including mooring lines, lumber for fender boards, chafing gear, screw anchors, nails, hoses and clamps, oil-absorbent pads, flashlights, batteries, portable generators, electrical and manual bilge pumps, and hull-patching supplies.

9. Test all equipment that may be used during an emergency—such as portable generators and pumps.
Prior to the Hurricane

Even the smallest marine facility has numerous tasks to perform in preparation for a hurricane. However, 72 hours is probably the minimal time needed in most instances for a facility owner or administrator to undertake the following.

48 to 72 Hours Prior

1. Notify facility employees that they should begin implementing their Hurricane Plan.

2. Consider terminating activities of all mobile or waterborne operations, if any, within 24 hours.

3. Initiate facility-protection procedures by removing or securing all loose items and equipment in open areas.

4. Secure all flammable, explosive, and other hazardous materials such compressed gas cylinders in a protected structure.

5. Consider relocating small boats on dry storage or outside racks or on trailers to safer locations under cover. Facilities with inside rack storage may provide sufficient protection unless they are situated in a low-lying area that is subject to storm surge inundation.

6. Take down large signs, antennas, or other removable items that could be subject to wind damage.

7. Install storm shutters and other protective equipment.

8. Process and mail all paperwork that can be completed immediately. Set aside new paperwork to be completed after the hurricane.

9. Transport expensive equipment or products to inland storage sites.

10. Reduce inventories as much as possible and delay ordering materials, stocks, or supplies.

11. Begin contacting boat owners or their representatives to remove their boats, if required.

24 to 48 Hours Prior

1. Complete the following facility-protection measures:
   a. Lock all structures, including trailers.
   b. Turn off electricity at the main power switch.
   c. Turn off natural gas at the main valve.
   d. Top off tanks of facility boats and vehicles, and then turn off fuel supply tanks at the main valve.
   e. Disconnect electric motors, pumps, and similar equipment below ground level and remove to a safe location.
   f. Turn off water supply at the meter.

2. Complete boat removal operations and secure remaining boats.

3. Place forklifts, trucks, travel lifts, mobile cranes, and workboats in protected structures, if possible.
0 to 24 Hours Prior

During the 24-hour period prior to the projected arrival of the hurricane, a Hurricane Warning will be issued. The following activities should be in progress or nearing completion so that personnel can be released within the final 12 hours, if not sooner.

1. Complete vessel-protection and securing operations with a final check of doubled mooring lines, which should be tied off with sufficient slack and fender boards and other protective equipment in place.

2. Release employees who are not required to staff facilities during the hurricane no later than 12 hours prior to the projected time of arrival. Instructions for reporting to work after the hurricane should be given before they leave. Determine where in the facility all remaining employees will take shelter.

3. Complete facility preparations 12 hours prior to the hurricane's arrival. Make sure that all perimeter access points in the form of fences, gates, and building doors are locked and secured.

4. Do not allow any personnel to stay on any vessel during the hurricane.

5. Evacuate all personnel from the facilities, if so directed by Civil Defense officials.

During the Hurricane

1. Stay in a safe and protected place, inland if possible.

2. For facilities that remain staffed, do not allow personnel to go outdoors during the hurricane.

3. Do not attempt to move or re-secure a loose boat or piece of equipment.

4. Stay tuned to news and weather broadcasts concerning the hurricane's movement so you will know when the danger has passed.

5. Do not venture out during any lull or calm as the eye of the hurricane passes.

After the Hurricane

1. Be aware that the hurricane may have caused extensive damage, including wide spread flooding, washed out roads and bridges, and downed power lines—all of which may prevent you from accessing your facility.

2. Alert personnel returning to the facility to begin the damage assessment process to be aware of the following:

   a. Poisonous insects that may have crawled into unexpected places. Wear boots and gloves while working outside the facility.
b. Downed power lines that still may be live. Avoid all downed lines until the electric company troubleshooter disconnects them. Be aware that lines that appear dead may be live if they are connected to an emergency generator.

c. Natural gas leaks. Check for natural gas leaks by smell only, not with matches or candles.

d. Fuel leaks. Check facility fueling docks and fuel tanks for leaking gasoline or diesel.

e. Electrical equipment. Do not start any electrical equipment that was submerged in water until it has been checked or repaired. This includes electrical appliances such as hot plates, toasters, and calculators.

f. Broken sewer or water mains. Report the breaks to the appropriate utility company.

g. Electrical wiring. Check all of the facility's wiring completely before turning on the main power switch.

3. Prepare a written assessment of the damages and take photographs of them as soon as possible. Estimate damages to docks and piers and other harbor facilities, including cranes, mast hoists, boat sheds, toilets, showers, lockers, offices, and fuel docks.

4. If any theft, vandalism, or damage other than that caused by the hurricane has occurred, report it to the police or other appropriate authorities. Record the incident report number and obtain a copy of the report as soon as possible to help substantiate any insurance claim or IRS property loss report.

5. Carefully document and photograph immediate repairs made prior to an insurance adjustment. In the case of facility property damages, appraisers assigned by the insurance companies will be involved with the adjustment and will establish temporary claim offices.

6. Be aware that the facility will receive calls from vessels owners, captains, caretakers, and other with boating interests.

This boat was destroyed and beached at Kā‘anapali Beach, Maui, by Hurricane Iniki in 1992.
General Procedures for Processing Vessel Claims

If your boat is insured and damages occurred during a hurricane, a report of loss and/or damage should be made to your insurance agent or to the insurance company as soon as possible. A telephone call should suffice to initiate the claim. Then follow up the call with a brief written report that includes the following:

- The exact location of the boat, including information on whether it is partially or totally submerged.
- The structural condition of the boat, including an estimate of the percentage of damage, a description of the damage, and photographs of the damage.
- Information on whether the boat must be removed immediately and, if so, to what location.

With all the confusion that follows in the aftermath of a hurricane, insurance companies will settle first those claims that have the appropriate paperwork completed and in hand. After you have made the initial notification to your insurance company, take the steps listed below to assist in processing your claim. Take these steps as quickly as possible to expedite getting your boat repaired as soon as possible.

1. If your boat is still in a precarious situation, stabilize it to prevent further damage.
2. Do not perform repairs other than those necessary to prevent further damage.
3. Photograph the damage to your boat.
4. Make a list of all damages and suspected problems.
5. Contact repair yards to get estimates. You do not have to wait for an adjuster/surveyor to get estimates.

In order to process claims, insurance companies will send surveyors and adjusters into the area to work with you and other policy holders. In locations designated as disaster areas, claim offices will be setup and staffed with teams of insurance personnel to expedite the processing of large numbers of claims. Locations of the claim offices should be available through the local media and civil defense offices. In your dealings with the insurance companies, remember the following:

1. You will need to file a statement of loss explaining what, when, why, where and how it all took place. Your statement should include copies of your list of damages, photographs, and sketches, if necessary.
2. An adjuster, insurance company surveyor, or independent surveyor acceptable to the insurance company will be instructed to survey the damage to your boat. Make sure you accompany the surveyor on the initial damage survey.
3. You should have your inventory list, receipts, pictures of damages, and repair estimates ready for inspection by the adjuster/surveyor.

4. After conducting the survey, the surveyor will file a damage report with the insurance company. Request that a copy also be sent to you.

5. If you are not satisfied with the damage report results and are not able to resolve your differences with the insurance company, you may elect to hire another surveyor at your own expense for a second opinion. Your surveyor will then represent you in any mediated discussions that follow.

6. If you agree with the insurance company’s damage estimates and the company designated to do the repairs, the insurance company will proceed with the payment for repairs. It will issue a check with both the repair company’s name and your name as payees.

7. When the work is completed to your satisfaction, you sign the check and the repair company gets paid.

8. If your boat is declared a total loss, the insurance company will issue a check to you, usually for the boat’s fair market value as agreed upon by you and the company.

9. Be prepared to surrender the boat’s documentation papers, original insurance policy any remaining equipment, and the boat itself.

Storm surge is one of the greatest dangers during a hurricane. It destroys structures and pushes boats inland.
Boat Owner’s Hurricane Plan Worksheet

After reading the material in this manual, use this worksheet to develop a Hurricane Plan for your boat. Be sure to distribute copies to your alternates as well as your harbor manager.

Boat's name:__________________________________________________________

Length:_____________________ Model:____________________

Boat's current location:________________________________________________

Boat's location during hurricane:_______________________________________

Your name:___________________________________________________________

Address:____________________________________________________________

City:____________________ State____________________ Zip Code____________________

Phone# Day:____________________ Night:____________________

Two Alternatives (if you are not available)

Name:_______________________________________________________________

Address:___________________________________________________________

City:____________________ State____________________ Zip Code____________________

Phone# Day:____________________ Night:____________________

Has boat keys?_____________ Access to hurricane equipment?______________

If Stored Aside

Is boat already stored ashore?

If No, what arrangements have been made for hauling?

______________________________

Storage location:____________________________________________________

Contact name: (harbor manager)_______________________________________

Phone no:__________________________________________________________

If at dock:____________________ Slip#____________________

Additional lines no:____________________ Length:____________________ Size:____________________

Chafe gear:____________________ Fenders:____________________
If At A Mooring/Anchorage

Has mooring been inspected within the last six months? ____________________________________

How will the burner get ashore? _________________________________________________________

Type of bottom: ___________________________________________ Depth: _______________________

Mooring line should be extended ___________________ to increase scope

Additional anchors needed: No: __________ Size: ________________________________

Type(s): _________________________________________________________

Additional lines: ______ No: ______ Length: _______ Size: ____________________________

Additional chain: ______ No: ______ Length: _______ Size: ____________________________

Chafe gear: _______ Swivel: _______ Shackle(s): ________________________________

List All Equipment Needed Aboard To Prepare Boat

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Current Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Extra lines</td>
<td></td>
</tr>
<tr>
<td>2. Chafe protectors</td>
<td></td>
</tr>
<tr>
<td>3. Fenders</td>
<td></td>
</tr>
<tr>
<td>4. Anchors</td>
<td></td>
</tr>
<tr>
<td>5. Swivels</td>
<td></td>
</tr>
<tr>
<td>6. Shackles</td>
<td></td>
</tr>
<tr>
<td>7. Duct tape</td>
<td></td>
</tr>
<tr>
<td>8. Plugs (exhaust ports)</td>
<td></td>
</tr>
<tr>
<td>9. __________________</td>
<td></td>
</tr>
<tr>
<td>10. ________________</td>
<td></td>
</tr>
</tbody>
</table>

List Equipment To Be Removed From Boat

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Storage Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electronics</td>
<td></td>
</tr>
<tr>
<td>2. Dinghy</td>
<td></td>
</tr>
<tr>
<td>3. Outboard/fuel</td>
<td></td>
</tr>
<tr>
<td>4. Sails</td>
<td></td>
</tr>
<tr>
<td>5. Bimini</td>
<td></td>
</tr>
<tr>
<td>6. Gailey fuel</td>
<td></td>
</tr>
<tr>
<td>7. Ship's papers</td>
<td></td>
</tr>
<tr>
<td>8. __________________</td>
<td></td>
</tr>
<tr>
<td>9. __________________</td>
<td></td>
</tr>
<tr>
<td>10. ________________</td>
<td></td>
</tr>
</tbody>
</table>

- Arrange dock/anchor lines
- Add chafe protection
- Use extra fenders/fender boards as needed
- Insert plugs in engine ports
- Strip bimini, sails, life rings, etc.
- Disconnect shore power
- Close fuel valves
- Close all but the cockpit sections
- Lock boat
- Notify harbor manager
Remember These Important Points!

- Develop your Hurricane Plan now. You alone are responsible for your plan.
- Make all arrangements for moving and securing your boat prior to hurricane season (June 1 to November 30).
- Do not stay on your boat or attempt to move it after a Hurricane Warning has been issued. Rescue agencies will not risk the lives of their personnel to assist you or other careless boaters during a hurricane.
- Do not become a hurricane statistic! Your life is more valuable than your boat.
- Do not be fooled by the lull or calm as the eye of the hurricane passes. The second half of the storm will strike soon with full intensity.
- Consult the Civil Defense section of your phone book for shoreline evacuation zones.
- Stay tuned to all broadcasts and official announcements of the hurricane’s status.
- Do not return to your boat until the hurricane has passed and you hear the All Clear announcement.

*This was a common site in the small boat harbors in Kaua'i after Hurricane Iniki struck in 1992.*
Part 2

Tsunami Information
General Tsunami Information

A tsunami is a series of ocean waves that are set in motion by great disturbances in the earth's crust. These disturbances are normally earthquakes or natural events associated with earthquakes, such as volcanic eruptions and explosions that vertically displace the water column in the ocean. For this reason, tsunami are sometimes called seismic sea waves (the word "seismic" referring to earthquakes), but tsunami can also be caused by non-seismic events such as landslides and meteorite impacts.

Tsunami are also sometimes called tidal waves because as they strike a river or a low-lying land area, they may resemble the bore tidal waves that daily flood the mouth of the Amazon River in Brazil, the Bay of Fundy in Canada, and other funnel-like geographical sites. Tsunami, though, have nothing to do with the tides.

There is no tsunami season. Tsunami are unpredictable events that can happen at any time. Most tsunami that strike the Hawaiian islands are generated in the oceanic trenches around the border of the Pacific Ocean. The most unstable areas are the Pacific coast of Japan, the Kurile-Kamchatka Island chain, the Aleutian Island arc, and the Pacific coasts of Central America and South America.

Tsunami have great destructive potential and are capable of inundating (or flooding) areas hundreds of feet inland past the normal high-tide level. Their fast-moving waters can crush cars, homes, buildings, boats, and anything else in their path. They also have great erosional potential, stripping beaches of sand and undermining trees and other coastal vegetation.

In Hawai'i tsunami have been most destructive on the Big Island. Major portions of the city of Hilo were totally destroyed in 1946 and again in 1960. Both of these tsunami were generated by earthquakes in the Pacific Rim; the first occurred in the Aleutian Islands and the second along the coast of South America.

Tsunami in Hawai'i may also be generated by local as well as distant earthquakes. This is especially true on the Big Island where seismic events are commonly associated with the volcanic activity at Kilauea and Mauna Loa. Any violent earthquake—one that causes you to fall to the ground or to hold onto something to keep from falling—should be considered a natural tsunami warning. If in a low-lying area, you should move immediately to higher ground. In 1975 two campers at Halapē on the shoreline of Hawaii Volcanoes National Park were killed by a locally generated tsunami before they had a chance to escape. That tsunami struck Halapē immediately after the occurrence of an extremely violent earthquake that was centered only a few miles away.

In general, all coastal areas of the Hawaiian islands are vulnerable to inundation by tsunami. See the Civil Defense pages in the front of the telephone book for maps of the coastal evacuation zones. Determine whether you live, work, or go to school in an evacuation zone and develop a Tsunami Evacuation Plan for you, your family, and your boat.
Tsunami Warnings

Distant Earthquakes

In the event of a significant earthquake in a distant area of the Pacific Basin, the Pacific Tsunami Warning Center (PTWC) on O‘ahu will issue a Tsunami Watch until a tsunami can be confirmed or discounted. PTWC will issue a Tsunami Warning when a tsunami is confirmed and evacuation is necessary. The warning will be announced over the radio and on television through the Emergency Broadcast System, in conjunction with the sounding of Civil Defense sirens. The warning will include the predicted time of arrival of the first wave. Civil Defense sirens will be sounded at 3, 2, 1, and 1/2 hour prior to the estimated arrival time of the first wave.

Local Earthquakes

If a significant earthquake occurs in the vicinity of the Hawaiian islands, PTWC will issue an Urgent Tsunami Warning. The warning will be announced over the radio and on television through the Emergency Broadcast System, in conjunction with the sounding of Civil Defense sirens. If the Urgent Tsunami Warning identifies the island you are on as subject to impact, leave any evacuation zone immediately.

In the event of a local earthquake that causes you to fall to the ground or to hold onto something to keep from falling, move immediately to higher ground when the shaking stops if you are in an evacuation zone. There may be no time for an official warning from PTWC, the Emergency Broadcast System, or Civil Defense sirens. You must act on your own.

All Clear announcements will be made by local authorities through the Emergency Broadcast System over the radio and on television. Civil Defense sirens are neither sounded during All Clear announcements nor used to indicate All Clear conditions. Remain in a safe area until you hear an official All Clear announcement over the Emergency Broadcast System.

Tsunami Evacuation Plan For Boat Owners

Develop a Tsunami Evacuation Plan that includes any of the following steps that are applicable to your boat and your situation:

1. If your boat is on a trailer in an evacuation zone, move it outside the evacuation zone as soon as a Tsunami Warning is declared.
2. If your boat is in the water and cannot be trailered, move it offshore to waters over 200 fathoms (1,200 feet) deep as soon as a Tsunami Warning is declared. Tsunami can cause rapid changes in water level and unpredictable and dangerous currents in harbors and entrance channels, in addition to destruction from waves.

3. If your Tsunami Evacuation Plan includes moving your boat offshore, plan to have enough fuel, food and water, and anything else you consider essential for at least 24 hours.

4. If you decide to move your boat offshore, you must be at least 2 miles away from the channel entrance buoy prior to the expected arrival time of the tsunami. Otherwise, do not attempt to move your boat offshore or you may be caught in the tsunami or the dangerous currents associated with it.

5. If you have enough time to move your boat offshore, consider having someone drive you to the harbor. If you drive yourself and leave your vehicle in the harbor parking lot, it may sustain damage from the tsunami while you are offshore in your boat.

6. If your boat is in an evacuation zone and cannot be moved inland or offshore, determine ahead of time what you want to remove and how you will secure the boat. As soon as a Tsunami Watch is declared, remove the items, secure the boat, and leave the evacuation zone.

7. All shores of all Hawaiian islands are subject to seasonal high surf, some of which directly impacts boat channels and harbor entrances. If a Tsunami Warning occurs during a period of seasonal high surf, especially at night, and your Tsunami Evacuation Plan calls for moving your boat offshore, you should give serious consideration to just removing whatever you can, securing your boat, and leaving the evacuation zone.

8. Forty-five minutes before the expected arrival of the first wave, roadblocks will be established by the police and Civil Defense volunteers at the perimeters of the evacuation zones. After that, only police officers, fire fighters, lifeguards, EMS personnel, and Civil Defense volunteers will be allowed into the evacuation zones to assist those individuals who are still evacuating. Therefore, if you intend to take some kind of emergency action for your boat, you should complete it and be out of the evacuation zone at least one hour prior to the expected arrival of the first wave.

9. Anticipate heavy traffic island wide when a Tsunami Warning is issued. Allow ample travel time to reach your boat before the evacuation zones are closed to non-emergency traffic.

10. If for any reason you are unable to attend to your boat during a Tsunami Warning, designate someone else to carry out your Tsunami Evacuation Plan.
Boats At Sea During A Tsunami

1. Tsunami wave activity is imperceptible in the open ocean, so that would normally be the safest place for most boats. However, in Hawai‘i small-boat owners must take seasonal high surf conditions and rough seas outside the harbors into consideration before moving their boats offshore.

2. Most large harbors and ports are under the control of a harbor authority and a vessel traffic system. If the harbor authority orders a forced evacuation of vessels to deeper water, you will need to be aware of the traffic, especially if it will impact you and your boat.

3. If you do not have a marine or citizens band (CB) radio on your boat, make sure that a transistor radio is part of your survival kit.

4. If the official All Clear announcement is not given for some time, anchor your boat if possible or operate it in a manner that will conserve fuel. The tsunami warning may last for hours and ocean conditions following it may not permit a quick return to port.

5. There will be a lot of boating traffic in your area. If you are anchored at night, put on your anchor lights. If you are underway, put on your running lights.

Boats At Sea After A Tsunami

1. Damaging wave activity and dangerous currents can affect harbors for an undetermined period of time following the impact of the tsunami on the coast. Do not return to port until an official All Clear announcement is given on the radio by the Civil Defense agency.

2. Tsunami damage may prevent you from returning to the facility from which you departed. After the All Clear announcement is given, you may need to go to another facility or anchor offshore.

3. Be alert for people who may have been swept out to sea by the tsunami.

4. Be prepared to yield to or assist emergency personnel involved in rescue or salvage operations.
Part 3

Emergency Assistance Information
Important Phone Numbers

State of Hawai'i
(non-O'ahu callers dial 1-808 before the number)

- National Weather Service Recorded Buoy Reports: 973-6114
- State Civil Defense Agency: 733-4300

City and County of Honolulu
(island of O'ahu)

- NOAA Weather Radio Recording: 973-6109
- National Weather Service Recorded Marine Forecast: 973-4382
- National Weather Service Recorded Surf Forecast: 973-4383
- Ambulance, Fire, and Police: 911
- American Red Cross: 734-2101
- Marine emergencies, nearshore 0–3 miles: fire rescue: 911
- Marine emergencies, offshore 3–200 miles: Coast Guard: 1-800-552-6458
- Marine emergencies, offshore 200+ miles: Coast Guard: 541-2500
- Coast Guard cellular phone: * USCg (8724)
- O'ahu Civil Defense Agency: 523-4121
- O'ahu Civil Defense Agency Recorded Information: 527-5372

Maui County
(islands of Maui, Moloka'i, Lāna'i, and Kaho'olawe)

- Maui — NOAA Weather Radio Recording: 871-6706
- Lāna'i — NOAA Weather Radio Recording: 566-6033
- Moloka'i — NOAA Weather Radio Recording: 552-2477
- National Weather Service Recorded Marine Forecast: 877-3477
- Ambulance, Fire, and Police: 911
- American Red Cross: 244-0051
- Marine emergencies, nearshore 0–3 miles: fire rescue: 911
- Marine emergencies, offshore 3–200 miles: Coast Guard: 1-800-552-6458
Marine emergencies, offshore 200+ miles: Coast Guard ..................................................1-808-541-2500
Coast Guard cellular phone .................................................................................................................. * USCG (8724)
Maui Civil Defense Agency ..................................................................................................................243-7285

Hawai'i County
(island of Hawai'i, the Big Island)

NOAA Weather Radio Recording ..................................................................................................935-5055
National Weather Service Recorded Marine Forecast .................................................................935-9883
Ambulance, Fire, and Police .............................................................................................................911
American Red Cross .........................................................................................................................Hilo 935-8305, Kona 326-9488
Marine emergencies, nearshore 0–3 miles: fire rescue .................................................................911
Marine emergencies, offshore 3–200 miles: Coast Guard .........................................................1-800-552-6458
Marine emergencies, offshore 200+ miles: Coast Guard .............................................................1-808-541-2500
Coast Guard cellular phone .............................................................................................................. * USCG (8724)
Hawai'i Civil Defense Agency ...........................................................................................................935-0031

Kaua'i County
(islands of Kaua'i and Ni'iha'au)

NOAA Weather Radio Recording ..................................................................................................245-2919
National Weather Service Recorded Marine Forecast .................................................................245-3564
Ambulance, Fire, and Police .............................................................................................................911
American Red Cross .........................................................................................................................245-4919
Marine emergencies, nearshore 0–3 miles: fire rescue .................................................................911
Marine emergencies, offshore 3–200 miles: Coast Guard .........................................................1-800-552-6458
Marine emergencies, offshore 200+ miles: Coast Guard .............................................................1-808-541-2500
Coast Guard Cellular Phone .............................................................................................................. * USCG (8724)
Kaua'i Civil Defense Agency ............................................................................................................241-6336
Important Radio Frequencies

State Civil Defense Yellow Net ................................................................. 155.025 MHz
State RACES Link on O‘ahu ................................................................. 147.060 MHz
State RACES Link on Kaua‘i and Maui .................................................... 147.040 MHz
State RACES Link on Hawai‘i ............................................................... 147.020 MHz
High-Frequency (HF) Single Sideband .............................................. 7080 kHz
Channel 16 (International Public Hailing Channel) .................................. 156.800 MHz
Citizens Band (CB) Radio ........................................................................ Channels 9 and 23
NOAA Weather Radio Network for Hilo and Honolulu .................................. 162.550 MHz
NOAA Weather Radio Network for all other areas .................................. 162.400 MHz
Coast Guard Medium-Frequency (MF) Sideband .................................... 2870 kHz
NWS/KVM-70 Radio Fax Weather Data .................................................. 9982.5 kHz
11090.0 kHz
16135.0 kHz
23331.5 kHz

Public Evacuation Shelters

Your Hurricane Plan should include the locations of public evacuation shelters that you and your family might use. For the locations of public evacuation shelters, call your county Civil Defense agency. However, during a Hurricane Watch or Warning, listen to the Emergency Broadcast System announcements for the locations of the public evacuation shelters that are open; do not call your county Civil Defense agency.
References


Villanueva, Maria L., and Donald W. Pybas, editors. 1994. Recommendations for Hurricane Preparations and Responses for Boating Communities and Industries. Sponsored by the Florida Sea Grant College Program in cooperation with the University of Miami Boating Research Center and the Florida Sea Grant Extension Program. Technical Paper 75, Florida Sea Grant College Program, Gainesville.