



45th Space Wing Hurricane Survival Guide



15 August 2001

**45th Civil Engineer Squadron Readiness Flight
Patrick Air Force Base, Florida**

This guide is designed to assist military and civilian personnel and their families to be prepared in the event a hurricane were to strike Patrick AFB. This guide is applicable to Patrick Air Force Base military and civilian employees and their families residing either on or off base and includes all personnel assigned, attached, or associated to Patrick AFB. For additional information, contact the 45th Civil Engineer Squadron Readiness Flight at (321) 494-4224.

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Chapter 1

INTRODUCTION

1.1. Hurricanes. There are no other storms like hurricanes on earth. Born in warm tropical waters, these spiraling masses require a complex combination of atmospheric processes to grow, mature, and then die. Views of hurricanes from satellites (**Figure 1.1.**) located thousands of miles above the earth show how unique these powerful, tightly coiled weather systems are.



Figure 1.1. Hurricane Elena.

1.1.1. Each year on average, ten tropical storms (of which six become hurricanes) develop over the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico. Many of these remain over the ocean. However, about five hurricanes strike the United States coastline every 3 years. Of these five, two will be major hurricanes (category 3 or greater on the Saffir-Simpson Hurricane Scale).

1.1.2. Today, hurricane damage costs billions of dollars. Damage from Hurricane Andrew (1992) alone was estimated at more than \$25 billion in South Florida and Louisiana and undoubtedly would have been higher had the storm hit Miami directly.

1.1.3. Thankfully, the number of people injured or killed during tropical cyclones in the United States has been declining, largely because of improvements in forecasting and emergency preparedness. Nonetheless, our risk from hurricanes is increasing. With population and development continuing to increase along coastal areas, greater numbers of people and property are vulnerable to hurricane threat. Large numbers of tourists also favor coastal locations, adding greatly to the problems of emergency managers and local decision-makers during a hurricane threat.

1.1.4. Hurricanes cannot be controlled, but our vulnerability can be reduced through preparedness. Local decision-makers must make difficult choices between public safety and possible economic losses when faced with a hurricane, but these decisions will be solid if they are based on an understanding of hurricanes, their hazards, the value and limitations of forecasts, and a good decision-making process.

1.2. Areas at Risk.

1.2.1. Coastal Areas and Barrier Islands. All Atlantic and Gulf coastal areas are subject to hurricanes or tropical storms. Due to the limited number of evacuation routes, barrier islands are

especially vulnerable to hurricanes. People on barrier islands and in vulnerable coastal areas may be asked by local officials to evacuate well in advance of a hurricane landfall. If you are asked to evacuate, do so immediately!

1.2.2. Inland Areas. Hurricanes affect inland areas with high winds, floods, and tornadoes. Listen carefully to local authorities to determine what threats you can expect and take the necessary precautions to protect yourself, your family, and your property.

1.3. The United States Hurricane Problem.

1.3.1. Population Growth. The United States has a significant hurricane problem. Our shorelines attract large numbers of people. From Maine to Texas, our coastline is filled with new homes, condominium towers, and cities built on sand waiting for the next storm to threaten its residents and their dreams. There are now some 45 million permanent residents along the hurricane-prone coastline, and the population is still growing. The most rapid growth has been from Texas through the Carolinas. Florida, where hurricanes are most frequent, leads the nation in new residents. In addition to the permanent residents, the holiday, weekend, and vacation populations swell in some coastal areas 10 to 100 fold. A large portion of the coastal areas with high population densities are subject to the inundation from the hurricane's storm surge that historically has caused the greatest loss of life and extreme property damage.

1.3.2. Perception of Risk. Over the past several years, the warning system has provided adequate time for people on the barrier islands and the immediate coastline to move inland when hurricanes have threatened. However, it is becoming more difficult to evacuate people from the barrier islands and other coastal areas because roads have not kept pace with the rapid population growth. The problem is further compounded by the fact that 80 to 90 percent of the population now living in hurricane-prone areas have never experienced the core of a major hurricane. Many of these people have been through weaker storms. The result is a false impression of a hurricane's damage potential. This often leads to complacency and delayed response actions resulting in the loss of lives.

1.3.3. Frequency of Hurricanes. During the 70s and 80s, major hurricanes striking the United States were less frequent than the previous three decades. With the tremendous increase in population along the high-risk areas of our shorelines, we may not fare as well in the future. This will be especially true when hurricane activity inevitably returns to the frequencies experienced during the 40s through the 60s. In the final analysis, the only real defense against hurricanes is the informed readiness of the community.

1.4. Family Preparedness.

1.4.1. Family Disaster Plan. The threat of hurricanes requires that everyone be prepared to respond. Hurricanes can force you to evacuate your neighborhood or confine you to your home. What would you do if basic services, such as water, gas, electricity, or telephones were cut off? Local officials and relief workers will be on the scene after a disaster, but they cannot reach everyone right away. Families can and do cope with disaster by preparing in advance and working together as a team. Knowing what to do is your best protection and your responsibility.

1.4.2. Disaster Supplies Kit. After a disaster, local officials and relief workers will be on the scene, but they cannot reach everyone immediately. You could get help in hours, or it may take days. Basic services, such as electricity, gas, water, and telephones, may be cut off, or you may have to evacuate at a moment's notice. You probably won't have time to shop or search for the supplies you'll need. Your family will cope best by preparing for disaster before it strikes.

1.5. Informational Resources. If more in-depth information is required, please contact your local emergency management office, local National Weather Service office, or local American Red Cross chapter. Additional information, brochures, or materials about disaster safety can be obtained through the websites identified in **Attachment 1**.

Chapter 2

HURRICANE BASICS

2.1. General. The ingredients for a hurricane include a pre-existing weather disturbance, warm tropical oceans, moisture, and relatively light winds aloft. If the right conditions persist long enough, they can combine to produce the violent winds, incredible waves, torrential rains, and floods we associate with this phenomenon.

2.1.1 Breeding Grounds. In the eastern Pacific, hurricanes begin forming by mid-May, while in the Atlantic, Caribbean, and Gulf of Mexico, hurricane development starts in June. For the United States, the peak hurricane threat exists from mid-August to late October although the official hurricane season extends through November. Over other parts of the world, such as the western Pacific, hurricanes can occur year-round. Developing hurricanes gather heat and energy through contact with warm ocean waters. The addition of moisture by evaporation from the sea surface powers them like giant heat engines. Each year on average, ten tropical storms develop over the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico. Many of these remain over the ocean. Six of these storms become hurricanes each year. In an average 3-year period, roughly five hurricanes strike the United States coastline, killing approximately 50 to 100 people anywhere from Texas to Maine. Of these, two are typically major hurricanes (winds greater than 110 mph).

2.1.2. What is a Hurricane? A hurricane is a type of tropical cyclone, which is a generic term for a low-pressure system that generally forms in the tropics. The cyclone is accompanied by thunderstorms and, in the Northern Hemisphere, a counterclockwise circulation of winds near the earth's surface. Tropical cyclones are classified as follows:

2.1.2.1. Tropical Depression: An organized system of clouds and thunderstorms with a defined surface circulation and maximum sustained winds of 38 mph (33 knots) or less.

2.1.2.2. Tropical Storm: An organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73 mph (34 - 63 knots).

2.1.2.3. Hurricane: An intense tropical weather system of strong thunderstorms with a well-defined surface circulation and maximum sustained winds of 74 mph (64 knots) or higher.

2.2. Hurricane Categories. Hurricanes are categorized according to the strength of their winds using the Saffir-Simpson Hurricane Scale (**Table 2.1.**). A Category 1 storm has the lowest wind speeds, while a Category 5 hurricane has the strongest. These are relative terms, because lower category storms can sometimes inflict greater damage than higher category storms, depending on where they strike and the particular hazards they bring. In fact, tropical storms can also produce significant damage and loss of life, mainly due to flooding.

2.3. Hurricane Names. When the winds from these storms reach 39 mph (34 knots), the cyclone is given a name. Years ago, an international committee developed six separate lists of names for these storms (**Table 2.2.**). Each list alternates between male and female names. The

use of these easily remembered names greatly reduces confusion when two or more tropical cyclones occur at the same time. Each list is reused every six years, although hurricane names that have resulted in substantial damage or death are retired. The names assigned for the period between 2000 and 2005 are shown below.

HURRICANE CATEGORIES (DISASTER POTENTIAL SCALE)				
		Wind Speed		
Storm Category	Damage Potential	Knots	MPH	Storm Surge (Feet)
I	Weak	64 - 82	74 - 95	4 - 5
II	Moderate	83 - 95	96 - 110	6 - 8
III	Strong	96 - 113	111 - 130	9 - 12
IV	Very Strong	114 - 134	131 - 155	13 - 18
V	Devastating	Above 134	Above 155	Above 18

Table 2.1. Hurricane Categories.

NAMES FOR ATLANTIC TROPICAL STORMS				
2001	2002	2003	2004	2005
Allison	Arthur	Ana	Alex	Arlene
Barry	Bertha	Bill	Bonnie	Bret
Chantal	Cristobal	Claudette	Charley	Cindy
Dean	Dolly	Danny	Danielle	Dennis
Erin	Edouard	Erika	Earl	Emily
Felix	Fay	Fabian	Frances	Franklin
Gabrielle	Gustav	Grace	Gaston	Gert
Humberto	Hanna	Henri	Hermine	Harvey
Iris	Isidore	Isabel	Ivan	Irene
Jerry	Josephine	Juan	Jeanne	Jose
Karen	Kyle	Kate	Karl	Katrina
Lorenzo	Lili	Larry	Lisa	Lee
Michelle	Marco	Mindy	Matthew	Maria
Noel	Nana	Nicholas	Nicole	Nate
Olga	Omar	Odette	Otto	Ophelia
Pablo	Paloma	Peter	Paula	Philippe
Rebekah	Rene	Rose	Richard	Rita
Sebastien	Sally	Sam	Shary	Stan
Tanya	Teddy	Teresa	Tomas	Tammy
Van	Vicky	Victor	Virginie	Vince
Wendy	Wilfred	Wanda	Walter	Wilma

Table 2.2. Hurricane Names

2.4. Hurricane Season. The official hurricane season for the Atlantic Basin (the Atlantic Ocean, the Caribbean Sea, and the Gulf of Mexico) is from 1 June to 30 November. As seen in the graph to the right (**Figure 2.1**), the peak of the season is mid-August through late October. However, deadly hurricanes can occur anytime in the hurricane season.

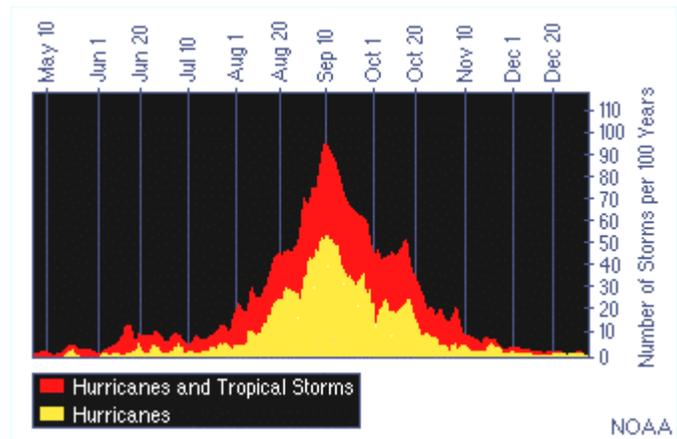


Figure 2.1. Hurricane Season Graph.

2.5. Origin and Life Cycle.

2.5.1. The Birth of a Tropical Cyclone. Tropical cyclones form over warm waters from pre-existing disturbances. These disturbances typically emerge every three or four days from the coast of Africa as "tropical waves" that consist of areas of unsettled weather. Tropical cyclones can also form from the trailing ends of cold fronts and occasionally from upper-level lows. The process by which a tropical cyclone forms and subsequently strengthens into a hurricane depends on at least three conditions shown in **Figure 2.2**.

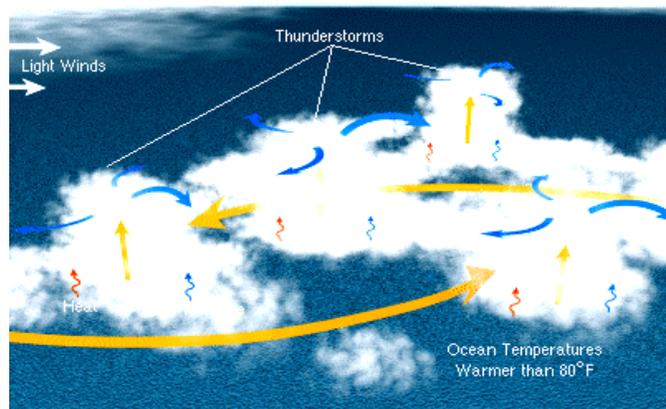


Figure 2.2. Tropical Cyclone Process.

- A pre-existing disturbance with thunderstorms.
- Warm (at least 80° F) ocean temperatures to a depth of about 150 feet.
- Light upper level winds that do not change much in direction and speed throughout the depth of the atmosphere (low wind shear).

2.5.2. Growth and Maturity. In these early stages, the system appears on the satellite image as a relatively unorganized cluster of thunderstorms. If weather and ocean conditions continue to be favorable, the system can strengthen and become a tropical depression (winds less than 38 mph or 33 knots). At this point, the storm begins to take on the familiar spiral appearance due to the flow of the winds and the rotation of the earth (**Figure 2.3**). If the storm continues to strengthen to tropical storm status (winds 39 - 73 mph, 34 - 63 knots), the bands of thunderstorms contribute additional heat and moisture to the storm. The storm

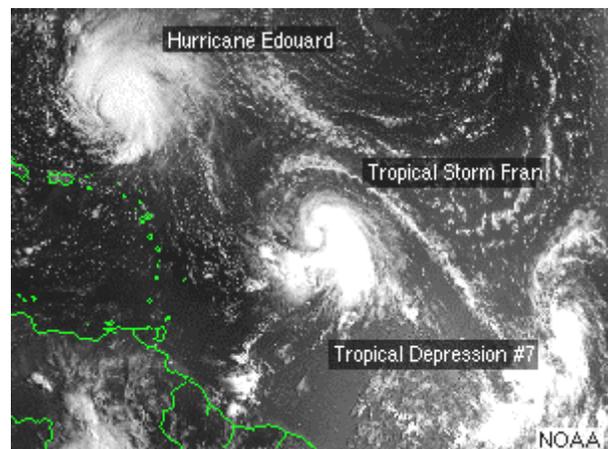


Figure 2.3. Hurricane Growth and Maturity.

becomes a hurricane when winds reach a minimum of 74 mph (64 knots). At this time, the cloud-free hurricane eye typically forms because rapidly sinking air at the center dries and warms the area. The center, or eye, of a hurricane is relatively calm. The most violent activity takes place in the area immediately around the eye, called the eyewall. During their life span, hurricanes can last for more than two weeks over the ocean and can travel up the entire Atlantic Coast.

2.5.3. The Storm's End. Just as many factors contribute to the birth of a hurricane, there are many reasons why a hurricane begins to decay. Wind shear can tear the hurricane apart. Moving over cooler water or drier areas can lead to weakening as well. Landfall typically shuts off the hurricane's main moisture source, and the surface circulation can be reduced by friction when it passes over land. Generally, a weakening hurricane or tropical cyclone can re-intensify if it moves into a more favorable region or interacts with mid-latitude frontal systems.

2.6. Hurricane Structure.

Contrary to how many weather maps appear, a hurricane is more than a point on a weather map, and its path is more than a line. It is a large system that can affect a wide area, requiring that precautions be taken far from where the eye is predicted to come ashore. This section talks about the different parts of the hurricane and will help you better understand hurricane hazards.

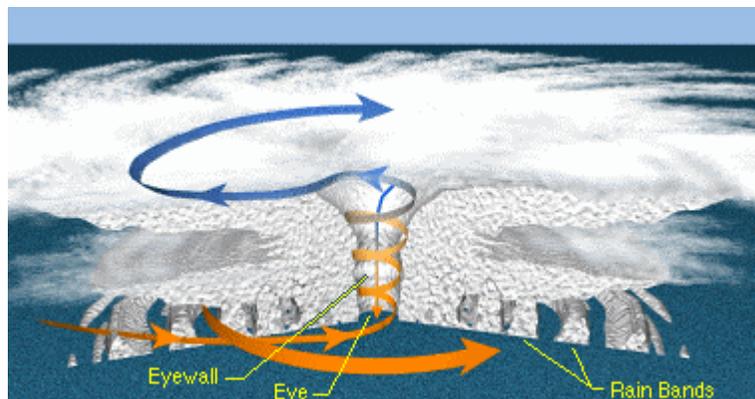


Figure 2.4. Hurricane Structure.

The main parts of a hurricane (**Figure 2.4.**) are the rainbands on its outer edges, the eye, and the eyewall. Air spirals in toward the center in a counter-clockwise pattern, and out the top in the opposite direction. In the very center of the storm, air sinks, forming the cloud-free eye.

2.6.1. The Eye. The hurricane's center is a relatively calm, clear area usually 20-40 miles across. People in the midst of a hurricane are often amazed at how the incredibly fierce winds and rain can suddenly stop and the sky clear when the eye comes over them. Then, just as quickly, the winds and rain begin again, but this time from the opposite direction.

2.6.2. The Eyewall. The dense wall of thunderstorms surrounding the eye has the strongest winds within the storm. Changes in the structure of the eye and eyewall can cause changes in the wind speed, which is an indicator of the storm's intensity. The eye can grow or shrink in size, and double (concentric) eyewalls can form.

2.6.3. The Spiral Rainbands. The storm's outer rainbands (often with hurricane or tropical storm-force winds) can extend a few hundred miles from the center. These dense bands of thunderstorms, which spiral slowly counterclockwise, range in width from a few miles to tens of miles and are 50 to 300 miles long.

2.6.4. Hurricane Size. Typical hurricanes are about 300 miles wide although they can vary considerably (**Figure 2.5.**). Size is not necessarily an indication of hurricane intensity. Hurricane Andrew (1992), the most devastating hurricane of this century, was a relatively small hurricane. Do not focus on the location and track of the center, because the hurricane's destructive winds and rains cover a wide swath. Hurricane-force winds can extend outward to about 25 miles from the storm center of a small hurricane and to more than 150 miles for a large one. The area over which tropical storm-force winds occur is even greater, ranging as far out as almost 300 miles from the eye of a large hurricane.

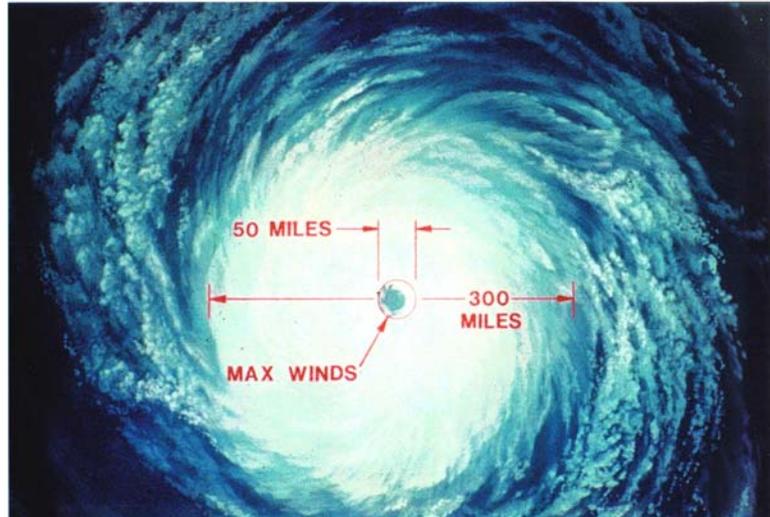


Figure 2.5. Hurricane Size.

2.6.5. Hurricane Circulation and Movement. In the Northern Hemisphere, hurricane winds circulate around the center in a counter-clockwise fashion. This means that the wind direction at your location depends on where the hurricane's eye is. A hurricane's speed and path depends on complex interactions between the storm with its own internal circulation's and the earth's atmosphere. The air in which the hurricane is embedded is a constantly moving and changing "river" of air. Other features in that flow, such as high and low pressure systems, can greatly alter the speed and the path of the hurricane. In turn, it can modify the environment around the storm. Typically, a hurricane's forward speed averages around 15-20 mph. However, some hurricanes stall, often causing devastatingly heavy rain. Others can accelerate to more than 60 mph. Some hurricanes follow a fairly straight course, while others loop and wobble along the path (**Figure 2.6.**). These seemingly erratic changes are difficult to forecast.



Figure 2.6. Circulation and Movement.

2.6.6. The Right Side of the Storm. As a general rule of thumb, the hurricane's right side (relative to the direction it is traveling) is the most dangerous part of the storm because of the additive effect of the hurricane wind speed and speed of the larger atmospheric flow (the steering winds) (**Figure 2.7.**). The increased winds on the right side increase the storm surge. Tornadoes are also more common here.



Figure 2.7. The Right Side.

2.7. **Hurricane Hazards.** The main hazards associated with tropical cyclones and especially hurricanes are storm surge, high winds, heavy rain, and flooding, as well as tornadoes. The intensity of a hurricane is an indicator of damage potential. However, impacts are a function of where and when the storm strikes.

2.7.1. Storm Surge.

2.7.1.1. Storm surge is a large dome of water often 50 to 100 miles wide that sweeps across the coastline near where a hurricane makes landfall. The surge of high water topped by waves is devastating. The

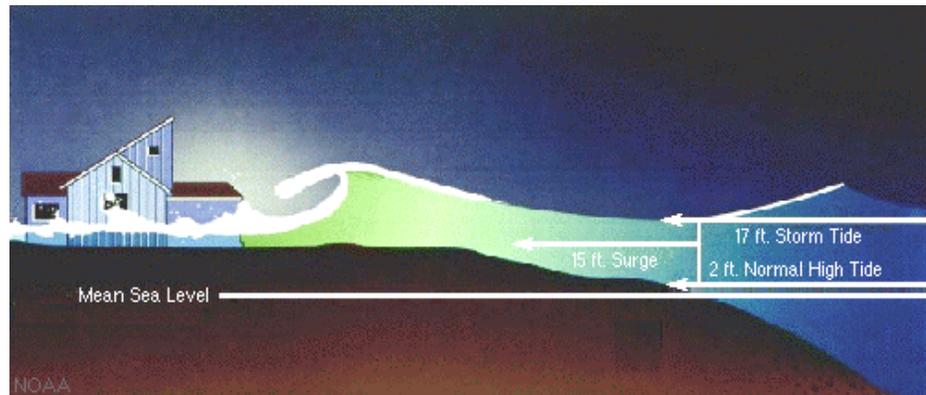


Figure 2.8. Storm Surge.

stronger the hurricane and the shallower the offshore water, the higher the surge will be. Along the immediate coast, storm surge is the greatest threat to life and property. Storm surge is simply water that is pushed toward the shore by the force of the winds swirling around the storm. This advancing surge combines with the normal tides to create the hurricane storm tide (**Figure 2.8.**), which can increase the mean water level 15 feet or more. In addition, wind waves are superimposed on the storm tide. This rise in water level can cause severe flooding in coastal areas, particularly when the storm tide coincides with the normal high tides. Because much of the United States' densely populated Atlantic and Gulf Coast coastlines lie less than 10 feet above mean sea level, the danger from storm tides is tremendous.

2.7.1.2. The level of surge is also determined by the slope of the continental shelf (**Figure 2.9.**). A shallow slope off the coast will allow a greater surge to inundate coastal communities. Communities with a steeper continental shelf will not see as much surge inundation, although large breaking waves can still present major problems. Storm tides, waves, and currents in confined harbors severely damage ships, marinas, and pleasure boats. Wave and current action associated with the tide also causes extensive damage. Water weighs approximately 1,700 pounds per cubic yard; extended pounding by frequent waves can demolish any structure not specifically designed to withstand such forces. The currents created by the tide combine with the action of the waves to severely erode beaches and coastal highways. Many buildings withstand hurricane force winds until their foundations, undermined by erosion, are weakened and fail. In estuaries and bayous, intrusions of salt water endanger the public health and send animals, such as snakes, fleeing from flooded areas.

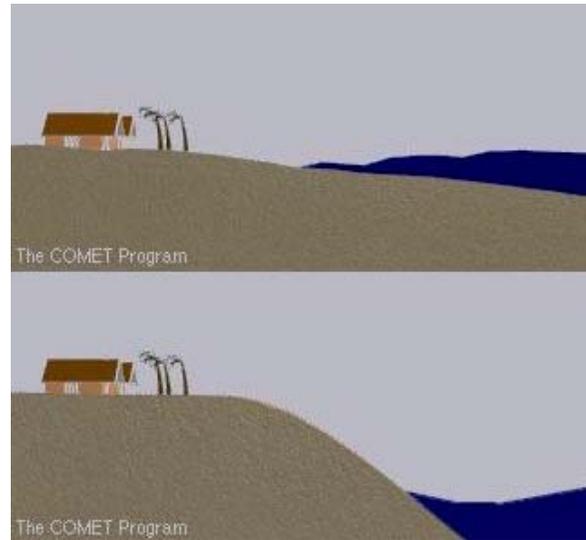


Figure 2.9. Slope of the Continental Shelf.

2.7.2. High Winds. The intensity of a landfalling hurricane is expressed in terms of categories that relate wind speeds and potential damage. According to the Saffir-Simpson Hurricane Scale, a Category 1 hurricane has lighter winds compared to storms in higher categories. A Category 4 hurricane would have winds between 131 and 155 mph and, on the average, would usually be expected to cause 100 times the damage of the Category 1 storm. Depending on circumstances, less intense storms may still be strong enough to produce damage, particularly in areas that have not prepared in advance. Tropical storm-force winds are strong enough to be dangerous to those caught in them. For this reason, emergency manager's plan on having their evacuations complete and their personnel sheltered before the onset of tropical storm force winds, not hurricane force winds. Hurricane-force winds can easily destroy poorly



Figure 2.10. Hurricane Force Winds.

constructed buildings and mobile homes. Debris such as signs, roofing material, and small items left outside become flying missiles in hurricanes (**Figure 2.10.**). Extensive damage to trees, towers, water and underground utility lines (from uprooted trees), and fallen poles cause considerable disruption. High-rise buildings are also vulnerable to hurricane-force winds, particularly at the higher levels since wind speed tends to increase with height. It is not uncommon for high-rise buildings to suffer a great deal of damage due to windows being blown out. Consequently, the areas around these buildings can be very dangerous. The strongest winds usually occur in the right side of the

eyewall of the hurricane. Wind speed usually decreases significantly within 12 hours of landfall. Nonetheless, winds can stay above hurricane strength well inland.

2.7.3. Heavy Rains/Floods. Widespread rainfall of 6 to 12 inches or more is common during landfall, frequently producing deadly and destructive floods (**Figure 2.11.**). Such floods have been the primary cause for tropical cyclone-related fatalities over the past 30 years. The risk from flooding depends on a number of factors: The speed of the storm, its interactions with other weather systems, the terrain it encounters, and ground saturation. Rains are generally heaviest with slower moving storms (less than 10 mph). To estimate the total rainfall in inches, one rule of thumb is to divide 100 by the forward speed of the hurricane in miles per hour ($100/\text{forward speed} = \text{estimated inches of rain}$). The heaviest rain usually occurs near or along the cyclone track in the period 6 hours before and 6 hours after landfall. However, storms can last for days. Occasionally hurricanes produce little rain where it is expected. Large amounts of rain can occur more than 100 miles inland where flash floods are typically the major threat. Tornadoes and high winds generally become less of a threat the farther inland a hurricane moves (although there have been several exceptions). But the heavy rains frequently continue and even intensify as the dying, but still powerful, hurricane is forced up higher terrain or merges with other storm systems in the area.



Figure 2.11. Torrential Rains and Flooding.

2.7.4. Tornadoes. Hurricanes also produce tornadoes, which add to the hurricane's destructive power (**Figure 2.12.**). Tornadoes are most likely to occur in the right-front quadrant of the hurricane. They are also often found elsewhere embedded in the rainbands, well away from the center of the hurricane. However, they can also occur near the eyewall. Some hurricanes seem to produce no tornadoes, while others develop multiple ones. In general, tornadoes associated with hurricanes are less intense than those that occur in the Great Plains (**Table 2.3.** - Fujita Tornado Intensity Scale). Nonetheless, the effects of tornadoes, added to the larger area of hurricane-force winds, can produce substantial damage. We have no way at present to predict exactly which storms will spawn tornadoes or where they will touch down. The new Doppler radar systems have greatly improved the forecaster's warning capability, but the technology



Figure 2.12. Tornadoes.

usually provides lead times from only a few minutes up to about 30 minutes. Consequently, preparedness is critical.

THE FUJITA INTENSITY SCALE			
F-Scale Number	Intensity	Wind Speed (MPH)	Type of Damage Done
F0	Gale tornado	40 – 70	Some damage to chimneys; breaks off trees; pushes over shallow-rooted trees; damages sign boards.
F1	Moderate tornado	73 – 112	The lower limit is the beginning of hurricane wind speed; peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos pushed off road; attached garages may be destroyed.
F2	Significant tornado	113 – 157	Considerable damage. Roofs torn off frame homes; mobile homes demolished; boxcars pushed over; large trees snapped or uprooted; light object missiles generated.
F3	Severe tornado	158 – 206	Roof and some walls torn off well constructed houses; trains overturned; most trees in forests uprooted.
F4	Devastating tornado	207 – 260	Well-constructed houses leveled; structures with weak foundations blown off some distance; cars thrown and large missiles generated.
F5	Incredible tornado	261 – 318	Strong frame houses lifted off foundations and carried considerable distances to disintegrate; automobile sized missiles fly through the air in excess of 100 meters; trees debarked; steel re-enforced concrete structures badly damaged.
F6	Inconceivable tornado	319 – 379	These winds are very unlikely. The small area of damage they might produce would probably not be recognizable along with the mess produced by F4 and F5 wind that would surround the F6 winds. Missiles, such as cars and refrigerators would do serious secondary damage that could not be directly attributed as F6 damage. If this level is ever achieved, evidence for it might only be found in some manner of ground swirl pattern, for it may never be identifiable through engineering studies.

Table 2.3. Fujita Tornado Intensity Scale.

Chapter 3

HURRICANE PREPAREDNESS

3.1. General. Timely warnings have greatly diminished hurricane fatalities in the United States. In spite of this, property damage continues to mount. There is little we can do about the hurricanes themselves. However, the National Oceanic and Atmospheric Administration's (NOAA's) Tropical Prediction Center and National Weather Service (NWS) field offices team up with other federal, state, and local agencies; rescue and relief organizations; the private sector; and the news media in a huge warning and preparedness effort.

3.2. Awareness Information.

3.2.1. A hurricane WATCH is issued when there is a threat of hurricane conditions within 24 to 36 hours.

3.2.2. A hurricane WARNING is issued when hurricane conditions are expected in 24 hours or less.

3.2.3. Hurricane Conditions (HURCONS): The prerequisite for any preparatory and survival situation is a positive means of relaying warning or disaster information. HURCONS (**Table 3.1.**) is the tool Patrick AFB uses to ensure pre-disaster information is passed and are disseminated throughout the base. These conditions give sufficient preparation time to safeguard personnel, aircraft, equipment, and facilities.

3.2.4. Many people do not realize the threat of hurricanes, as each one is different. Over the past several years, U.S. hurricane warning systems have provided adequate time for people on barrier islands and the immediate coastline to move inland when hurricanes threaten. However, due to rapid population growth, it is becoming more difficult to evacuate people from the barrier islands and other coastal areas because roads have not kept pace with the expansion. The problem is further compounded by the fact that 80 to 90 percent of the population now living in hurricane-prone areas have never experienced the core of a "major" hurricane. Many of these people have been through weaker storms. The result is a false impression of a hurricane's damage potential. This often leads to complacency and delayed actions, which could result in the loss of many lives.

HURRICANE CONDITIONS (HURCONS)	
HURCON 4	  <div style="border: 1px solid black; padding: 5px; display: inline-block;">HURCON 4</div>
Destructive winds of 50 knots or greater are possible within 72 hours.	
	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Hurricane Condition Four has been declared by the 45th Space Wing Commander. Destructive Winds of 50 knots (58 mph) or greater are possible within 72 hours.</div>
	Effective: _____ (Local)
HURCON 3	  <div style="border: 1px solid black; padding: 5px; display: inline-block;">HURCON 3</div>
Destructive winds of 50 knots or greater are possible within 48 hours.	
	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Hurricane Condition Three has been declared by the 45th Space Wing Commander. Destructive Winds of 50 knots (58 mph) or greater are possible within 48 hours.</div>
	Effective: _____ (Local)
HURCON 2	  <div style="border: 1px solid black; padding: 5px; display: inline-block;">HURCON 2</div>
Destructive winds of 50 knots or greater are possible within 24 hours.	
	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Hurricane Condition Two has been declared by the 45th Space Wing Commander. Destructive Winds of 50 knots (58 mph) or greater are possible within 24 hours.</div>
	Effective: _____ (Local)
HURCON 1	  <div style="border: 1px solid black; padding: 5px; display: inline-block;">HURCON 1</div>
Destructive winds of 50 knots or greater are possible within 12 hours.	
	<div style="border: 1px solid black; padding: 5px; display: inline-block;">Hurricane Condition One has been declared by the 45th Space Wing Commander. Destructive Winds of 50 knots (58 mph) or greater are possible within 12 hours.</div>
	Effective: _____ (Local)
RECOVERY	No Visual Aid
Actions taken to reestablish primary mission capability and return Patrick AFB to normal operations.	

Table 3.1. Hurricane Conditions.

3.2.5. Follow instructions given by proper authorities. These instructions will be given over the local radio and television stations. Police and emergency management officers will be patrolling off-base areas. People on base will be given instructions through the following means;

- Pyramid Notification System
- Global E-mail
- Commanders Channel (Channel 99)
- Rumor Control Line (494-9100)
- Special briefings
- Patrick Marquee
- Base Paper - Missileer
- Base Public Address System
- Patrolling Security Police vehicles
- Patrick Evacuation Hotline – (1-800-470-7232)
- CCAFS Evacuation Hotline – (1-800-861-7900)
- AFPC Evacuation Information Hotline – (To be used when PAFB and CCAFS hotlines are inoperable). Randolph AFB Personnel Readiness Branch (1-800-435-9941).

3.3. Preparedness.

3.3.1. Plan for a Hurricane. Develop a Family Disaster Plan. Hurricane-specific planning should include the following:

- Learn about your community's risk from hurricanes. Contact your local emergency management office, local National Weather Service office, or local chapter of the American Red Cross for more information on hurricanes and how to prepare for them.
- If your community is at risk from hurricanes, contact the local emergency management office or planning and zoning office to find out if you live in an area that could flood during a hurricane or heavy rains. If you live in a risk area, learn what types of supplies should be stored to protect your home from floodwaters. Knowing the elevation of your property in relation to nearby streams and dams will let you know if forecasted flood levels will affect your home.
- If you are at risk from hurricanes:
 - ◆ Talk to your insurance agent. Homeowners' policies do not cover flooding from hurricanes. Ask about the National Flood Insurance Program (NFIP).
 - ◆ Ask about your community's hurricane preparedness plan. The local emergency management office or local chapter of the American Red Cross should be able to provide you with details of this plan. This plan should include information on the safest evacuation routes, nearby shelters, advice on when schools would be closed and what conditions are necessary for recommended evacuation of certain areas.

- ◆ Develop an evacuation plan. Everyone in your family should know where to go if they have to leave. Trying to make plans at the last minute can be upsetting and create confusion.
- ◆ Determine where to move your boat in an emergency. Marinas and other storage facilities may fill up quickly. Some locations may have less risk of damage than others. You may be required to secure your boat well in advance of approaching hurricanes.
- ◆ Discuss hurricanes with your family. Everyone should know what to do in case all family members are not together. Discussing hurricanes ahead of time will help reduce fear and anxiety, and lets everyone know how to respond. Review flood safety and preparedness measures with your family.

3.3.2. How to Protect Your Property.

- Make a list of items to bring inside in the event of a storm. A list will help you remember anything that can be broken or picked up by strong winds. Hurricane winds, often in excess of 100 miles per hour, can turn unanchored items into deadly missiles, causing damage or injury when they hit.
- Keep trees and shrubbery trimmed. Make trees more wind resistant by removing diseased or damaged limbs then strategically remove branches so that wind can blow through. Hurricane winds frequently break weak limbs and hurl them at great speed, causing great damage when they hit property. Debris collection services may not be operating just before a storm, so it is best to do this well in advance of approaching storms.
- Remove any debris or loose items in your yard. Hurricane winds can pick up anything unsecured, creating damage to property when the debris hits.
- Clear loose and clogged rain gutters and downspouts. Hurricanes often bring long periods of heavy rain. Providing clear drainage will help prevent misdirected flooding.
- Install permanent hurricane shutters. Hurricane shutters provide the best protection for your windows and doors. Taping windows could take critical time from more effective preparedness measures. All tape does is help prevent glass from broken windows from scattering all over inside. Tape does not prevent windows from breaking. Cover the outside of windows with shutters or plywood.
- If you do not have permanent hurricane shutters, install anchors for plywood (marine plywood is best) and pre-drill holes in pre-cut half-inch outdoor plywood boards so that you can cover the windows of your home quickly. Mark which board fits which window. **NOTE:** Tape does not prevent windows from breaking, so taping windows is not recommended. Most homes destroyed during recent hurricanes had no window

protection. When wind enters a home through broken windows, the pressure builds against the walls and can lift roofs, followed by collapsing walls.

- Install protection to the outside areas of sliding glass doors. Glass doors are as vulnerable as windows to breakage by wind-driven objects.
- Well ahead of time, buy any other items needed to board up windows and protect your home. When a hurricane threatens, supplies are quickly sold out at many stores. Stock may not be replenished until after the storm.
- Strengthen garage doors. Many houses are destroyed by hurricane winds that enter through damaged garage doors, lifting roofs, and destroying the remainder of the house.
- Have an engineer check your home and advise about ways to make it more resistant to hurricane winds. There are a variety of ways to protect your home. Professionals can advise you of engineering requirements, building permits or requirements of local planning and zoning departments to provide the most effective protection.
- Elevate coastal homes. Raising houses to a certain height will make them more resistant to hurricane-driven waters. There may be many local codes affecting how and where homes can be elevated. Meet with your emergency manager or planning and zoning official for a description of the process to have your home elevated. There may also be community funds available for such measures.
- If you live in a flood plain or are prone to flooding, also follow flood preparedness precautions. Hurricanes can bring great amounts of rain and frequently cause floods. Some hurricanes have dropped more than 10 inches of rain in just a few hours.

3.3.3. What to Do During a Hurricane WATCH.

- Continue listening regularly to a NOAA Weather Radio or local radio or television stations for updated information. Hurricanes can change direction, intensity, and speed very suddenly. What was a minor threat several hours ago can quickly escalate to a major threat.
- Listen to the advice of local officials, and evacuate if they tell you to do so. Avoid flooded roads and watch for washed-out bridges. Leaving an area that may be affected will help keep your family safe. Local officials may call for evacuation in specific areas at greatest risk in your community. Following the advice of local authorities is your safest protection. Local officials may close down certain roads, especially near the coast, when the outer effects of increasing wind and rain from a hurricane reach the coast.
- Prepare your property for high winds. Hurricane winds can blow large, heavy objects and send them crashing into homes. Anything not secured may become a deadly or damaging projectile.

- ◆ Bring lawn furniture inside, as well as outdoor decorations or ornaments, trash cans, hanging plants, or anything else that can be picked up by the wind.
 - ◆ Make trees more wind resistant by removing diseased and damaged limbs, then strategically remove branches so that wind can blow through.
 - ◆ Secure building by closing and boarding up each window of your home. Remove outside antennas.
 - ◆ Moor boat securely or move it to a designated safe place. Use rope or chain to secure boat to trailer. Use tie-downs to anchor trailer to the ground or house.
- Fill your car's gas tank. If advised to evacuate, you may have to travel long distances or be caught in traffic, idling for long periods of time. Gas stations along the route may be closed.
 - Stock up on prescription medications. Stores and pharmacies may be closed after the storm.
 - Recheck manufactured home tie-downs. Manufactured homes may not be as affected by strong winds if they are tied down according to the manufacturer's instructions. Properly tied down homes are more likely to stay fixed to their foundations.
 - Check your Disaster Supplies Kit. Some supplies may need to be replaced or restocked.
 - Turn refrigerator and freezer to coldest setting. Open only when absolutely necessary and close quickly. Keeping the coldest air in will help perishables last much longer in the event of a power failure.
 - Store valuables and personal papers in a safety deposit box in a waterproof container on the highest level of your home. Hurricanes leave much water damage inside homes. Historically, it is shown that protecting valuables in this manner will provide the best security.
 - Turn off utilities if told to do so by authorities. Authorities may ask you to turn off water or electric utilities to prevent damage to your home or within the community. Most of the time they will tell you to leave the gas on because a professional is required to turn your gas back on, and it may be several weeks before you receive service.
 - Turn off propane tanks. Propane tanks may be damaged or dislodged by strong winds or water. Turning them off reduces the fire potential if they are damaged by the storm.
 - Unplug small appliances. Small appliances may be affected by electrical power surges that may occur as the storm approaches. Unplugging them reduces potential damage.

- Review evacuation plan. Make sure your planned route is the same as the currently recommended route. Sometimes roads may be closed or blocked, requiring a different route.
- Stay away from floodwaters. If you come upon a flooded road, turn around and go another way. When you are caught on a flooded road and waters are rising rapidly around you, if you can do so safely, get out of your vehicle and climb to higher ground. Floods cause most hurricane-related deaths and most flood fatalities are caused by people attempting to drive through water. The depth of water is not always obvious. The roadbed may be washed out under the water, and you could be stranded or trapped. Rapidly rising water may stall the engine, engulf the vehicle and its occupants, and sweep them away. Two feet of water will carry away most automobiles.

3.3.4. What to Do During a Hurricane WARNING.

- Listen to a NOAA Weather Radio, or portable, battery-powered radio or television for updated information and official instructions. Hurricanes can change direction, intensity, and speed very suddenly. Continue listening for local information.
- If officials announce a hurricane warning, they may ask you to leave your home as soon as possible to be safe. Take your Disaster Supplies Kit and go to a shelter or evacuation location. Local officials advise leaving only if they truly believe your location is in danger. It is important to follow their instructions as soon as possible. Roads may become blocked and the storm can worsen, preventing safe escape. Having your disaster supplies will make you more comfortable while you are away from home.
- If you are not advised to evacuate, stay indoors, on the first floor away from windows, skylights and glass doors, even if they are covered. Stay on the floor least likely to be affected by strong winds and floodwaters. A small interior room without windows on the first floor is usually the safest place. Have as many walls between you and the outside winds as possible. Sometimes strong winds and projectiles may tear hurricane shutters off, so stay away from windows even if they are covered. Lie on the floor under a table or other sturdy object. Being under a sturdy object will offer greater protection from falling objects.
- Close all interior doors. Secure and brace external doors. Closed doors will help prevent damaging hurricane winds from entering additional rooms.
- Have a supply of flashlights and extra batteries handy. Avoid using open flames (candles and kerosene lamps) as a source of light. Flashlights provide the safest emergency lighting source. Between 1984 and 1998, candle-related deaths from home fires following hurricanes were three times greater than the number of deaths related to the direct impact of the hurricane. Kerosene lamps require a great deal of ventilation and are not designed for indoor use.

- Store drinking water in clean bathtubs, sinks, plastic bottles, and cooking utensils. Public water supplies and wells may become contaminated, or electric pumps may be inoperative if power is lost. Survivors of community-wide disasters have said the individual's greatest need following the disaster is water.
- If power is lost, turn off major appliances to reduce the power "surge" when electricity is restored. When electricity is restored, the surge from many major appliances starting at the same time may cause damage or destroy the appliances. Turning off or unplugging major appliances will allow you to decide when it is best to turn them back on.
- If in a mobile home, check tie-downs and evacuate immediately. Historically, manufactured homes suffer the greatest amount of damage during hurricanes. Prior to 1994, most manufactured homes were not designed to withstand even moderate winds.
- Be aware that the calm "eye" is deceptive; the storm is not over. The worst part of the storm will happen once the eye passes over and the wind blows from the opposite direction. Trees, shrubs, buildings, and other objects damaged by the first winds can be broken or destroyed by the second winds. The opposing winds begin suddenly, and have surprised and injured many people who ventured out during the eye.
- Watch out for flooding. Hurricanes and tropical storms often drop large amounts of rainfall and cause severe flooding, even when they are weakening or are no longer a named storm. "Weak" tropical storms are just as capable of producing heavy rainfall and flooding as major hurricanes.
- Be alert for tornadoes. Tornadoes can happen during and after a hurricane passes over. Remain indoors on a lower level, in the center of your home, in a closet or bathroom without windows. Going below ground, such as to a basement or storm cellar, increases your risk from flood.

3.3.5. What to Do if Evacuation Is Necessary.

- Leave as soon as possible (if possible, in daylight). Avoid flooded roads and watch for washed-out bridges. Roads and bridges frequently become crowded and traffic moves slow. Evacuation will probably take longer than expected. Give yourself plenty of time.
- Secure your home by unplugging appliances and turning off electricity and the main water valve. This will reduce potential damage to your appliances (from power surges) and to your home.
- Tell someone outside of the storm area where you are going.
- Relatives and friends will be concerned about your safety. Letting someone know your travel plans will help relieve their fear and anxiety.

- If time permits, and you live in an identified surge zone or area prone to flooding, move furniture to a higher floor. Moving valuable furnishings helps reduce potential damage.
- Bring pre-assembled emergency supplies and warm protective clothing. People frequently arrive at shelters or hotels with nothing. Having these items will make you more comfortable in other locations.
- While shelters provide a safe place to stay, food and other specialty items may not be available (i.e. infant supplies and individuals on restricted diets). It may take several days until permission is given by local authorities to reenter an evacuated area. Bring all the necessary items with you to a shelter.
- Lock up your home and leave. There may be individuals evacuating after you, or returning before you. Police may be busy with hurricane-related emergencies and not able to patrol neighborhoods as usual. Lock your property as you normally would when leaving home.

3.3.6. What to Do After a Hurricane.

- Continue listening to local radio or television stations or a NOAA Weather Radio for information and instructions. Access may be limited to some parts of the community, or roads may be blocked.
- If you evacuated, return home when local officials tell you it is safe. Local officials on the scene are your best source of information on accessible areas and passable roads.
- Stay alert for extended rainfall and subsequent flooding, even after the hurricane or tropical storm has weakened. Hurricanes may stall or change direction when they make landfall, or they may bring a lot of rain upriver, causing additional flood hazards for hours or days after the storm.
- Stay away from floodwaters. Drive only if absolutely necessary and avoid flooded roads and washed-out bridges. Continue to follow all flood safety messages. Floodwaters may last for days following a hurricane. If you come upon a flooded road, turn around and go another way. When you are caught on a flooded road and waters are rising rapidly around you, if you can safely get out of the car, do so immediately and climb to higher ground. Never try to walk, swim, or drive through such swift water. Most flood fatalities are caused by people attempting to drive through water or people playing in high water. If it is moving swiftly, even water six inches deep can sweep you off your feet, and two feet can carry away most automobiles.
- If you come upon a barricade, follow detour signs or turn around and go another way. Local officials put up barricades to protect people from unsafe roads. Driving around them can be a serious risk.

- Stay on firm ground. Moving water only six inches deep can sweep you off your feet. Standing water may be electrically charged from underground or downed power lines.
- Help injured or trapped persons. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
- Help a neighbor who may require special assistance - infants, elderly people and people with disabilities. Elderly people and people with disabilities may require additional assistance. People who care for them or who have large families may need additional assistance in emergency situations.
- Avoid disaster areas. Your presence might hamper rescue and other emergency operations, and put you at further risk from the residual effects of floods, such as contaminated waters, crumbled roads, landslides, mudflows, and other hazards.
- Avoid loose or dangling power lines; immediately report them to the Power Company, police, or fire department. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury.
- Electrical equipment should be checked and dried before being returned to service. Call an electrician for advice before using electricity, which may have received water damage.
- Stay out of the building if water remains around the building. Floodwaters often undermine foundations, causing buildings to sink, floors to crack, or walls to collapse.
- When entering buildings, use extreme caution. Hurricane-driven floodwaters may have damaged buildings where you least expect it. Carefully watch every step you take.
 - ◆ Wear sturdy shoes. The most common injury following a disaster is cut feet.
 - ◆ Use battery-powered lanterns or flashlights when examining buildings. Battery-powered lighting is the safest and easiest, preventing fire hazard for the user, occupants, and building.
 - ◆ Examine walls, floors, doors, staircases, and windows to make sure that the building is not in danger of collapsing.
 - ◆ Inspect foundations for cracks or other damage. Cracks and damage to a foundation can render a building uninhabitable.
 - ◆ Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Flammable or explosive materials may come from upstream. Fire is the most frequent hazard following floods.

- ◆ Check for gas leaks. If you smell gas or hear a blowing or hissing noise, open a window and quickly leave the building. Turn off the gas, using the outside main valve if you can, and call the Gas Company from a neighbor's home. If you turn off the gas for any reason, it must be turned back on by a professional.
 - ◆ Look for electrical system damage. If you see sparks, broken or frayed wires, or if you smell burning insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician first for advice. Electrical equipment should be checked and dried before being returned to service.
 - ◆ Check for sewage and water line damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the Water Company, and avoid using water from the tap. You can obtain safe water from undamaged water heaters or by melting ice cubes.
 - ◆ Watch out for animals, especially poisonous snakes that may have come into buildings with the floodwaters. Use a stick to poke through debris. Floodwaters flush many animals and snakes out of their homes.
 - ◆ Watch for loose plaster, drywall, and ceilings that could fall.
 - ◆ Take pictures of the damage, both of the building and its contents, for insurance claims.
- Open windows and doors to ventilate and dry your home.
 - Check refrigerated food for spoilage. If power was lost, some foods may be spoiled.
 - Avoid drinking or preparing food with tap water until you are certain it is not contaminated. Hurricane-driven floodwaters may have contaminated public water supplies or wells. Local officials should advise you on the safety of the drinking water. Undamaged water heaters or melted ice cubes can provide good sources of fresh drinking water.
 - Pump out flooded basements gradually (about one-third of the water per day) to avoid structural damage. If the water is pumped out completely in a short period of time, pressure from water on the outside could cause basement walls to collapse.
 - Service damaged septic tanks, cesspools, pits, and leaching systems as soon as possible. Damaged sewage systems are health hazards.
 - Use the telephone only for emergency calls. Telephone lines are frequently overwhelmed in disaster situations. They need to be clear for emergency calls to get through.

3.5. Evacuation. (Figure 3.1) .

3.5.1. The 45 SW Commander and subordinate commanders will ensure that all personnel evacuate from Patrick AFB if they are in the forecast track of the storm.

3.5.2. Wing personnel are encouraged to stay with friends, family members, or in hotels located outside the predicted flooding areas. The 45th Space Wing has identified the Space Coast Middle School as the primary evacuation site for the wing (**Figure 3.2. and 3.3**). If these options are not available, personnel can also use local county shelters (**Figure 3.4 and Table 3.2**).



Figure 3.1. Evacuation.

3.5.3. Once the storm has moved to within 24 hours of the forecast arrival of 50 knot (58 MPH) winds the 45 SW Commander will direct the evacuation of base personnel, including housing residents. Residents of military family housing, the unaccompanied dormitories, and billeting must be evacuated either to Space Coast Middle School or other inland safe haven locations.



Figure 3.2. Space Coast Middle School

3.5.4. Military personnel and families residing in base housing needing transportation will report to the on-base assembly areas for formation and evacuation to Space Coast Middle School. Upon declaration of the evacuation order, buses will be dispatched to evacuation assembly areas. Personnel requiring transportation will report to the following locations:

3.5.4.1. Personnel residing in billeting, transient quarters, dormitories and DEOMI students will report to the parking lot across from building 720 (Billeting Office), corner of Falcon and Atlas Avenues.

3.5.4.2. Personnel residing in North Base Housing will report to the intersection of Hopi and Riverside Trail (next to the playground).

3.5.4.3. Personnel residing in Central Base Housing will report to the Base Education Center (Bldg. 998).

3.5.4.4. Personnel residing in South Base Housing will report to Youth Center/Chapel 2 parking lot (Bldg. 3655 and 3659).

Evacuation Route to Space Coast Middle School

ROUTE 1: Proceed west on Pineda Causeway (SR 404) to US 1 North. Travel 20.4 miles to Fay Boulevard and turn left (first light after power plant) on to Fay Boulevard. Go 3.6 miles and turn right on to Homestead Avenue (after I-95 overpass). Go to the fourth street and turn left onto Corsica Boulevard, then turn right on to Duncan Avenue. Space Coast Middle School is straight ahead.

ROUTE 2: Proceed East on the Pineda Causeway (SR 404) to Wickham Road. Make a right on to Wickham Road to I-95 North. Take I-95 North to Exit # 77C Port St. John Parkway East. Proceed East on to Port St. John Parkway and make a left on to Grissom Boulevard North and make a left on to Fay Boulevard. Right turn on to Homestead Avenue then left on to Corsica and then right on to Duncan Avenue to Space Coast Middle School.

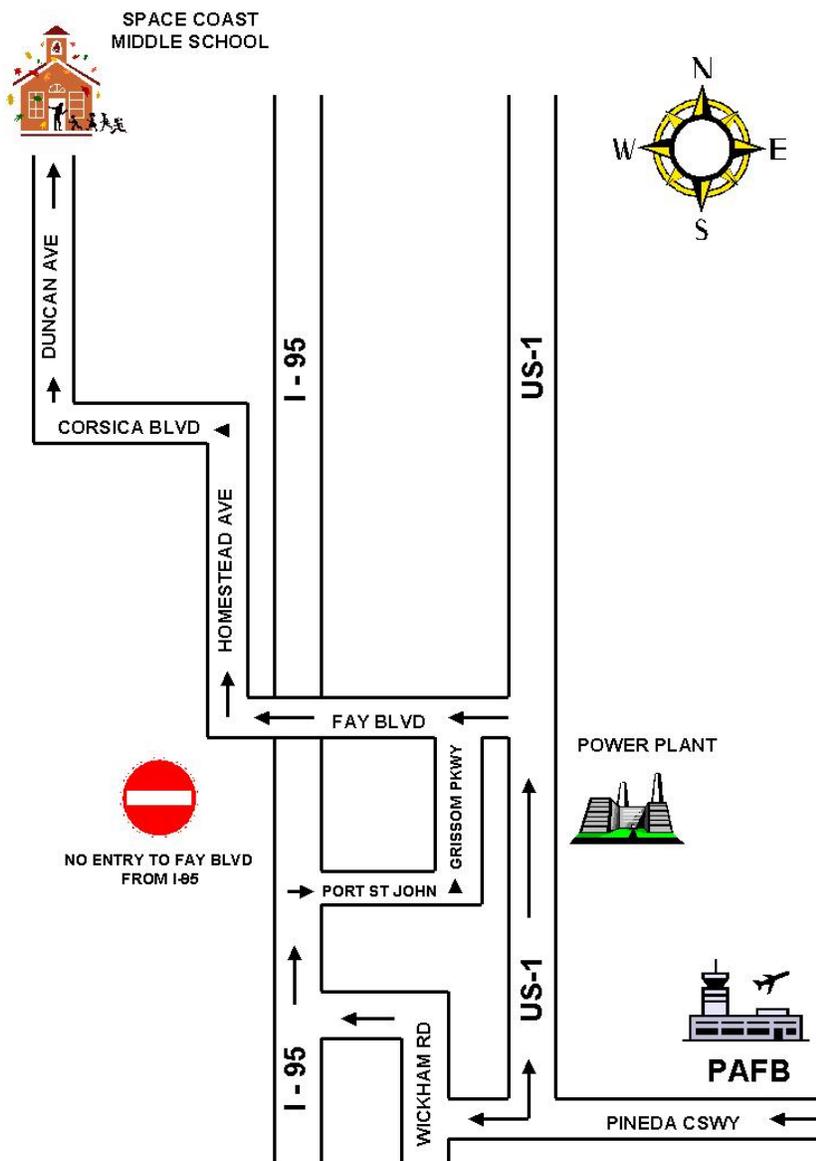
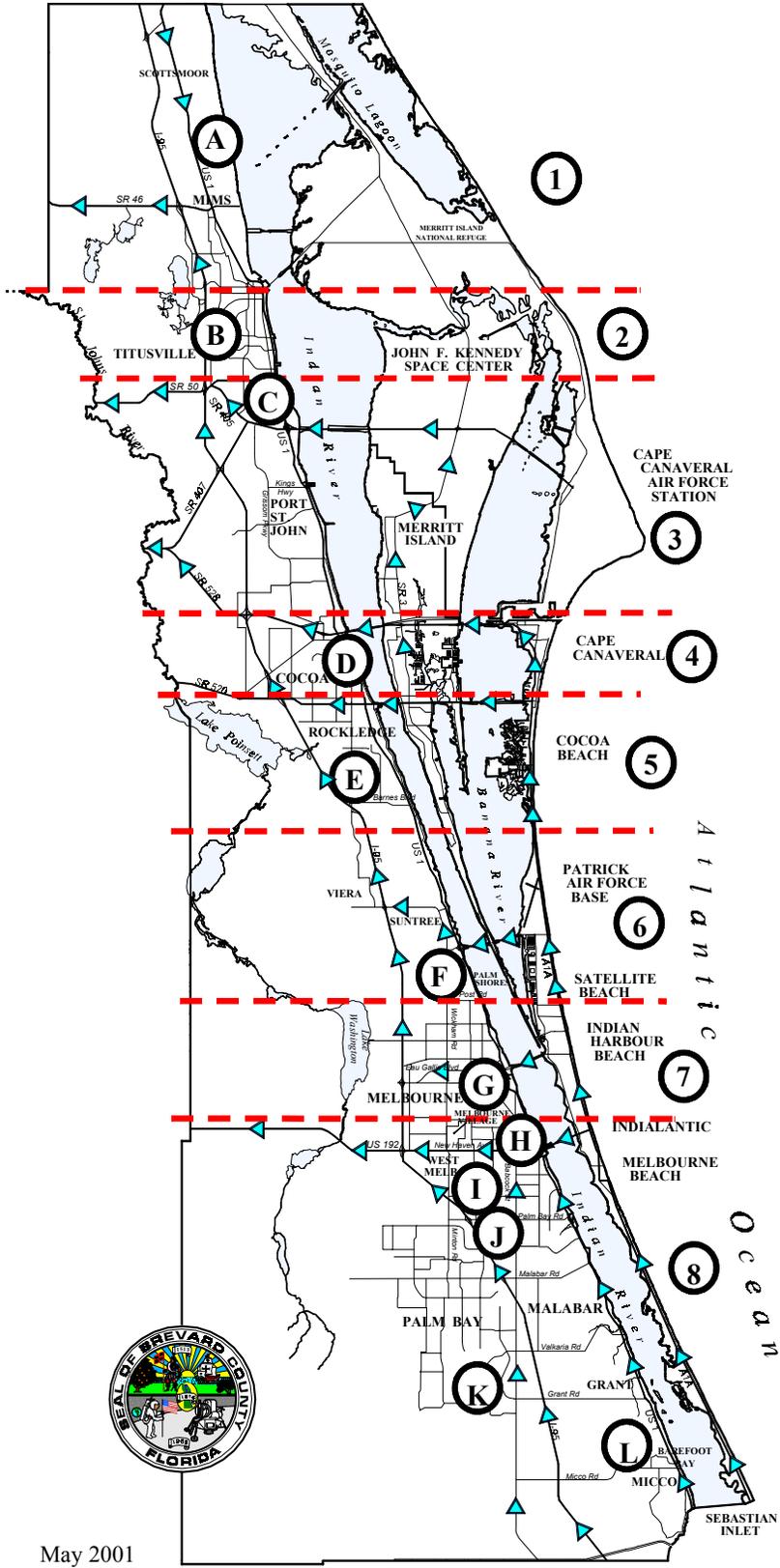


Figure 3.3. Evacuation Route to Space Coast Middle School



May 2001

Figure 3.4. County Hurricane Shelters/Evacuation Routes Map

BREVARD COUNTY PRIMARY EVACUATION SHELTERS	
Office: (321) 637-6670 Web Page: www.embrevard.com Information Line During Disasters Only: (321) 637-6674	
PRIMARY EVACUATION SHELTERS	
A.	PINEWOOD ELEMENTARY SCHOOL - 3654 Lionel Road, Mims
B.	APOLLO ELEMENTARY SCHOOL - 3085 Knox McRae Drive, Titusville
C.	IMPERIAL ESTATES ELEMENTARY SCHOOL - 5525 Kathy Drive, Titusville
D.	BREVARD COMMUNITY COLLEGE - Cocoa Campus – 1519 Clearlake Road, Cocoa
E.	ANDERSEN ELEMENTARY SCHOOL - 3011 South Fiske Boulevard, Rockledge
F.	BREVARD COMMUNITY COLLEGE - Melbourne Campus – 3865 North Wickham Road, Melbourne
G.	EAU GALLIE HIGH SCHOOL - 1400 Commodore Boulevard, Melbourne
H.	MELBOURNE HIGH SCHOOL - 74 Bulldog Boulevard, Melbourne
I.	CENTRAL MIDDLE SCHOOL - 2600 Wingate Boulevard, West Melbourne
J.	RIVIERA ELEMENTARY SCHOOL - 351 Riviera Drive NE, Palm Bay
K.	WESTSIDE ELEMENTARY SCHOOL - 2175 DeGrootd Road SW, Palm Bay
L.	BAREFOOT BAY COMMUNITY CENTER - Bldg. A, Barefoot Boulevard (Not a Shelter – (See # 9)
EVACUATION AND SHELTER ROUTES	
1.	Residents north of Garden St. to north County Line, evacuate west on SR 46, or shelter at Pinewood Elementary School.
2.	Residents from Garden St. to SR 50, evacuate to I-95, or west on SR 50, or shelter at Apollo Elementary School.
3.	Residents of North Merritt Island, Port St. John and South Titusville, evacuate west on SR 405 to SR 50, or shelter at Imperial Estates Elementary School on Kathy Dr. off Sisson Rd.
4.	Merritt Island, Beachside, and mainland residents north of SR 520, evacuate west on SR 528 (Beeline), or shelter at Brevard Community College, Cocoa.
5.	Residents north of Patrick AFB and Macaw Ln. on Merritt Island, evacuate west on SR 520, or shelter at Andersen Elementary School. Mainland residents use Barnes Blvd., Eyster Blvd., or Fiske Blvd. to evacuate to I-95, or shelter at Andersen Elementary School.
6.	Residents south of Patrick AFB to north limits of Indian Harbour Beach and south of Macaw Ln. on Merritt Island, evacuate west on Pineda Cswy. To Wickham Rd. then north to I-95, or shelter at BCC, Melbourne. Mainland residents north of Aurora Rd to Barnes Blvd., evacuate to I-95, or shelter at BCC, Melbourne.
7.	Residents from the north Indian Harbour Beach limits to the Indialantic north limits, evacuate west on SR 518 to I-95. Mainland residents from Aurora Rd. to US 192, evacuate west, or shelter at Eau Gallie High School, new wing.
8.	Residents from the north limits of Indialantic to the south County Line, evacuate to and west on US 192, or take Shelter Route north on Babcock St. to Melbourne High School, unless directed south on Babcock St. to Palm Bay Rd. and west to Riviera Dr. then south to Riviera Elementary School. Mainland residents south of US 192 evacuate west on US 192 or report to Riviera Elementary School. Mainland south county residents needing shelter, proceed west on Micco Rd., Grant Rd., or Valkaria Rd., to S. Babcock St., then to Cogan Dr. or Eldron Blvd., west to San Filippo Dr., then south and west to DeGrootd Rd. to Westside Elementary School. Residents of West Melbourne, Melbourne Village and NW Palm Bay needing shelter proceed to Minton Rd. and Wingate Blvd. and shelter at Central Middle School.
9.	Residents in the Barefoot Bay/South County area that do not have transportation, report to the Barefoot Bay Community Center for transportation to Westside Elementary School or other designated shelter.

Table 3.2. County Hurricane Shelters/Evacuation Routes

Chapter 4

FAMILY DISASTER PLAN

4.1. General. Disaster can strike quickly and without warning. It can force you to evacuate your neighborhood or confine you to your home. What would you do if basic services, such as water, gas, electricity, or telephones were cut off? Local officials and relief workers will be on the scene after a disaster, but they cannot reach everyone right away.

4.1.1. Families can and do cope with disaster by preparing in advance and working together as a team (**Figure 4.1.**). Knowing what to do is your best protection and your responsibility.

4.1.2. Learn more about Family Disaster Plans by contacting your local emergency management office or American Red Cross chapter.

4.2. Preparedness. There are four basic steps to developing a family disaster plan:

4.2.1. Find out what could happen to you. By learning what your risks may be, you can prepare for the disaster most likely to occur in your area. Learn more by contacting your local emergency management office or American Red Cross chapter. Be prepared to take notes. Ask the following:

- What type of disasters are most likely to happen in your community? Identify which human-caused or technological disasters can affect your region, too. Remember to consider major chemical emergencies that can occur anywhere chemical substances are stored, manufactured, or transported.
- How should you prepare for each?
- Does your community have a public warning system? What do your community's warning signals sound like and what should you do when you hear them?
- What about animal care after disaster? Pets (other than service animals) are not permitted in places where food is served, according to many local health department regulations. Plan where you would take your pets if you had to go to a public shelter where they are not permitted.
- If you care for elderly or disabled persons, how can you help them? What might be some special needs to consider?



Figure 4.1. Family Disaster Plan.

- What are the disaster plans at your workplace, your children's school or day care center, and other places where members of your family spend time? You should be prepared wherever you may be when disaster strikes and learn steps you can take to prevent or avoid disasters.

4.2.2. Create a Family Disaster Plan. Once you know what disasters are possible in your area, talk about how to prepare and how to respond if one occurs. Make checklists of steps you can take as you discuss this information with your family. Here is how to create your Family Disaster Plan:

- Meet with your family and discuss why you need to prepare for disaster. Explain the dangers of fire, severe weather, and earthquakes to children. Plan to share responsibilities and work together as a team. Keep it simple enough so people can remember the important details. A disaster is an extremely stressful situation that can create confusion. The best emergency plans are those with very few details.
- Discuss the types of disasters that are most likely to happen. Explain what to do in each case. Everyone should know what to do in case all family members are not together. Discussing disasters ahead of time will help reduce fear and anxiety and will help everyone know how to respond.
- Pick two places to meet:
 - ◆ Right outside of your home in case of a sudden emergency, like a fire.
 - ◆ Outside of your neighborhood in case you can't return home or are asked to leave your neighborhood. Everyone must know the address and phone number of the meeting locations.
- Develop an emergency communication plan. In case family members are separated from one another during floods or other disasters, have a plan for getting back together. Separation is a real possibility during the day when adults are at work and children are at school.
- Ask an out-of-town relative or friend to be your "family contact." Your contact should live outside of your area. After a disaster, it is often easier to make a long distance call than a local call. Family members should call the contact and tell him or her where they are. Everyone must know the contact's name, address, and phone number.
- Discuss what to do if authorities ask you to evacuate. Make arrangements for a place to stay with a friend or relative who lives out of town and learn about shelter locations.
- Be familiar with escape routes. Depending on the type of disaster, it may be necessary to evacuate your home. Plan several escape routes in case certain roads are blocked or closed. Remember to follow the advice of local officials during evacuation situations.

They will direct you to the safest route; some roads may be blocked or put you in further danger.

- Plan how to take care of your pets. Pets (other than service animals) are not permitted to be in places where food is served, according to many local health department regulations. Plan where you would take your pets if you had to go to a public shelter where they are not permitted.

4.2.3. Complete your checklists. Take the steps outlined in the checklists you made when you created your Family Disaster Plan. Remember to include the following items on your checklists:

- Post by phones emergency telephone numbers (fire, police, ambulance, etc.). You may not have time in an emergency to look up critical numbers.
- Teach all responsible family members how and when to turn off the water, gas, and electricity at the main switches or valves. Keep necessary tools near gas and water shut-off valves. Turn off utilities only if you suspect a leak or damaged lines, or if you are instructed to do so by authorities. If you turn the gas off, you will need a professional to turn it back on. Paint shut-off valves with white or fluorescent paint to increase visibility. Attach a shut-off valve wrench or other special tool in a conspicuous place close to the gas and water shut-off valves.
- Check if you have adequate insurance coverage. Ask your insurance agent to review your current policies to ensure that they will cover your home and belongings adequately. Homeowner's insurance does not cover flood losses. If you are a renter, your landlord's insurance does not protect your personal property; it only protects the building. Renters' insurance pays if a renter's property is damaged or stolen. Renters' insurance costs less than \$15 a month in most areas of the country. Contact your insurance agent for more information.
- Install smoke alarms on each level of your home, especially near bedrooms. Smoke alarms cut nearly in half your chances of dying in a home fire. Smoke alarms sense abnormal amounts of smoke or invisible combustion gases in the air. They can detect both smoldering and flaming fires. Many areas are now requiring hard-wired smoke alarms in new homes.
- Get training from the fire department on how to use your fire extinguisher (A-B-C type), and show family members where extinguishers are kept. Different extinguishers operate in different ways. Unless responsible family members know how to use your particular model, they may not be able to use it effectively. There is no time to read directions during an emergency. Only adults should handle and use extinguishers.
- Conduct a home hazard hunt. During a disaster, ordinary objects in your home can cause injury or damage. Anything that can move, fall, break, or cause a fire is a home hazard. For example, during an earthquake or a tornado, a hot water heater or a bookshelf could turn over or pictures hanging over a couch could fall and hurt someone. Look for

electrical, chemical, and fire hazards. Contact your local fire department to learn about home fire hazards. Inspect your home at least once a year and fix potential hazards.

- Stock emergency supplies and assemble a Disaster Supplies Kit. Keep enough supplies in your home to meet your needs for at least three days. Assemble a Disaster Supplies Kit with items you may need in case of an evacuation. Store these supplies in sturdy, clearly labeled, easy-to-carry containers, such as backpacks or duffel bags.
- Keep a smaller Disaster Supplies Kit in the trunk of your car. If you become stranded or are not able to return home, having these items will help you to be more comfortable.
- Keep a portable, battery-operated radio or television and extra batteries. Maintaining a communications link with the outside is a step that can mean the difference between life and death. Make sure that all family members know where the portable, battery-operated radio or television is located, and always keep a supply of extra batteries.
- Consider using a NOAA Weather Radio with a tone-alert feature. NOAA Weather Radio is the best means to receive warnings from the National Weather Service. The National Weather Service continuously broadcasts updated weather warnings and forecasts that can be received by NOAA Weather Radios, which are sold in many stores. NOAA Weather Radio now broadcasts warning and post-event information for all types of hazards - both natural and technological. Working with other federal agencies and the Federal Communications Commission's new Emergency Alert System, NOAA Weather Radio is an "all hazards" radio network, making it the single source for the most comprehensive weather and emergency information available to the public. Your National Weather Service recommends purchasing a NOAA Weather Radio that has both a battery backup and a Specific Area Message Encoder (SAME) feature, which automatically alerts you when a watch or warning is issued for your county, giving you immediate information about a life-threatening situation. The average range is 40 miles, depending on topography. The NOAA Weather Radio signal is a line-of-sight signal, which does not bore through hills or mountains.
- Take a Red Cross first aid and CPR class. Have your family learn basic safety measures, such as CPR and first aid. These are critical skills, and learning can be a fun activity for older children.
- Plan home escape routes. Determine the best escape routes from your home in preparation for a fire or other emergency that would require you to leave the house quickly. Find two ways out of each room.
- Find the safe places in your home for each type of disaster. Different disasters often require different types of safe places. While basements are appropriate for tornadoes, they could be deadly in a major chemical emergency.
- Make two photocopies of vital documents and keep the originals in a safe deposit box. Keep one copy in a safe place in the house, and give the second copy to an out-of-town

friend or relative. Vital documents such as birth and marriage certificates, tax records, credit card numbers, financial records, and wills and trusts can be lost during disasters.

- Make a complete inventory of your home, garage, and surrounding property. The inventory can be either written or videotaped. Include information such as serial numbers, make and model numbers, physical descriptions, and price of purchases (receipts, if possible). This list could help you prove the value of what you owned if your possessions are damaged or destroyed and can help you to claim deductions on taxes. Be sure to include expensive items such as sofas, chairs, tables, beds, chests, wall units, and any other furniture too heavy to move. Do this for all items in your home, on all levels. Then store a copy of the record somewhere away from home, such as in a safe deposit box.

4.2.4. Practice and maintain your plan. Practicing your plan will help you instinctively make the appropriate response during an actual emergency. You will need to review your plan periodically and you may need to change some parts.

- Quiz your kids every six months so they remember what to do, meeting places, phone numbers, and safety rules.
- Conduct fire and emergency evacuation drills at least twice a year. Actually drive evacuation routes so each driver will know the way. Select alternate routes in case the main evacuation route is blocked during an actual disaster. Mark your evacuation routes on a map; keep the map in your Disaster Supplies Kit. Remember to follow the advice of local officials during evacuation situations. They will direct you to the safest route, away from roads that may be blocked or put you in further danger.
- Replace stored food and water every six months. Replacing your food and water supplies will help ensure freshness.
- Use the test button to test your smoke alarms once a month. The test feature tests all electronic functions and is safer than testing with a controlled fire (matches, lighters, or cigarettes). If necessary, replace batteries immediately. Make sure children know what your smoke alarm sounds like.
- If you have battery-powered smoke alarms, replace batteries at least once a year. Some agencies recommend you replace batteries when the time changes from standard daylight savings each spring and again in the fall. "Change your clock, change your batteries," is a positive theme and has become a common phrase. While replacing batteries this often certainly will not hurt, available data show that batteries will last at least a year, so more frequent replacements is not necessary.
- Replace your smoke alarms every 10 years. Smoke alarms become less sensitive over time. Replacing them every 10 years is a joint recommendation by the National Fire Protection Association and the US Consumer Products Safety Commission.

- Look at your fire extinguisher to ensure it is properly charged. Fire extinguishers will not work properly if they are not properly charged. Use the gauge or test button to check proper pressure. Follow manufacturer's instructions for replacement or recharging fire extinguishers. If the unit is low on pressure, damaged, or corroded, replace it or have it professionally serviced.

4.2.5. What to Tell Children.

- Tell children that a disaster is something that happens that could hurt people, cause damage, or cut off utilities such as water, telephones, or electricity. Explain to them that nature sometimes provides "too much of a good thing" - fire, rain, wind, snow. Talk about typical effects that children can relate to, such as loss of electricity, water, and telephone service.
- Give examples of several disasters that could happen in your community. Help children recognize the warning signs for the disasters that could happen in your community. Discussing disaster ahead of time reduces fear and anxiety and lets everyone know how to respond.
- Teach children how and when to call for help. Check the telephone directory for local emergency telephone numbers. If you live in a 911 service area, teach children to call 911. At home, post emergency telephone numbers by all phones and explain when to call each number. Even very young children can be taught how and when to call for emergency assistance. If a child can't read, make an emergency telephone number chart with pictures that may help the child identify the correct number to call.
- Explain that when people know what to do and practice in advance, everyone is better able to handle emergencies. That's why you need to create a Family Disaster Plan.
- Have older children take a first aid and CPR course. These are critical skills, and learning can be a fun activity.
- Tell children that in a disaster there are many people who can help them. Talk about ways that an emergency manager, Red Cross volunteer, police officer, firefighters teacher, neighbor, doctor, or utility worker might help following a disaster.
- Teach children to call your family contact in case they are separated from the family in an emergency. Help them memorize the telephone number, or write it down on a card that they can keep with them.

4.2.6. Remember Your Pets.

- Plan how to take care of your pets. If you must evacuate, it is best to take your pets with you. However, pets (other than service animals) are not permitted in public shelters, according to many local health department regulations and because of other considerations.

- Contact hotels and motels outside of your immediate area to check their policies on accepting pets and restrictions on the number, size, and species. Ask if "no pet" policies could be waived in an emergency.
- Ask friends, relatives, or others outside of the affected area whether they could shelter your animals. If you have more than one pet, they may be more comfortable if kept together, but be prepared to house them separately.
- Prepare a list of boarding facilities and veterinarians who could shelter animals in an emergency; include 24-hour phone numbers. Ask local animal shelters if they provide emergency shelter or foster care for pets in a disaster. Animal shelters may be overburdened, so this should be your last resort.
- Keep a list of "pet friendly" places, including their phone numbers, with other disaster information and supplies. If you have notice of an impending disaster, call ahead for reservations.
- Carry pets in a sturdy carrier. Animals may feel threatened by some disasters and become frightened or try to run.
- Have identification, collar, leash, and proof of vaccinations for all pets. Veterinarian records may be required by some locations before they will allow you to board your pets. If your pet is lost, identification will help officials return it to you.
- Assemble a portable pet disaster supplies kit. Keep food, water, and any special pet needs in an easy-to-carry container.
- Have a current photo of your pets in case they get lost.
- As a last resort, if you absolutely must leave your pets behind, prepare an emergency pen in the home that includes a three-day supply of dry food and a large container of fresh water.

4.2.7. Evacuation.

- Evacuate immediately if told to do so. Authorities do not ask people to leave unless they truly feel lives may be in danger. Follow their advice.
- Listen to local radio or television and follow the instructions of local emergency officials. Local officials will provide you with the most appropriate advice for your particular situation.
- Wear protective clothing and sturdy shoes. Disaster areas and debris contain many hazards. The most common injury following disasters is cut feet.

- Lock your home. Others may evacuate after you or before you return. Secure your house as you normally would when leaving for extended periods.
- Use travel routes specified by local authorities. Don't use shortcuts because certain areas may be impassable or dangerous.
- If you have only moments before leaving, grab the following items and go:
 - ◆ First aid kit, including prescription medications, dentures, extra eyeglasses, and hearing aid batteries.
 - ◆ Disaster Supplies Kit basics and Evacuation Supplies Kit.
 - ◆ A change of clothes and a sleeping bag or bedroll and pillow for each household member.
 - ◆ Car keys and keys to the place you may be going (friend's or relative's home).
- If you're sure you have time and if local officials haven't advised an immediate evacuation, but there's a chance the weather may get worse or flooding may happen, take steps to protect your home and belongings:
 - ◆ Bring all pets into the house and confine them to one room, if you can. If necessary, make arrangements for your pets. Pets may try to run if they feel threatened. Keeping them inside and in one room will allow you to find them quickly if you need to leave.
 - ◆ Put your Disaster Supplies Kit basics and Evacuation Supplies Kit in your vehicle or by the door if you may be leaving on foot. In some disaster situations, such as tsunamis, it is better to leave by foot.
 - ◆ Notify your family contact where you are going and when you expect to get there. Relatives and friends will be concerned about your safety. Letting someone know your travel plans will help relieve the fear and anxiety of those who care.
 - ◆ Bring things indoors. Lawn furniture, trash cans, children's toys, garden equipment, clotheslines, hanging plants, and any other objects that may be blown around or swept away should be brought indoors.
 - ◆ Look for potential hazards. Look for coconuts, fruit, and other objects in trees around your property that could blow or break off and fly around in strong winds. Cut them off and store them indoors until the storm is over. If you have not already cut away dead or diseased branches or limbs from trees and shrubs, leave them alone. Local rubbish collection services will not have time before the storm to pick anything up.
 - ◆ Turn off electricity at the main fuse or breaker, and turn off water at the main valve. Unless local officials advise otherwise, leave natural gas on because you will need it

for heating and cooking when you return home. If you turn gas off, a licensed professional is required to turn it back on, and it may take weeks for a professional to respond.

- ◆ Turn off propane gas service. Propane tanks often become damaged or dislodged in disasters.
- ◆ If strong winds are expected, cover the outside of all the windows of your home. Use shutters that are rated to provide significant protection from windblown debris, or pre-fit plywood coverings over all windows.
- ◆ If flooding is expected, consider using sandbags to keep water away from your home. It takes two people about one hour to fill and place 100 sandbags, giving you a wall one foot high and 20 feet long. Make sure you have enough sand, burlap, or plastic bags, shovels, strong helpers, and time to place them properly.

4.2.8. After a Disaster.

- Remain calm and patient. Staying calm and rational will help you move safely and avoid delays or accidents caused by irrational behavior. Many people will be trying to accomplish the same things you are for their family's safety. Patience will help everyone get through a difficult situation more easily.
- Put your plan into action. Having specific steps to take will keep you working toward your family's safety.
- Listen to local radio or television for news and instructions. Local authorities will provide the most appropriate advice for your particular situation.
- Check for injuries. Give first aid and get help for seriously injured people. Taking care of yourself first will allow you to help others safely until emergency responders arrive.
- Help your neighbors who may require special assistance infants, elderly people, and people with disabilities - and the people who care for them or for large families who may need additional help in an emergency situation.
- Wear protective clothing and sturdy shoes. Disaster areas and debris contain many hazards. The most common injury following disasters is cut feet.
- Check for damage in your home. Disasters can cause extensive damage, sometimes in places you least expect. Look carefully for any potential hazards.
 - ◆ Use battery-powered lanterns or flashlights when examining buildings. Battery-powered lighting is the safest and easiest and does not present a fire hazard for the user, occupants, or building.

- ◆ Avoid using candles. Candles can easily cause fires. They are quiet and easily forgotten. They can tip over during earthquake aftershocks or in a gust of wind. Candles invite fire play by children. More than three times as many people have died in residential fires caused by using candles after a disaster than from the direct impact of the disaster itself.
- ◆ Look for fire hazards. There may be broken or leaking gas lines, flooded electrical circuits, or submerged furnaces or electrical appliances. Fire is the most frequent hazard following floods.
- ◆ Check for gas leaks. Sniff for gas leaks, starting at the water heater. If you smell gas or suspect a leak, open a window and get everyone outside quickly. Turn off the gas at the outside main valve if you can and call the Gas Company from a neighbor's home. If you turn off the gas for any reason, it must be turned back on by a professional.
- ◆ Look for electrical system damage. If you see sparks, broken or frayed wires, or if you smell burning insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician first for advice. Electrical equipment should be checked and dried before being returned to service.
- ◆ Check for sewage and water lines damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the Water Company and avoid using water from the tap. You can obtain safe water from undamaged water heaters or by melting ice cubes.
- ◆ Clean up spills immediately. This includes medicines, bleach, gasoline, and other flammable liquids.
- ◆ Watch for loose plaster and ceilings that could fall.
- ◆ Take pictures of the damage, both of the building and its contents, for insurance claims.
- Confine or secure your pets. They may be frightened and try to run.
- Let your family contact know you have returned home and then do not use the telephone again unless it is a life-threatening emergency. Telephone lines are frequently overwhelmed in disaster situations. They need to be clear for emergency calls to get through.
- Make sure you have an adequate water supply in case service is cut off. Water is often contaminated after major disasters. An undamaged water heater may be your best source of drinking water.

- Stay away from downed power lines and report them immediately. Getting damaged utilities turned off will prevent further injury or damage. If possible, set out a flare and stay on the scene to warn others until authorities arrive.

4.2.9. For People With Disabilities. Persons with disabilities, or those who may have mobility problems (such as elderly persons), should prepare as anyone else. In addition, they may want to consider some of the following steps:

- Create a network of relatives, friends, or co-workers to assist in an emergency. If you think you may need assistance in a disaster, discuss your disability with relatives, friends, or co-workers and ask for their help. For example, if you need help moving or require special arrangements to receive emergency messages, make a plan with friends. Make sure they know where you keep your disaster supplies. Give a key to a neighbor or friend who may be able to assist you in a disaster.
- Maintain a list of important items and store it with your emergency supplies. Give a copy to another family member and a friend or neighbor. Important items might include:
 - ◆ Special equipment and supplies, for example, hearing aid batteries.
 - ◆ Current prescription names and dosages.
 - ◆ Names, addresses, and telephone numbers of doctors and pharmacists.
 - ◆ Detailed information about the specifications of your medication regime.
- Contact your local emergency management office now. Many local emergency management offices maintain registers of people with disabilities and their needs so they can be located and assisted quickly in a disaster.
- Wear medical alert tags or bracelets to identify your disability in case of an emergency. These may save your life if you are in need of medical attention and unable to communicate.
- Know the location and availability of more than one facility if you are dependent on a dialysis machine or other life-sustaining equipment or treatment. There may be several people requiring equipment, or facilities may have been affected by the disaster.
- If you have a severe speech, language, or hearing disability:
 - ◆ When you dial 911, tap the space bar to indicate a TDD call.
 - ◆ Store a writing pad and pencils to communicate with others.
 - ◆ Keep a flashlight handy to signal your whereabouts to other people and for illumination to aid in communication.

- ◆ Remind friends that you cannot completely hear warnings or emergency instructions. Ask them to be your source of emergency information as it comes over the radio. Another option is to use a NOAA Weather Radio with a tone-alert feature connected to lights. When a watch or warning is issued for your area, the light would alert you to potential danger.
- ◆ If you have a hearing ear dog, be aware that the dog may become confused or disoriented in an emergency.
- ◆ If you have a hearing ear dog, store extra food, water, and supplies for your dog. Trained hearing ear dogs will be allowed to stay in emergency shelters with their owners. Check with local emergency management officials for more information.
- If you are blind or visually impaired:
 - ◆ Keep extra canes well placed around the home and office, even if you use a guide dog.
 - ◆ If you have a guide dog, be aware that the dog may become confused or disoriented in an emergency.
 - ◆ If you have a guide dog, store extra food, water, and supplies for your dog. Trained guide dogs will be allowed to stay in emergency shelters with their owners. Check with local emergency management officials for more information.
- If you need a wheelchair, show friends how to operate your wheelchair so they can move you if necessary. Make sure friends know the size of your wheelchair in case it has to be transported, and where to get a battery if needed.
- Listen to the advice of local officials. People with disabilities have the same choices as other community residents about whether to evacuate their homes and where to go when an emergency threatens. Decide whether it is better to leave the area, stay with a friend, or go to a public shelter. Each of these decisions requires planning and preparation.

Chapter 5

DISASTER SUPPLIES KIT

5.1. General. After a disaster, local officials and relief workers will be on the scene, but they cannot reach everyone immediately. You could get help in hours, or it may take days. Basic services, such as electricity, gas, water, and telephones, may be cut off, or you may have to evacuate at a moment's notice. You probably won't have time to shop or search for the supplies you'll need. Your family will cope best by preparing for disaster before it strikes. Assembling the supplies (**Figure 5.1.**) you might need following a disaster is an important part of your Family Disaster Plan. Following a disaster, having extra supplies at home or supplies to take with you in the event of an evacuation can help your family endure evacuation or home confinement. Learn more about Disaster Supplies Kits by contacting your local emergency management agency or American Red Cross chapter.



Figure 5.1. Disaster Supplies Kit.

5.2. Awareness Information. Involve children in disaster preparedness. Ask children to help you remember to keep your kits in working order by changing the food and water every six months and replacing batteries as necessary. Children might make calendars or posters with the appropriate dates marked on them. Ask children to think of items that they would like to include in their own Disaster Supplies Kit, such as books or games or appropriate nonperishable food items.

5.3. Preparedness. Prepare Your Kit.

5.3.1. Tips for Your Disaster Supplies Kit.

- Keep a smaller Disaster Supplies Kit in the trunk of each car. If you become stranded or are not able to return home, having some items will help you to be more comfortable until help arrives.
- Keep items in airtight plastic bags. This will help protect them from damage or spoiling.
- Replace stored food and water every six months. Replacing your food and water supplies will help ensure their freshness.
- Rethink your kit and family needs at least once a year. Replace batteries, update clothes, etc.

- Ask your physician or pharmacist about storing prescription medications. It may be difficult to obtain prescription medications during a disaster because stores may be closed or supplies may be limited.
- Use an easy-to-carry container for the supplies you would most likely need for an evacuation. Label it clearly. Possible containers include:
 - ◆ A large, covered trash container.
 - ◆ A camping backpack.
 - ◆ A duffel bag.
 - ◆ A cargo container that will fit on the roof of your vehicle.

5.3.2. Disaster Supplies Kit Basics. The following items might be needed at home or for an evacuation. Keeping them in an easy-to-carry backpack or duffel bag near your door would be best in case you need to evacuate quickly, such as in a tsunami, flash flood, or major chemical emergency. Store your kit in a convenient place known to all family members. Kit basics are:

- A portable, battery-powered radio or television and extra batteries.
- Flashlight and extra batteries.
- First aid kit and first aid manual.
- Supply of prescription medications.
- Credit card and cash.
- Personal identification.
- An extra set of car keys.
- Matches in a waterproof container.
- Signal flare.
- Map of the area and phone numbers of places you could go.
- Special needs, for example, diapers or formula, prescription medicines and copies of prescriptions, hearing aid batteries, spare wheelchair battery, spare eyeglasses, or other physical needs.

- If you have additional space, consider adding some of the items from your Evacuation Supplies Kit.

5.3.3. Evacuation Supplies Kit. Place in an easy-to-carry container the supplies you would most likely need if you were to be away from home for several days. Label the container clearly. Remember to include:

- Disaster Supplies Kit basics (listed above).
- Three gallons of water per person.
- Three-day supply of nonperishable food.
- Kitchen accessories: manual can opener; mess kits or paper cups, plates, and plastic/disposable utensils; utility knife; a can of cooking fuel if food must be cooked; household liquid bleach to treat drinking water; sugar, salt, pepper; aluminum foil; plastic resealable bags.
- One complete change of clothing and footwear for each family member, sturdy shoes or work boots, raingear, hat and gloves, thermal underwear, sunglasses.
- Blankets or sleeping bag for each family member.
- Tools and other accessories: paper, pencil; needles and thread; pliers, shut-off wrench, shovels, and other useful tools; tape; medicine dropper; whistle; plastic sheeting; small canister, A-B-C-type fire extinguisher; emergency preparedness manual; tube tent; compass.
- Sanitation and hygiene items: toilet paper, towelettes; soap, hand sanitizer, liquid detergent; feminine supplies; personal items such as shampoo, deodorant, toothpaste, toothbrushes, comb, and brush, lip balm; plastic garbage bags (heavy duty) and ties (for personal sanitation uses); medium sized plastic bucket with tight lid; disinfectant; household chlorine bleach; small shovel for digging an expedient latrine.
- Entertainment, such as games.
- Remember to consider the young and older family members, such as infants and elderly or disabled persons.
-
- For baby: formula, diapers, bottles, powdered milk, medications.
- For adults: heart and high blood pressure medication, insulin, prescription drugs, denture needs, contact lenses and supplies, extra eyeglasses, and hearing aid batteries.

5.3.4. Home Disaster Supplies Kit.

5.3.4.1. In addition to your Disaster Supplies Kit basics and Evacuation Supplies Kit, gathering the following items will help your family endure home confinement, which often happens following disasters and may include the loss of utilities.

- Wrench to turn off household gas and water. Keep it near the shut-off valves.
- A week's supply of food and water.
- Additional blankets and sleeping bags.

5.3.4.2. Also, consider using a NOAA Weather Radio with the tone-alert feature in your home. NOAA Weather Radio is the best means for receiving warnings from the National Weather Service. The National Weather Service continuously broadcasts updated weather warnings and forecasts that can be received by NOAA Weather Radios sold in many stores. NOAA Weather Radio now broadcasts warning and post-event information for all types of hazards - both natural and technological. Working with other federal agencies and the Federal Communications Commission's new Emergency Alert System, NOAA Weather Radio is an "all hazards" radio network, making it the single source for the most comprehensive weather and emergency information available to the public. Your National Weather Service recommends purchasing a radio that has both a battery backup and a Specific Area Message Encoder (SAME) feature, which automatically alerts you when a watch or warning is issued for your county, giving you immediate information about a life-threatening situation. The average range is 40 miles, depending on topography; the National Weather Radio signal is a line-of-sight signal, which does not bore through hills or mountains.

5.3.5. Water. Having an ample supply of clean water is a top priority in an emergency.

- Store water in plastic containers, such as soft drink plastic bottles. Seal containers tightly, label them and store in a cool, dark place. Replace water every six months. Avoid using containers that will decompose or break, such as milk cartons or glass bottles.
- Keep at least a three-day supply of water, or a minimum of three gallons per person. It is strongly recommended to have more if possible. Use one-half gallon per day for drinking, and one-half gallon for cooking and sanitation. A normally active person needs to drink at least two quarts of water each day. Hot environments and intense physical activity can double that amount. Children, nursing mothers, and ill people will need more. Store your three-day supply in a handy place. You need to have water packed and ready in case there is no time to fill water bottles when disaster strikes.
- Water needs to be treated only if it is of questionable purity.
 - ◆ Boiling is the safest method of treating water. Strain water through a clean cloth to remove bulk impurities. Bring water to a rolling boil for about one full minute, keeping in mind that some water will evaporate. Let the water cool before drinking. Boiled water will taste better if you put oxygen back into it by pouring the water back

and forth between two clean containers. This will also improve the taste of stored water.

- ◆ You can use household liquid bleach to kill microorganisms. Use only regular household liquid bleach that contains 5.25 percent sodium hypochlorite. Do not use scented bleaches, color-safe bleaches, or bleaches with added cleaners. Add 16 drops of bleach per gallon of water, stir, and let stand for 30 minutes. If the water does not have a slight bleach odor, repeat the dosage and let stand another 15 minutes. If it still does not smell of chlorine, discard it and find another source of water. Other chemicals, such as iodine or water treatment products sold in camping or surplus stores that do not contain 5.25 percent hypochlorite as the only active ingredient, are not recommended and should not be used.
- ◆ Distillation involves boiling water and then collecting the vapor that condenses back to water. The condensed vapor will not include salt or other solid impurities. To distill, fill a pot halfway with water. Tie a cup to the handle on the pot's lid so that the cup will hang right-side up when the lid is upside down (make sure the cup is not touching the water) and boil the water for 20 minutes. The water that drips from the lid into the cup is distilled.
- Melt ice cubes or use water from undamaged hot water tanks, toilet tanks (not the bowl), and water pipes if you need additional water.
- If you need to find water outside of your home, you can use rainwater; streams, rivers, and other moving bodies of water; ponds and lakes; and natural springs. If you question its purity, be sure to treat the water first. Avoid water with floating material, an odor, or a dark color. Use saltwater only if you distill it first. Do NOT drink floodwater.

5.3.6. Food. Even though it is unlikely that an emergency would cut off your food supply for two weeks, you should consider preparing a supply that will last that long. The easiest way to develop a two-week stockpile is to increase the amount of basic foods you normally keep on your shelves. If your water supply is limited, try to avoid foods that are high in fat and protein, and don't stock salty foods, since they will make you thirsty. Familiar foods can lift morale and give a feeling of security in time of stress. Also, canned foods won't require cooking, water, or special preparation. Take into account your family's unique needs and tastes. Try to include foods that they will enjoy and that are also high in calories, protein, carbohydrates, vitamins, and minerals.

- Pack at least a three-day supply of nonperishable food and water, and store it in a handy place. You need to have these items packed and ready in case there is no time to gather food from the kitchen when disaster strikes.
- Select foods that require no refrigeration, preparation, or cooking, and little or no water. Foods that are compact and lightweight are easy to store and carry.
- If you must heat food, pack a can of cooking fuel.

- Try to eat salt-free crackers, whole grain cereals, and canned food with high liquid content. Recommended foods include:
 - ◆ Ready-to-eat canned meats, fruits, and vegetables.
 - ◆ Canned juice, milk, and soup (if powdered, store extra water).
 - ◆ High-energy foods, such as peanut butter, jelly, crackers, granola bars, and trail mix.
 - ◆ Comfort foods, such as hard candy, sweetened cereals, candy bars, and cookies.
 - ◆ Instant coffee, tea bags.
 - ◆ Foods for infants, elderly persons, or persons on special diets, if necessary.
- Also consider:
 - ◆ Compressed food bars. They store well, are lightweight, taste good, and are nutritious.
 - ◆ Trail mix. Available prepackaged, or assemble your own.
 - ◆ Dried foods. They can be nutritious and satisfying, but contain a lot of salt, which promotes thirst.
 - ◆ Freeze-dried foods. They are tasty and lightweight, but will need water for reconstitution.
 - ◆ Instant meals. Cups of noodles or cups of soup are a good addition, although they need water for reconstitution.
 - ◆ Snack-sized canned goods. Good because they generally have pull-top lids or twist-open keys.
 - ◆ Prepackaged beverages. Those in foil packets and foil-lined boxes are suitable because they are tightly sealed and will keep for a long time.
- Food options to avoid:
 - ◆ Commercially dehydrated foods. They can require a great deal of water for reconstitution and extra effort in preparation.
 - ◆ Bottled foods. They are generally too heavy and bulky, and break easily.

- ◆ Meal-sized canned foods. They are usually bulky and heavy.
- ◆ Whole grains, beans, pasta. Preparation could be complicated under the circumstances of a disaster.
- If your electricity goes off:
 - ◆ First, use perishable food and foods from the refrigerator.
 - ◆ Then, use the foods from the freezer. To minimize the number of times you open the freezer door, post a list of freezer contents on it. In a well-filled, well-insulated freezer, foods will usually still have ice crystals in their centers (meaning foods are safe to eat) for at least three days.
 - ◆ Finally, begin to use nonperishable foods and staples.
- Remember to store nonperishable foods for your pets.

5.3.7. First Aid Kit. Assemble a first aid kit for your Disaster Supplies Kit and one for each car.

- The basics for your first aid kit include:
 - ◆ First aid manual.
 - ◆ Sterile adhesive bandages in assorted sizes.
 - ◆ Assorted sizes of safety pins.
 - ◆ Cleansing agent/soap.
 - ◆ Latex gloves (2 pairs).
 - ◆ Sunscreen.
 - ◆ 2-inch sterile gauze pads (4-6).
 - ◆ 4-inch sterile gauze pads (4-6).
 - ◆ Triangular bandages (3).
 - ◆ Nonprescription drugs.
 - ◆ 2-inch sterile roller bandages (3 rolls).
 - ◆ 3-inch sterile roller bandages (3 rolls).
 - ◆ Scissors.
 - ◆ Tweezers.
 - ◆ Needle.
 - ◆ Moistened towelettes.
 - ◆ Antiseptic.
 - ◆ Thermometer.
 - ◆ Tongue depressor blades (2).
 - ◆ Tube of petroleum jelly or other lubricant.
- Have the following nonprescription drugs in your Disaster Supplies Kit:

- ◆ Aspirin or non-aspirin pain reliever.
- ◆ Anti-diarrhea medication.
- ◆ Antacid (for stomach upset).
- ◆ Syrup of ipecac (use to induce vomiting if advised by the poison control center).
- ◆ Laxative.
- ◆ Activated charcoal (use if advised by the poison control center).
- ◆ Vitamins.
- ◆ Add any necessary prescription and nonprescription drugs.
- ◆ Add special needs for infants, elderly persons, or anyone with serious allergies.

5.3.8. Important Documents. Keep the following original documents in a safe deposit box if possible, and copies in a waterproof, fire-resistant portable container:

- Will, insurance policies, contracts, deeds, stocks and bonds.
- Passports, social security cards, immunization records.
- Bank account numbers.
- Credit card account numbers and companies.
- Inventory of valuable household goods, important telephone numbers.
- Family records (birth, marriage, death certificates).

Chapter 6

A VICTIM'S LEGAL GUIDE TO HURRICANE PREPAREDNESS

6.1. Purpose. This information will greatly assist you in the claims process. Minimizing your property loss may depend on your ability to quickly and accurately file your claim.

6.2. Planning. It is imperative that significant preplanning occurs for hurricane season. Planning and being prepared for a hurricane are important factors that increase your chances of being fully compensated for your property loss. Securing important paperwork and legal documents, keeping both a written and photographic inventory and saving receipts for large purchases will make the claims process much easier.

6.2.1. First, prior to evacuating, you must ensure that you have your military ID cards, your dependents' ID cards and any other type of identification cards that you might need during evacuation, such as your driver's license, Tri-care cards, or credit cards.

6.2.2. You should also have a complete inventory of all of your household items. It is a good idea to have a photographic inventory of these items. You can keep these inventories in a three-ring binder or photo album and stored with other important documents for easy access. These inventories provide documentation and proof of ownership in the event you file a claim. For example, if you file a claim for a television or a stereo, which was destroyed during a hurricane, and no proof of purchase is available, a family Christmas picture with the television in the background is often sufficient proof of ownership.

6.3. Understanding the Military Claims Process

6.3.1. The Personnel Claims Act authorizes compensation for personal property damage or loss, to include food spoilage, which is caused by a hurricane.

6.3.2. A claim will be allowed only for the amount and quantity of personal property considered reasonable or useful under the attendant circumstances, incident to service or employment. Personal property includes tangible property that is owned by the claimants or their immediate family members. It also includes borrowed property if the claimant borrowed the property for his/her use or the use of his/her immediate family. Personal property includes, but is not limited to, household goods, unaccompanied baggage, privately owned vehicles and mobile homes.

6.3.3. The Personnel Claims Act applies to losses incurred at a member's home on base. Additionally, claims are paid for losses incurred in "quarters" and in "other authorized places."

6.3.3.1. "Quarters" include the following:

6.3.3.1.1. Housing the government assigns or otherwise provides in kind to the claimant, including substandard housing and trailers.

6.3.3.1.2. Privately owned mobile or manufactured homes parked on base in spaces the government provides.

6.3.3.1.3. Transient housing accommodations, wherever located, such as hotels, motels, guesthouses, transient dormitories, or other lodgings the government furnishes or contracts for.

6.3.3.1.4. Garages, carports, driveways, and parking lots assigned to quarters for the occupants of the quarters to use.

6.3.3.1.5. Street Parking

6.3.3.1.6. In the immediate vicinity of quarters or in the area immediately, adjacent to quarters when used for storage of items not commonly stored in living areas. For example: boats, motorcycles, motorbikes, bicycles, lawn mowers, garden equipment, and outdoor furniture.

6.3.3.2. Authorized places include:

6.3.3.2.1. Any place authorized or apparently authorized by the government to receive, hold, or store personal property, such as offices, warehouse, baggage holding areas, and hospitals.

6.3.3.2.2. Any area on a military installation designated for parking or storing vehicles.

6.3.3.2.3. A recreation area or any real estate the Air Force or any other DOD element uses or controls.

6.3.4. The Personnel Claims Act does not apply to a member's home off base. Personal insurance is necessary for protection. Keep in mind, the Government is not an insurer of property. Payments under the Personnel Claims Act are generally limited to the fair market value of items damaged or destroyed and, consequently, claimants will ordinarily be compensated only for the depreciated value of such items. If you really want to be protected against property loss, you need to have full replacement cost insurance.

6.3.5. Typically, the maximum amount payable by the Government for a claim is \$40,000. However, if the claim arose from an emergency evacuation or from extraordinary circumstances, the amount settled and paid may exceed \$40,000, but may not exceed \$100,000. A claim allowed under this exception might be paid in money or in kind replacement.

6.3.6. A settlement authority may make a partial payment in advance of final settlement when a claimant experiences personal hardship due to extensive property damage or loss.

6.4. When to File. You have two years from the date of incident to file your claim. The claim must be received in a claims office by the two-year date. A postmark within the two-year statute does not satisfy this requirement. Prompt filing of claims is highly recommended since it is much easier to verify your claim if you file quickly.

6.5. Who May File a Claim. Proper claimants are:

6.5.1. Active duty military personnel.

6.5.2. Civilian employees of the Air Force who are paid from appropriated funds

6.5.3. DOD school teachers and school administrative personnel who are provided logistic and administrative support by an Air Force installation commander.

6.5.4. Air Force Reserve/Air National Guard personnel when performing active duty, full time National Guard duty, or inactive duty training.

6.5.5. Retired or separated Air Force military personnel who suffer damage or loss resulting from the last storage or movement of personal property, or for claims accruing before retirement or separation.

6.5.6. AFROTC cadets while on active duty for summer training.

6.6. False Claims. It is a crime to willfully make a false, fictitious, or fraudulent claim. Section 287 of title 18, United States Code, provides for a maximum fine of \$10,000.00 or imprisonment for five years, or both.

6.7. Substantiation. The Personnel Claims Act requires substantiation of claims. Normally, this means the claimant must show both that a loss occurred and the value of that loss. Documentary evidence such as purchase receipts, prior appraisals, copies of canceled checks, credit card owner's manuals or photographs showing the type or value of the property damaged or lost should be included with your claim. Photographs of damaged items can also be submitted to show the extent of damage. The claims office may wish to inspect all items being claimed. Do not clean, repair or dispose of any items without approval from the claims office.

6.8. Information and Assistance to Claimants. Claims personnel are available to furnish advice as to the evidence required to justify your claim. The burden of gathering the documents and completing the claim forms is the responsibility of the claimant or his agent. If you have any questions, contact the Claims Office at 321-494-7357.

Attachment 1

HURRICANE INFORMATION LINKS ON THE WORLD WIDE WEB		
National Hurricane Center Real-Time Forecasts		
National Centers for Environmental Prediction (NCEP) Forecasts	Marine and aviation forecasts, satellite products and discussions, tropical analyses.	http://www.nhc.noaa.gov/forecast.html
National Hurricane Center	Links to latest forecasts, satellite imagery, aircraft reconnaissance, historical and general information about NHC and the Tropical Prediction Center.	http://www.nhc.noaa.gov/
National Hurricane Center	Active Storm Advisories	http://www.nhc.noaa.gov/index_special.html
Tropical Cyclone Products Page	Tropical outlooks, tropical discussions, satellite products and discussions, tropical analyses.	http://www.nhc.noaa.gov/products.html
Satellite Imagery		
NCEP Satellite Imagery	Real-time infrared and visible imagery.	http://www.nhc.noaa.gov/graphics.html
NOAA Geostationary Satellite Server	Real-time infrared and visible imagery.	http://www.goes.noaa.gov/
NOAA Images/Movies of Hurricanes and Special Events	Archive of images and movies.	http://www.ncdc.noaa.gov/ol/satellite/olimages.html
Hurricane and Forecast Information		
Descriptions of NHC Forecast Products	Also includes information about hurricane reconnaissance and dropsonde observations.	http://www.nhc.noaa.gov/aboutnhcprod.html#TCP
FEMA, NWS, and other Disaster Organization Links		
American Red Cross	Are You Ready for a Hurricane?	http://www.redcross.org/disaster/safety/hurricane.html
FEMA		http://www.fema.gov/
FEMA Storm Watch		http://www.fema.gov/fema/trop.htm
FEMA Storm Watch	Hurricane Background and Preparedness Information	http://www.fema.gov/hu98/hurinfo.htm
FEMA Emergency Management Institute		http://www.fema.gov/emi/
National Weather Service (NWS)		http://www.nws.noaa.gov
NWS Southern Region Offices		http://www.nhc.noaa.gov/aboutnws.html#SOUTH
Miscellaneous		
Colorado State University	Dr. William Gray's long-range hurricane forecasts	http://tropical.atmos.colostate.edu/forecasts/index.html
Hurricane Hunters		http://www.hurricanehunters.com/

Attachment 2

LOCAL EMERGENCY RELIEF ANIMAL SHELTERS

All 3 county Animal Shelters will be open, unless ordered evacuated, and will receive pets on an Emergency basis. Call the following numbers for information concerning pet sheltering during a disaster:

North Area Animal Animal Center	Titusville	(321) 264-5119
Central Brevard Humane Society	Cocoa	(321) 636-3343
Humane Society South Branch	Melbourne	(321) 259-3400

In the event that all shelters are full, the Melbourne Greyhound Park at 1100 N. Wickham Road Melbourne, has volunteered its facility as a Temporary Disaster Relief Shelter for Pets of people in the evacuation areas only.

It is very important to bring current rabies certificates, medications, and food.

Attachment 3

Central Florida Emergency Management Offices

The following is a list of Central Florida's Emergency Management Offices. These offices can provide you and your family with information on the location of shelters and provide you with information on where to find assistance within your specific county.

Brevard County http://www.embrevard.com	Rockledge	(321) 633-1770
Flagler County http://www.flagleremergency.com	Bunnell	(904) 437-7381
Lake County http://www.co.lake.fl.us/emergenc_mang.htm	Tavares	(904) 343-2351
Marion County http://www.sheriff.marioncountyfl.org/e-mgmt.htm	Ocala	(904) 622-3205
Orange County http://www.Ocoem.com	Orlando	(407) 836-9140
Osceola County http://www.Osceola.com	St. Cloud Kissimmee	(407) 847-1270
Seminole County http://www.seminolspublicsafety.org/em.htm	Winter Park Sanford	(407) 322-4795
Sumter County http://boc.co.sumter.fl.us.htm/	Bushnell	(904) 793-0200
Volusia County http://www.volusia.org/emergency	Deland Daytona Beach	(904) 254-1500

HURRICANE TRACKING CHART

REMEMBER: Hurricanes are large powerful storm that can suddenly change direction! Check frequently on the storm's progress until all Watches and Warnings for your area from the National Weather Service are cancelled!

HURRICANE WATCH: Hurricane MAY threaten the area within 36 hours

- Be prepared to take action if a warning is issued by the National Weather Service

HURRICANE WARNING: Hurricane expected to strike within 24 hours

- Leave beachfront and low lying areas
- Leave mobile homes for more substantial structure
- Stay in your home if it is sturdy, on high ground, and not near the beach, but if you are asked to leave by authorities, GO!
- Stay tuned to radio, NOAA weather radio, or television for hurricane advisories and safety information

