

# EMERGENCY PREPAREDNESS

## Introduction

Southwest Florida is vulnerable to a variety of natural and technological hazards and sociological-based threats. The natural hazards include excessive rainfall, storm surge flooding, destructive winds and lightning normally cause by severe thunderstorms, hurricanes and tornadoes. Droughts and freezes impact the region's agricultural economy; wildfires impact natural resources and rural development. Dike failures have occurred from heavy rainfall and could occur from hurricane wind driven water surges. Technological hazards are hazardous material incidents creating spills and plumes, hazardous waste sites and mass care and casualty events such as are possible from airplane crashes, nuclear accidents, civil disorder, and spontaneous mass immigration. (The latter two are considered sociological caused threats.)

### ➤ PROBLEMS, NEEDS, AND OPPORTUNITIES

#### Problems

##### Natural Hazards

The primary natural hazard threat in this region is from hurricanes, attributed mostly to the low land elevations along the densely populated coastal areas and high probabilities for hurricane occurrence; this is depicted in Map 1. Southwest Florida is the second most hurricane vulnerable region in the country. Adequate hurricane evacuation infrastructures (roads and shelters) are not keeping pace with population growth within the hurricane surge vulnerable areas or for the wind-vulnerable mobile homes that are increasing throughout the region. More than 20 percent (827.7 square miles) of the regions land area is subject to storm surge flooding in a worst-case category 3 hurricane. Seventy-nine percent (773,107 people) of the region's population is vulnerable to category 3 hurricane hazards. Adding to the operational problems, an above average percent of this population is substantially aged or infirm. The hurricane vulnerable population is increasing at a rate of three percent a year with only a .75% increase per year increase in hurricane shelter space. Between 1983 and 1991, 210,000 new residents in the region became hurricane vulnerable. Evacuation time increases for some counties ranged from 1.5 to 10 hours. Total evacuation times for the worst case regional scenario ranges from 39.5 to 54.1 hours.

Regional population growth in hurricane vulnerable areas are expected to continue. The long range implication of development and redevelopment along our coastline becomes even more serious when weighed against such phenomenons as further potential for a sea level rise. Research indicates that sea level rise during the past century has been greater than the previous 200 years, extreme projections indicate that overall plans should be made for a 66-centimeter (26 inches) rise in sea level by 2010. Therefore, in an effort to reduce the loss of lives and property, evacuation route improvements must be constructed, new shelter space must be found and structural vulnerability must be reduced.

Thunderstorms and their effect are another problem in the Region. According to the state's hazard analysis, Southwest Florida has the highest mean annual thunderstorm days in the state, with Hendry County having the highest. On any day during the summer's rainy season, thousands of lightning strikes accompany these thunderstorms. These storms also produce tornadoes giving Florida the highest tornado occurrences in the nation. Between 1959 and 1992, Southwest Florida had a total of 168 reported tornadoes which caused a total of 115 injuries and eight deaths. During this same period, 90 injuries and 20 deaths were caused by lightning. Total property losses in dollars during this time frame is unknown but is estimated to be ten of millions of dollars. Although tornadoes and lightning threaten all structures, serious mobile home damage from tornadoes/wind shears is more frequent than for conventional homes. With mobile homes currently constituting 16% of housing stock, and having been increasing as a percentage through time, growth will increase the nature of the threat.

Although Southwest Florida is known for its warm climate, the Region has had numerous freezes which caused significant crop losses and unemployment. At least 20 notable freezes have affected the region's agricultural economy, which creates the second most economic activity behind tourism.

Droughts and the resulting fires are another emergency preparedness problem affecting the Region. Droughts affect agricultural production and also cause groundwater drinking supply problems (e.g., saltwater intrusion) and increase the threat of wildfires. In Southwest Florida, because the dry season coincides with peak population levels, water restrictions have become routine. The public health and welfare of Southwest Florida's citizens cannot be provided for without a sufficient quantity of water. Because the region's water supply is intertwined with multiple regions, South Florida's fast growing population is causing concerns from citizens and elected officials that the existing water supply may not be adequate, and at least needs better management, to provide for the state's projected needs. Water management officials believe overall water demand is expected to increase 55 percent between 1990 and 2010, with urban demand increasing by 90 percent and agricultural demand by 44 percent. Although no life threatening water shortages have yet occurred, the economic impact of a major water shortage can have far reaching effects on the Region's urban and agricultural economies. Further, "buildout" scenarios for the Region's urban areas indicate an increased competition for water resources between urban and rural areas.

The regional drought cycle, combined with historical efforts to keep lands drained to increase their productivity, has resulted in increased fire hazard throughout much of the region's open space. This occurs because the dehydrated lands have lost natural resistance to fire and its rapid spread. Vegetation becomes overly dry; drought and overdrainage (or over use) eliminates the natural firebreaks caused by creeks and wetland ponds and sloughs. When fire breaks out, either through natural conditions, accident or arson, it rapidly spreads and -combined with high wind conditions- becomes difficult to contain. Each year homes and structural damage occurs as rural fires move to inhabited areas. In the large subdivisions where there are scatterings of homes, damage threat mounts rapidly when such fires spread, leaping roads and dry drainage courses.

### Technological Hazards

The primary technological hazard threat in the region is from fixed based and mobile hazardous materials. Accidents involving hazardous materials are becoming more routine as the region grows and diversifies economically, requiring the use of greater volumes and types of hazardous substances.

Of the top ten hazardous materials, a total of 1,781,468 pounds of these substances are currently found within the region. Various industries, swimming pool chemical companies, agricultural operations, dry cleaners, retail and wholesale distributors, as well as state, local, and federal governments handle these hazardous substances. A total of 374 extremely hazardous substances sites are present in Southwest Florida, with 51 of these sites being considered regional because of having the possibility of impacting two or more jurisdictions. Forecasted increases in commercial and industrial sites will only increase the number of these sites.

Other technological hazards and sociological threats, which have lesser probability, are nuclear threats and nuclear power plant fallout from accidents at one of the three plants in Florida or from a plant under construction in Cuba. Portions of the lower eastern portion of the region, for example, are within the 50 mile radius of the Turkey Point nuclear plant, while the Hutchinson Island plant's 50 mile radius affects the Lake Okeechobee counties. While Southwest Florida has been spared serious impacts from spontaneous mass immigration and civil disturbances, geographic location makes all of South Florida susceptible to the social and economic impacts of these sociological threats.

The natural and technological hazards and sociological threats discussed above will usually impact more than one jurisdiction and will require a coordinated multi-jurisdiction response and recovery approach to manage. The following emergency preparedness issues and accompanying goals and policies are proposed to help prepare for, response to, recover from, and mitigate the economic and social impacts of these hazards and threats in the region.

The increasing sophistication of the region's urban and suburban development creates challenges for the region's public safety agencies. Hazardous material storage, pipeline expansions, and taller structures provide training and equipment challenges for public safety agencies that began in rural or suburban settings. The cost of information, training and equipment often becomes more than solitary entities can successfully carry.

## **Needs**

The region needs a system of inland shelters and refuges, whether public or private, that can withstand the force of great hurricanes. It needs routes with sufficient capacities to take evacuees to these shelters in a timely manner. Shelters need self sufficiency for water and sanitation, and in electrical generation for essential medical services.

Regarding problems of technology and natural hazards, there are ongoing and growing needs for training, volume of manpower, equipment, public information and awareness, and coordination at the operational, planning, and policy levels.

Communities that survive the test of time are those that can cope with the downturns of circumstance, and plan for the long term-as measured in centuries. Southwest Florida's communities, being lowlying, are among the first in the nation to be tested by the effects of global warming, whether slow or fast moving. A component of planning for communities in Southwest Florida is the extent to which this phenomenon can be recognized and steps taken to ensure the long term livability for the communities throughout the decades.

## Opportunities

The Council has had since 1973 a formal arrangement between counties to work on common issues. This has assisted in the resolution of a number of substantive matters.

In the matter of emergency preparedness, the Council has sponsored and participated in working groups of emergency managers (both public and private) since 1978, when the Council performed the state's first substantive hurricane evacuation study based on natural hazard analysis.

The Council's LEPC was established in 1989 to provide additional structure, particularly in regard to manmade hazards. This expanded the Council's scope into these hazards beyond the ad hoc arrangement that existed previously.

These arrangements, and others, provides the Council the continuing opportunity to assist in issue resolution through technical analysis, coordination, and the capacity to focus resources upon identified problems on a needs basis. With pending updates of the State Plan, agency functional plans, and local comprehensive plans, the opportunity to further the strategies following are heightened.

### ➤ ISSUES

#### ❖ NATURAL HAZARDS

**Goal 1: The general public and its governmental agencies become aware of the extent of flooding that can be induced from the Gulf of Mexico and Lake Okeechobee by a tropical storm or hurricane.**

Surge zones have been identified and mapped for the region (Volume One, Map 7). Many public and private entities make concerted efforts to brief residents on the location of the threat, including publication of surge zones in some of the telephone directories. This effort cannot be diminished since the region's population is continually growing and changing due to immigration replacing out migration and deaths.

**Strategy: Make easily understood information available with timely updates.**

#### Actions:

1. Maps depicting areas subject to storm surge flooding will be regularly updated and circulated to affected populations.

#### Indicators:

- Storm surge atlases and summary maps widely reprinted.
- Current atlases available at public libraries.
- Current atlases available through emergency management and planning offices.

Facilities: Hoover Dike is the region's only facility established solely for hurricane surge protection.

Planning standard: Saffir Simpson scale storm surge lines

**Goal 2: An organized recovery response to the effects of freezes, droughts, or floods on food and fiber production.**

The region has repeatedly lost components of its agricultural and fisheries production to natural causes, sometimes aggravated by man's management. This, in turn, results in widespread layoffs and unemployment. Legal impediments to relief need to be removed in order to quickly respond to those areas that will have a quick demand for basic human assistance in the form of food, rent assistance, and jobs.

**Strategy: Coordinated local, substate, and state short-term emergency response plans for relief and assistance for areas with catastrophic job losses due to freezes, droughts or floods.**

Actions:

1. Petition Congress, the President, and FEMA to identify drought as a natural disaster deserving of emergency relief.
2. Promote with the Water Management agencies, drought, freeze, and flood management programs that promote increased natural system storage to reduce impacts of fire, water shortages, and flooding.
3. Assist public agencies in identifying and keeping up-to-date disaster relief sites.
4. Public agencies should maintain lists that identify teams of short-term public relief workers.

Indicators:

- Relief plans with interagency agreements for relief support.
- Management Plans that indicate pre and post storage capacities.

Planning standards: Relief support should be prepared to meet 10% of labor force of Glades, Hendry, and Collier Counties, and 2% of the remainder of the region.

**Goal 3: Safe evacuation or protection for the most threatened populations.**


Southwest Florida's evacuation needs exceed public resources. One response, recognizably inadequate for all components of the problem, is to evacuate or shelter those for whom exposure leads to loss of life, as opposed to those to whom flooding will be an uncomfortable but not a life threatening event.

Hurricane flooding and hurricane force winds are the best known but not sole natural hazard. Using hurricane threat as an example, though, predictions are not totally accurate on the extent of flooding, nor is flooding the sole threat to structures. More persons will commonly be told to evacuate than will need to move, primarily because there is no manner in which to accurately predict the specific flooding of a particular storm whose landfall is not exactly known at the time the order to evacuate

needs to be given, particularly for more inland areas. However, time to evacuate all threatened population exceeds most reliable estimates of the warning time that can be given. Consequently, a prioritization program may reduce an overall community threat by targeting the most threatened; thereby, reducing shelter and evacuation road demand and reducing the number of persons who would over evacuate.

**Strategy: Develop programs that assess risk and are capable of giving priority to those who have the greatest threat, when time or resources provide constraints on total evacuation.**

Actions:

1. Each hurricane study update shall update  the numbers and locations of the most exposed populations.
2. Each hurricane study update shall update the evacuation times of the exposed zones, and recommend for prioritization for road improvements those zones with greater than 18 hour evacuation times.
3. Each hurricane study update shall update estimates and concentrations of housing types more subject to hurricane force wind damage, and prioritize these populations for sheltering.
4. Continue requiring all deeds to property located within a Development of Regional Impact located within the Southwest Florida Special Hurricane Preparedness District as required by Rule 9J-2.0257(4) shall be accompanied by a disclosure statement in the form of a covenant stating that the property is located in a hurricane vulnerability zone, that the hurricane evacuation clearance time for City/ County or the Southwest Florida Region is high, and/or hurricane shelter spaces are limited.
5. Work with all local governments in the region to require all deeds to hurricane vulnerable property located within their jurisdiction be accompanied by a disclosure statement in the form of a covenant stating that the property is located in a hurricane vulnerability zone, that the hurricane evacuation clearance time for City/County or the Southwest Florida Region is high, and hurricane shelter spaces are limited.

Indicator:

- Forecasted evacuation times that exceed 18 hours.
- Number of counties with those forecasts which have developed priority programs for the most threatened residents.

Planning standards: Evacuation times.

**Goal 4: Ensure that emergency management programs have the logistical support for successful evacuation, sheltering, and post storm relief and recovery.**

Evacuation requires traffic managers and emergency clearance crews. Sheltering requires shelter managers, health workers, and law enforcement. Recovery is an even more labor intensive effort, and will draw upon temporary relief workers from elsewhere who appear to assist in the recovery. For all these workers there is the need for logistical support, information systems to use them effectively, housing, and equipment and supply staging areas. Also, a precondition for effective relief and recovery involves the knowledge of the materials likely to be available and their spatial and support needs, and the physical sites likely to be available to meet them.

**Strategy: Maintain and keep up to date inventories of personnel, communities with mutual aid agreements, public shelters, evacuation route control points, supply lists needed for sheltering and recovery, recovery sites and staging areas for recovery operations.**

Actions:

1. Annually review and update the identification of potential disaster field offices and disaster assistance centers.
2. Assist communities in annually reviewing traffic control points for evacuation.
3. Review local plan amendments and development plans for the staffing, evacuation and sheltering needs of all new development within flood hazard areas in the event of hurricane type high wind and water conditions;

Facilities: Regional storm recovery sites on Map 2.

❖ **TECHNOLOGICAL HAZARDS**

**Goal 5: Be prepared to respond to accidental spills of hazardous materials or severely improper disposal of hazardous wastes.**


An increasingly sophisticated technology has been expanding the nature of emergencies and the hazards to those that combat them. It is important for general public safety, as well as personal and business liability, that those businesses with unique needs have developed emergency response programs and have coordinated them with public emergency managers. In recent years, fires in structures with hazardous materials have incapacitated unsuspecting local responders, and have forced the evacuation of thousands of unsuspecting residents. The nature of the threat will not diminish in forthcoming years.

A visual emergency, such as a fire or flooding, is a more recognizable emergency than leakage. However, dispersal of complex toxic materials or materials that are not toxic alone, but may combine with other materials through leakage to form toxic or other hazardous materials, has caused deaths and injuries for unsuspecting employees, neighbors, and emergency responders. Employees and managers need adequate training in spotting signs of dispersal and how to end the threat.

There have been efforts made to coordinate responses to manmade disasters. Those involving hazardous materials affecting more than one county are identified in Map 3, "EHS Hazardous Materials Map." Other facilities of concern, but not on this map, include the nuclear power plants in the Treasure Coast and South Florida Regions.

**Strategy: All sites that generate, use, or store significant amounts of hazardous materials (including wastes) having appropriate plans to manage spills or releases, and appropriate procedures for safely disposing unneeded materials.**

Actions:

1. Update inventories at least every 5 years of the location, type, and quantity of hazardous materials.
2. Update and maintain through the LEPC a coordinated program among regulatory agencies for the effective regulation of generation, storage, treatment, disposal, and transportation of hazardous materials and waste.
3. Continue to support a region-wide hazardous waste program which:
  - a. provides for regional siting for areawide hazardous waste sites;
  - b. increases on-site treatment of appropriate wastes;
  - c. recycles reusable wastes;
  - d. maintains a pick up system for households, small businesses, and other small quantity generators of hazardous waste;
  - e. develop environmentally safe treatment, storage, and disposal facilities;
  - f. provides training and certification for appropriate personnel;
  - g. implements the plan for siting of hazardous waste storage and transfer facilities, as previously adopted;
  - h. provides public education about hazardous and special waste treatment, disposal and recycling;
  - i. encourages the establishment of used oil recycling centers in each county of the Region;
  - j. coordinates between land use agencies and transportation agencies in the location of industrial and utility facilities which require a transport along public highways of hazardous waste materials;
  - k. restricts hazardous wastes and materials from being transported through residential areas;
  - l. evaluates  hazardous material and waste movement, includes measures for risk reduction of hazardous waste transport, coordination with emergency contingency plans, off-peak routing schemes or restrictions, and consideration of other transportation modes;



- m. requires carriers to be qualified and permitted, properly identified and marked, and requires vehicles to transport only properly packaged materials and wastes;
- n. addresses and properly disposes of or recycles special wastes, such as construction and demolition debris, white goods, waste tires, biohazardous waste, and batteries; and
- o. provides public information and public notice for proper storage and disposal of hazardous waste and materials, including special opportunities for disposal or technical assistance in proper storage.

Indicators:

- Percentages of sites generating or storing hazardous materials that have adequate disposal and emergency plans.

❖ **LIVABLE COMMUNITIES**

**Goal 6: New private and public developments are built further from flood prone areas than in the past and structures and roadways are protected from rain induced flooding.**

Communities must be able to survive adversity in order to be considered “livable” or “sustainable.” The common regional threat shared by all Southwest Florida communities is that of hurricanes. Much of the region's development has occurred in areas subject to hurricane surge flooding. Past development practices have also led to the dredging of lengthy canals with direct access to coastal waters, with residential lots along these canals. These lots are subject to inundation even quicker than in natural conditions since the canals provide new corridors for flood driven waters. These are the same areas that are experiencing the first effects of sea level rise, as the gradual creep of saltwater inland slowly increases the extend of lands subject to flooding.

Inland, Lake Okeechobee constitutes the site of the state's worst disaster for loss of life due to flooding. Although an extensive dike system protects these threatened lands, canals around the lake have served as attractions that draw even more persons into the threat area.

Rain induced flooding is an issue for all low-lying inland areas. Building lots and roadways approved prior to the Federal Emergency Management Administration's Flood Insurance Program are particularly susceptible to flooding due to heavy rainfall.

Many of the platted lots along the coast and inland are still vacant. The forecasted development expects all of these lots to be built upon at some point in the future. The latest surveys indicate that approximately 31% of the value of the region's structures may be damaged through hurricane waters and winds. (SWFRPC Hurricane Loss Study) The loss of this percentage of the region's value would be beyond local governments' capacities to restore in any timely period.

One means by which local governments, regional, state, and federal agencies can reduce risks is to lead by example. Damaged or destroyed publicly owned community centers, office buildings, maintenance and warehousing facilities, can be relocated inland, or built to higher elevations or

improved standards. By such leadership, private enterprises is given an example of what is expected of them.

**Strategy: New public structures be located outside the category 2 hurricane flood zone and outside of rainfall induced flow-ways.**

Actions:

1. Assist local mitigation strategy programs to identify relocation sites for most exposed public facilities.
2. Review local plan amendments and development proposals for their ability to locate new development outside of the category 2 flood zone and rainfall flow-ways.
3. mote provisions for the acquisition of hurricane vulnerable land, including channels, low-lying areas, and shoreline by federal, state and local governmental sponsored land acquisition programs.
4. Promote public acquisition of property that has been destroyed or damaged as the result of a hurricane, storm wave, or tidal action.

**Strategy: New developments and redevelopment of existing areas should provide for increased land elevations for public infrastructure and community infrastructure, including potential sheltering or refuge sites.**

Actions:

1. Promote local development requirements within each mobile home park outside of the category 1 surge zone that there be adequate shelter space within elevated structures to accommodate those who do not want to evacuate outside their community.
2. Promote local development requirements that there will be designated refuge space in condominium and apartment complexes outside of the category 2 zone (but within the category 5 zone.)

Planning standard: 10 sq. feet per person, on an occupancy rate of 75% for mobile home, 41% for a resident recreational vehicle, 78% for apartments, and 64% for condominiums.

**Goal 7: Designated shelters safe from flooding, and containing enough capacity to meet existing estimates of need.**

Not all of the region’s structures can be protected from flooding, but to be “livable” all of the region’s population must be able to be sheltered from storm induced flooding and winds. Regretfully, the region has had a continued public and private shelter deficit since hurricane assessments were first performed. These early assessments led to the deletion of many shelters that were discovered to be threatened with flooding or were structurally unsound. Space available for category 1 storms in 1995 approximated 2.5 million square feet in public shelters, with additional space in private refuges and motels. However, the more severe storms diminishes the space that may be available.

In many ways sheltering has been improving for the lesser category storms due to concerted efforts by local emergency management programs identifying or developing sheltering options, but it is recognized that more can be done. For greater category storms, virtually all coastal communities have sheltering needs that are unattainable in the region. Forecasted growth in low lying areas increases the volume and extent of the problem. A Regional Refuge of Last Resort Strategy Study will be completed to encourage local governments to implement a hurricane refuge plan for wind and surge vulnerable residents.

There are local initiatives to improve the situation. DRIs have been improving shelter space inland. Lee County has a special millage to retrofit structures with shutters. Private entities have been developing refuges for special populations.

**Strategy: Increase shelter space at rates greater than population growth**

Actions:

1. Promote programs to provide adequate storm evacuation shelters that:
  - a. Require all habitable areas of new residential construction in identified flood-prone areas to be elevated above the level subject to flooding as identified for the statistical 100-year storm or Federal Flood Insurance Program;
  - b. Incorporate in sheltering efforts the voluntary participation of owners of structures identified as potential storm evacuation shelters that are elevated above the level subject to flooding as identified for the category 3 storm surge height;
  - c. Require all new development of more than 100 dwelling units located outside category one and two storm zones, but within 3-5 zones, to provide on-site refuge facilities for residents of the development;
  - d. Require all development located outside category one and two flood zones to provide refuge space at a ratio of 20 square feet per person in common areas or other shelter areas; all development in category 1 and 2 zones should identify and secure unused shelter space in inland areas;
  - e. Require deeds, covenants, and all similar documents, for multi-story residential structures, to contain provisions to permit temporary shelters, during category 1 and 2 storm events, in upper interior hallways, or similarly protected areas, which contain no openings directly to the exterior, provided the structure is located in Category 3, 4, or 5, flood zones;
  - f. Require any shelter to be designed and constructed to withstand winds of at least 120 miles per hour sustained winds;
  - g. Require shelter to be equipped with emergency power, potable water supplies, and wastewater treatment capacity;

- h. Require any shelter to be constructed with as little glass as possible, while providing adequate protection by shutters or boards for any glass used;
- i. Require any shelter to have adequate ventilation, sanitary facilities, and first-aid equipment;
- j. Establish Homeowner's Associations to provide information to their residents concerning hurricanes, evacuation shelters, and related matters; and
- k. Require new residential development within category 1, 2, and 3 storm zones, and/or with evacuating population, to mitigate impact on inland shelter space.

- 1. Support management programs that advise hotels/motels in category 1 and 2 storm zones to evacuate during a hurricane watch and should not be utilized as storm shelters.
- 3. Discourage in Plan reviews the placement of storm shelters on islands.

Indicator:

- Ratios of available public shelter capacity to the projected demand.

Percentage of new shelters built above the category 3 storm surge height.

Facilities: Shelters depicted in SWFRPC Hurricane Evacuation Study (and updates).

Planning standards 20 sq. feet for storm duration per person, 40 sq. feet for a long term stay, power generator and refrigeration, toilet and cooking space, and withstand 120 mph sustained winds. Occupied floor elevations to exceed those heights forecasted for category 3 storms, be located outside of category 1-2 zones according to County Hurricane Storm Tide Atlas, and space is exclusive of unshuttered windowed rooms.

**Goal 8: Plan for and accommodate the segments of the population with special evacuation needs.**

All segments of the population must be included in efforts to make the region livable during periods of adversity. The region's special needs lie in the percentage of elderly, particularly frail elderly, which is exceeded by no other region in the nation. An estimated 27% of the region's population is retirement aged, which is a percentage double the national average, and fifty percent higher than the state as whole. This age indicator denotes the special evacuation problem that occurs when individuals, entire households, or developments such as Adult Congregate Living Facilities are unable to manage an evacuation.

Although many with special needs have a dependable support network (spouse, family, friends, etc.) that would provide for their needs, others do not. Through time, the numbers of these persons in the flood zone have been increasing, and there is no reason to expect that this will not continue. Fortunately, programs such as the transportation disadvantaged program have enabled public agencies to target and plan for the evacuation and sheltering of great portions of these persons.

However, the reality of the ability to transport and shelter is as serious for this segment as it is for the overall population.

Not all persons may go to a regular shelter. A recent evacuation that unsuspectingly mixed tubercular carriers with other persons resulted in a number testing positive for tuberculosis afterwards. For such persons-when known-special arrangements are needed.

**Strategy: Involve the expertise of human service agencies in identifying and accommodating those with special evacuation needs.**

Actions:

1. Integrate human service entities in evacuation and shelter planning.
2. Provide for special shelter needs for the frail, elderly, handicapped, persons with special medical/support conditions, and people with other conditions requiring specialized attention, who lack a dependable support not within a regular shelter.
3. Include additional disaster preparedness requirements in reviewing existing and new developments whose future residents, including the elderly, might have limited mobility or demand specialized attention.

Indicator:

- Designation and capacity of special needs shelters.

Facilities: Shelters designated in 2001 Update, as special needs.

Planning standard: 1 percent of evacuating population, as special needs.

**Goal 9: Public buildings designed to serve as short term shelters.**

It has been generally estimated that including general sheltering consideration into public building design will increase costs by 5%. However, there can be no expectation that private design will meet sheltering needs, and evacuation times are expected and have proven to be excessive. Further, directing persons to shelters that lack "reasonable" sheltering consideration, exposes the community to liability in the event of structure failures. Consequently, for current population and future population growth, improving public building design and construction is one of only a few viable options. Unfortunately, this is not a common consideration in public building design. With forecasted school and courthouse construction alone, much of our shelter deficits can be made up or prevented from increasing.

**Strategy: Make all public entities aware of the serious emergency shelter deficits that exist and that the situation affects the lives of the members of the agencies and their families.**

Actions:

1. Promote major public buildings outside of the category 1 flood zone meeting state building standards for shelters and having on-site facilities which are adequate for maximum capacity short-term occupation.
2. Promote innovative programs for financing shelter space, including municipal service benefit districts and shelter impact fees.

Indicators:

- Percentage of new local, district, state, and federal buildings which meet these criteria.
- Percentage of public agency bid packages that include this in the criteria for architectural design and construction.
- Capacity of new shelters.

Facilities: Public Buildings listed as "Secondary Support Services," Support Services, 2001, SWFRPC.

Planning standards: n/a

**Goal 10: Regional medical centers capable of operating through a natural disaster.**

A side effect of storms is the large number of injured persons, in addition to the current occupants of medical facilities. With current sheltering problems for the population at large, the region's evacuation program cannot accommodate additional stress of avoidable dislocations of medical centers and their occupants, and termination of their capacities to treat injuries. Many facilities, though, are in sites subject to storm flooding. These facilities may need retrofitting in order to operate, and new or expanded facilities should meet the special conditions necessary for them to function.

**Strategy: Power, water, and sanitation self sufficiency (for temporary periods) for each major medical facility.**

Actions:

1. Promote funding eligibility for the retrofit of existing hospitals with Hurricane Andrew Trust Funds, as well as with similar sources.
2. Promote in reviews that services necessary for hospital operation during emergencies be located on floors above the forecasted Category 3 flood elevation.
3. Promote during reviews of new hospitals (of 100 or more beds) that they should be located outside of the category 1 storm surge zone and should not be located on barrier islands.

Indicators:

- Percentage of medical centers that can operate in category 3 storms;
- Percentage that can operate in 1 or 2 only; and the change in percentage through time.

Facilities: Major Medical Sites depicted in Map 4.



Planning standard: Wind-proofing to 120 mph; flood elevation of first occupied floor level to category 3 storm surge heights; elevated generator and water supplies.

**Goal 11: A Region prepared for potential fuel shortages or prolonged electrical outages.**

Twice in the last three decades, the region suffered fuel emergencies. Each occasion led to the development of fuel shortage emergency response plans. However, these plans are outdated and are commonly considered irrelevancies lacking any current threat. Neither previous shortage; however, was preceded by a gradual buildup of tensions. Consequently, realistic assessments of supplies, needs, and priorities still need to be a component of emergency management.

Hurricane Andrew has also indicated the region is susceptible to short- and mid- term electrical outages. Damage to major electrical lines and loss of many electrical distribution systems can make otherwise habitable structures unusable due to the lack of cooking and lighting. Prioritization of all least minimum levels of service is a necessity for community recovery.

**Strategy: Maintained up-to-date fuel shortage and energy loss emergency response plans.**

Actions:

1. Assist communities in maintaining inventories of commercial fuel storage and sales sites, and in keeping up-to-date ordinances for emergency management of sale.
2. Promote public agencies setting examples by maintaining emergency response plans for staff, which include mandatory car pooling for work, and optional programs for family use.
3. Promote electrical utilities maintaining and keeping up-to-date fuel emergency and electrical conservation plans, coordinated with local and state regulatory authorities for energy conservation.

Indicators:

- Percentage of counties with up-to-date fuel shortage plans.
- Percentage of customers of electrical utilities whose service does not rely on a single generating or transmission system, or fuel type.

Facilities: Regional transmission lines depicted in the Description of the Region; FPL Plant on Caloosahatchee River.

**Goal 12: Fire, ambulance, and police services provide satisfactory service and responses times, not withstanding the pressures of growth.**

Commonplace emergencies are of the greatest volume and occur in the wide geography of the region's workplaces and homes. The distribution of hazardous materials increases the complexity of these emergencies without reducing their geographic spread. In order to meet these recurring incidents and better manage the threat, personnel and equipment must be distributed in general degree to meet the region's population spread. Since most of the region's population growth is

forecasted for areas currently with few services available, this decentralization and spread will need to be continued.

The region's land use densities and intensities have been expanding through time. Areas formerly served by the Florida Division of Forestry now need rural fire districts, rural fire districts need hired full time personnel, and urban districts need more sophisticated equipment and personnel trained to meet a broader range of threat. Water supplies that were previously served by wells now need centralized services, which in turn must be designed to also meet fire flow. Lower water tables due to drought increase rural fire risk, which is best handled through rapid information and response before the spread is too great, which in turn requires sophisticated information systems. This trend of increasing technological need will continue.

It should be noted that fire service adequacy is partially reimbursed through lower insurance rates. Ratings provided by the ISO indicates the community threat preparedness, the better the rating, and the lower the insurance rate for fire. This is of particular importance for businesses to whom fire and casualty insurance can be a significant cost.

**Strategy: Investing in personnel, equipment, and managerial structure to achieve or maintain a response capacity and capability within the recommended response times.**

Actions:

1. Promote increasing law enforcement and fire protection or equivalent community programs to match growth rates and eliminate current service deficits.
2. Review plans for development to ensure that adequate supplies of water for fire fighting is available.
3. Promote coordination agreements that enable all medical response teams to take victims to the nearest appropriate emergency facility, regardless of administrative jurisdiction.
4. Promote the participation of all jurisdictions in interagency agreements to cover insurance liabilities and staff and equipment costs when emergencies require assistance between neighbors.

Indicators:

- Percentage of emergency calls receive the response within recommended times; ISO ratings for individual fire departments, including water supplies suitability.

Planning standards: ICMA recommended response times for urban and rural communities.

❖ **TRANSPORTATION**

**Goal 13: Evacuation routes identified and clearly designated, and at the capacity and quality needed to carry the expected number of evacuating vehicles.**



Hurricane induced flooding and wind damages are the region's single greatest individual threat. More people will be threatened with death and injury over a broader area by a single hurricane than by any other foreseeable event (other than nuclear attack). Routes that move persons from flood zones have been identified in the past and some funding priority given to route improvements, but continued growth requires the constant reassessment of routes and reevaluation of needs and resources. Current forecasted times are high, and future growth will make them higher without comparable systematic road improvements. Routes are continually reevaluated by state, regional, and local transportation agencies; private entities assist in the public dissemination of this information through hurricane pamphlets (such as developed by the media), and by the phone companies, who include route maps in the phone books.

Evacuation is not solely a "within region" phenomenon. Most "great storm" scenarios require evacuation to and through other regions. Map 5 provides a general direction of evacuation traffic flow for "land falling" and "crossing" hurricanes.

There are tools available to reduce the volume of population growth expected in surge areas. Charlotte and Lee Counties have efforts to reduce densities in low lying areas. The City of Naples and Collier County jointly work to keep densities below one unit per acre on Key Island. Sarasota County has a special district designation to keep densities low on Casey Key. Unfortunately, many of the older platted subdivisions are in low lying areas, with adequate infrastructure for the consideration of building permits. More vigorous reassembly laws would enable proactive approach to removing some portion of these lots from potential development, as would a program of tax deed foreclosures.



**Strategy: Reduce evacuation times through capital investment and traffic management.**

Actions:

1. Recommend prioritization in FDOT or local capital improvement programs for evacuation routes with evacuation capacity restrictions, particularly intercommunity evacuation routes.
2. Review development and plan amendment proposals to ensure that there is mitigation of the impact of all new development on emergency evacuation routes, including consideration of non-road alternatives such as on site sheltering.

Indicators:

- Time to evacuate, by county and by region.

Facilities: Evacuation routes as depicted in SWFRPC Hurricane Evacuation Study (as updated)

Planning standards: 2 persons per vehicle; 1.1 vehicles per dwelling, based upon seasonal occupancy rates by unit type; route capacities as calculated according to the Highway Capacity Manual, 1985 edition, and its successor documents.

**❖ REGIONAL COORDINATION**

**Goal 14: Regional news media fully aware of and prepared for their critical role in helping the public respond to emergencies.**

Virtually all electronic and most daily print media have areawide service areas. They are the major recurring information medium for natural and manmade hazards. Their hurricane briefings, for example, provide a reliable level of coverage on that particular hazard for the entire regional population at the start of the hurricane season. Emergency management; however, largely focuses on very local problems, supplemented with working agreements between management entities. In training or preparing the public for appropriate responses, depending upon the nature of the emergency, it is important to keep the media briefed on the particular threat, the appropriateness of the response, and their role in targeting that part of the population in need of accurate information with clear detail. This is particularly relevant to Southwest Florida because the region's population will always have a high percentage of recent arrivals, to whom common place names will not be known, and may either not respond or wrongly respond because of unclear information in details such as who is being threatened.

**Strategy: Keep the media informed and answer questions as best as possible.**

Actions:

1. Promote local and state emergency managers annually brief the local news media about the nature of emergencies, likely public responses, and procedures for obtaining and circulating accurate information during emergencies.
  
2. Promote and maintain information accessible to the public on what can be done to prepare for the nature of emergencies of most importance to them.

Indicators:

- Percentage of media participation in annual briefings.

Facilities: All daily print media; all commercial broadcast media with news component.

➤ **IMPLEMENTATION**

**The following matrix shows the ways in which SWFRPC will interact with other organizations to implement the goals listed in the plan.**

	Goals																		
Agency	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Counties	I	R	R	R	F/I	F/I	R/F	R/F	R	A	R/F	R/A	I	R/F/I	F/I	R/I	F	A/I	I
Cities	I	R	R	R	F/I	F/I	R/F	R/F	R	A	R/F	R/A	I	R/F/I	F/I	R/I	F	A/I	I
Special Districts*						F/I	I	F	F		F		I	A/I	I	I	F	A/I	
Sheriffs							A							A			A	A/I	
FDOT					F/I		A			A						A/I		A/I	
DOA													A	I					
DOC													A	I					
DLES													F						
WMD		R									R/F							A/I	
DEP													R/A/F	R/A/F/I	R				
DCA	A/F	F				A	F	A	A	A	A	A	A	A/R	A	A	A	A/I	I

<b>Emergency Preparedness Element</b>
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EOG**						I		I			I		I		I	I		I	
FED		F/A					A	F		A	R	I		A				A/I	
Red Cross						A/I	I/A					I		I				A/I	I
Other Private						I	I/A		F			I	I	I	F/A/I	I	I	A/I	A/I
RPC	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
HRS							A		R					A/F					
FDLE																	A	A/I	
FDBR			X	X															

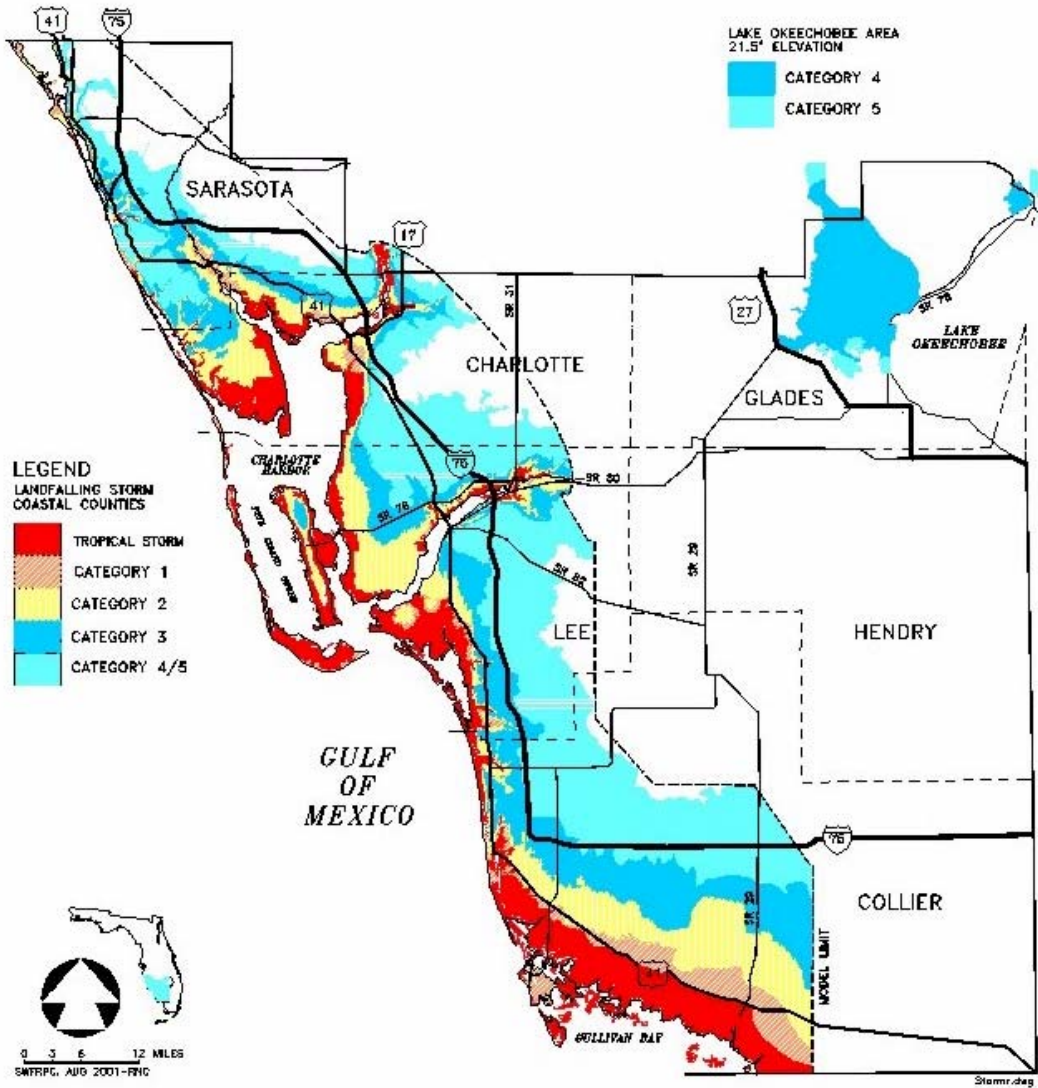
R = regulatory  
 F = funding  
 A = advisory  
 I = informational  
 X = all roles of Council

\*Commonly, fire districts.  
 \*\*EOG provides direction to all state agencies, and also stands for state agencies not otherwise listed.

**AGENCY ABBREVIATIONS**

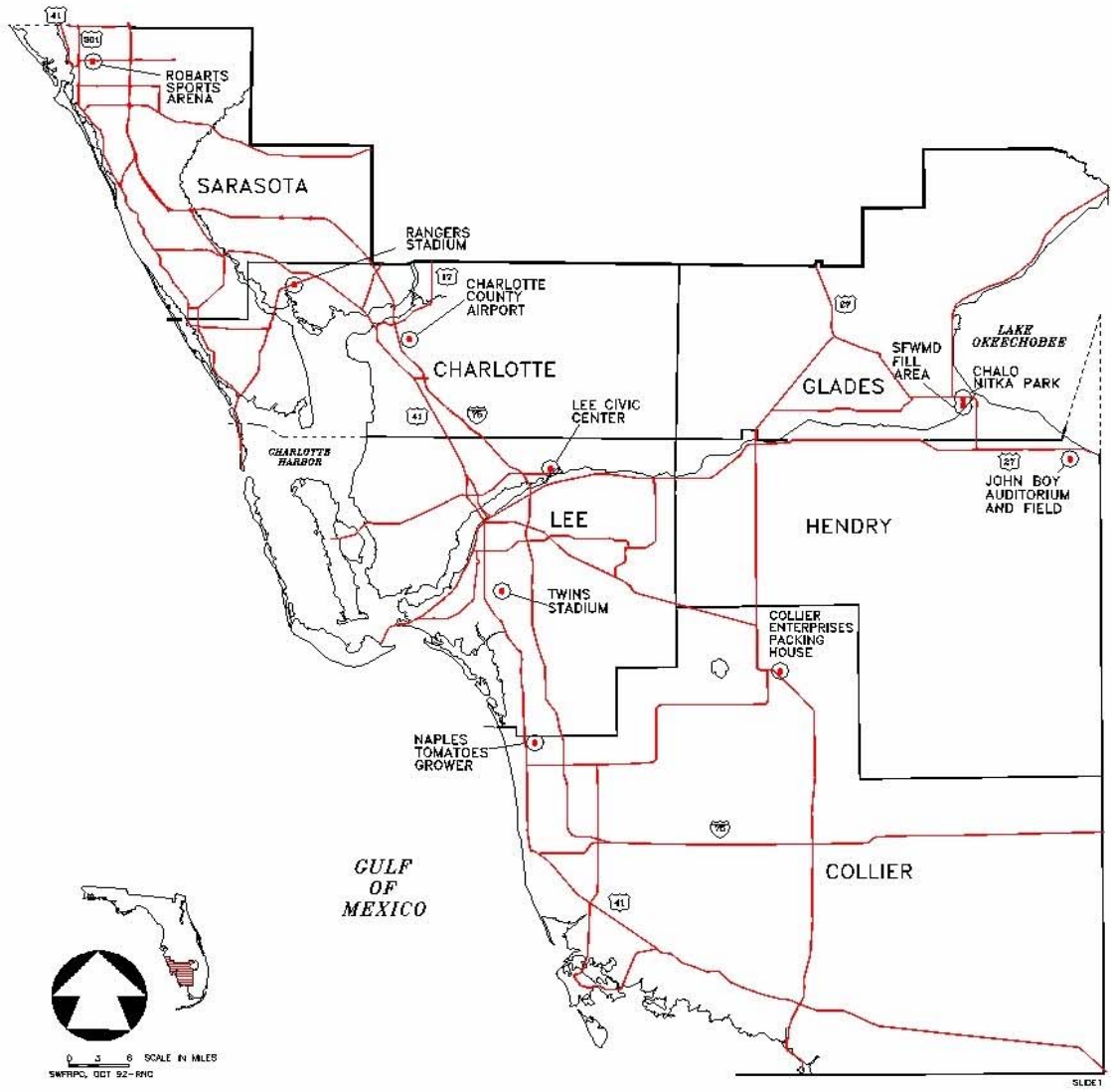
- FDOT: Florida Department of Transportation
- DOA: Department of Agriculture
- DOC: Department of Commerce
- DLES: Department of Labor Employment Security
- WMD: South and Southwest Water Management Districts
- DEP: Department of Environmental Protection
- DCA: Department of Community Affairs
- EOG: Executive Office of the Governor
- FED: Federal Agencies in General
- RPC: Regional Planning Council
- HRS: Health and Rehabilitative Services
- FDLE: Florida Department of Law Enforcement
- FDBR: Florida Department of Business Regulation

Map 1 – Landfalling Storm



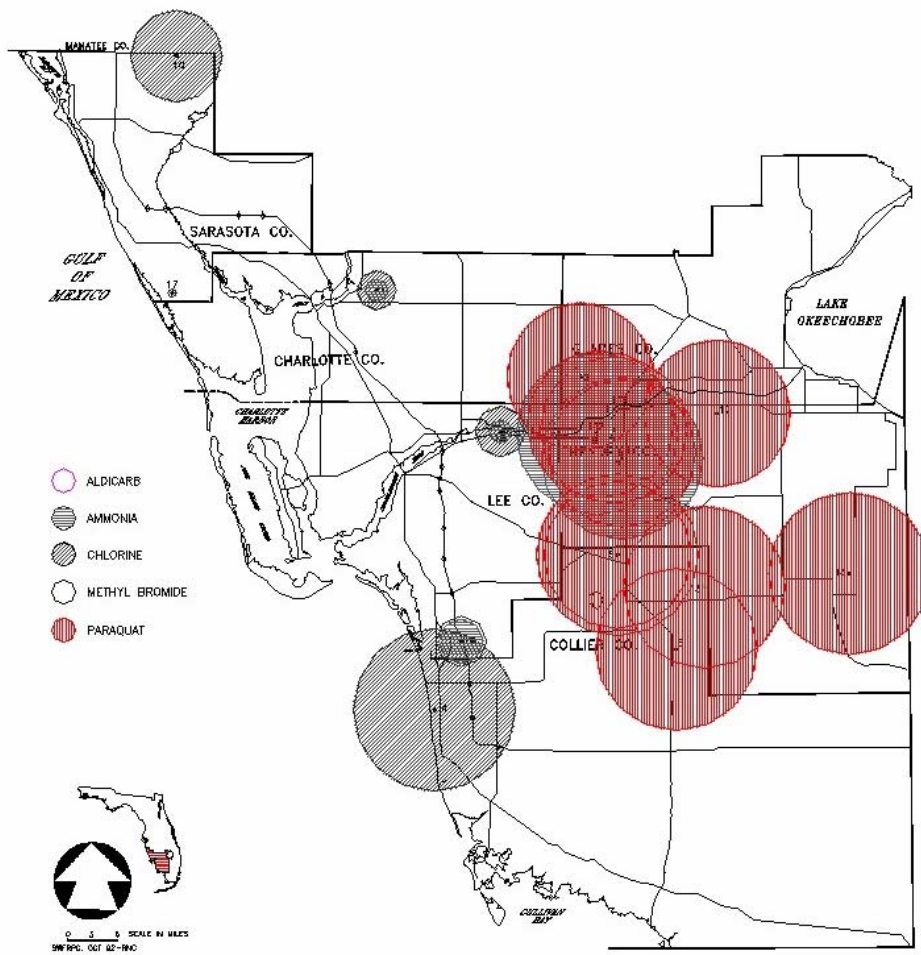
SOUTHWEST FLORIDA REGION  
LANDFALLING STORM

Map 2 – Recovery Sites



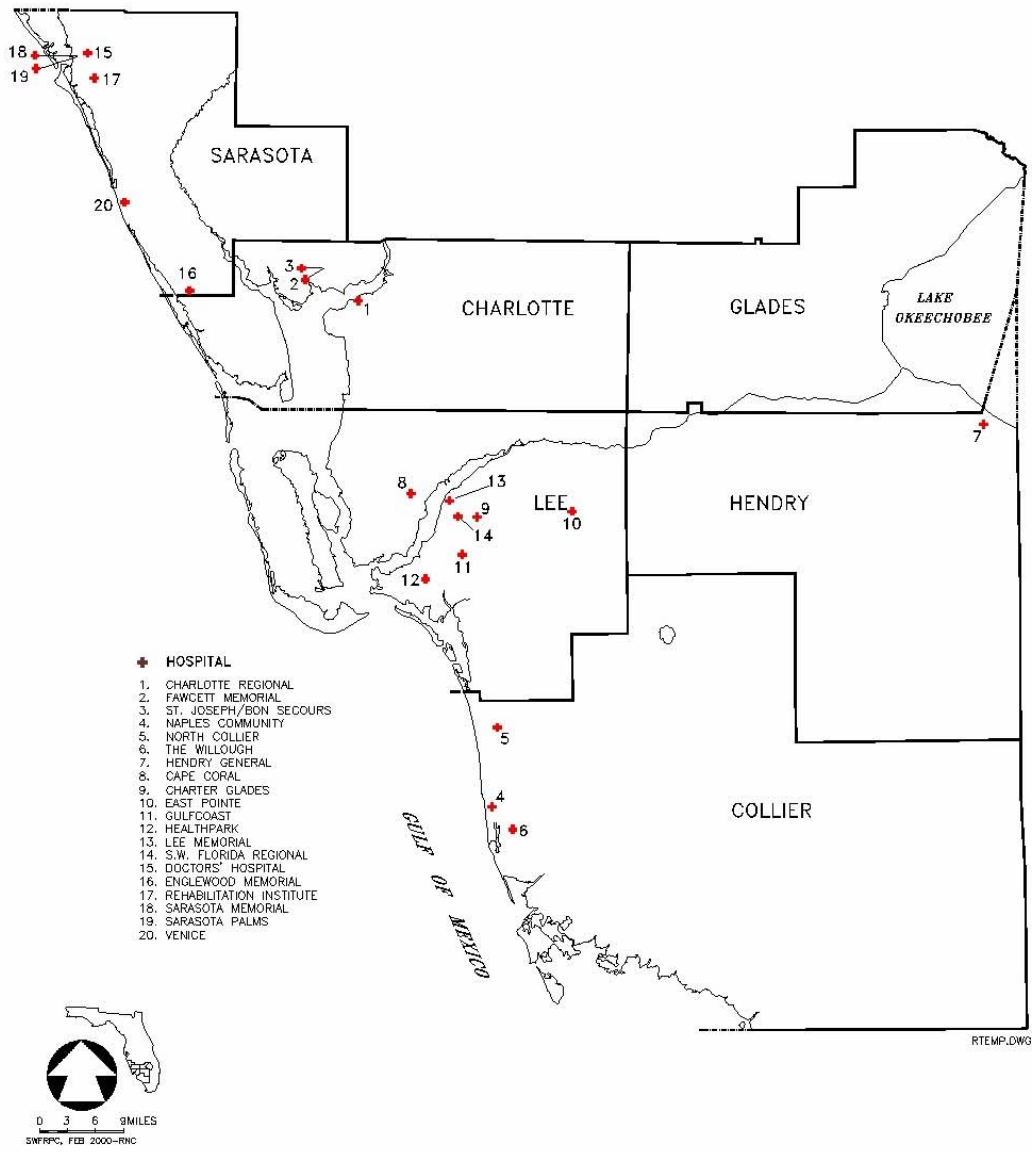
**MAP 2**  
**SOUTHWEST FLORIDA REGION**  
**HURRICANE RECOVERY STAGING AREAS**

Map 3 – EHS Hazardous Materials Map



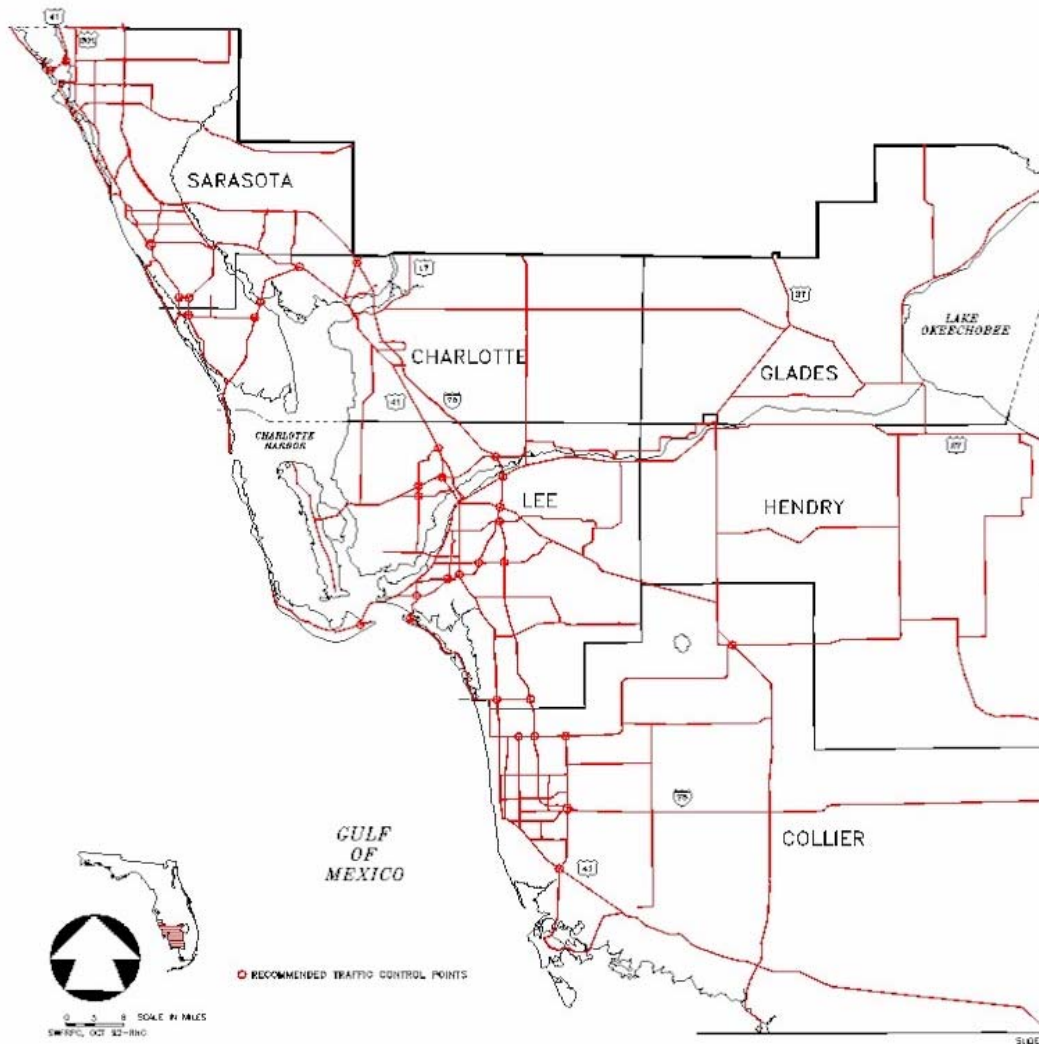
MAP 3  
SOUTHWEST FLORIDA REGION  
EHS HAZARDOUS MATERIALS MAP

Map 4 – Major Medical Sites



## MAP 4 SOUTHWEST FLORIDA REGION MAJOR MEDICAL SITES





**MAP 5**  
**SOUTHWEST FLORIDA REGION**  
**EVACUATION TRAFFIC ROUTES**