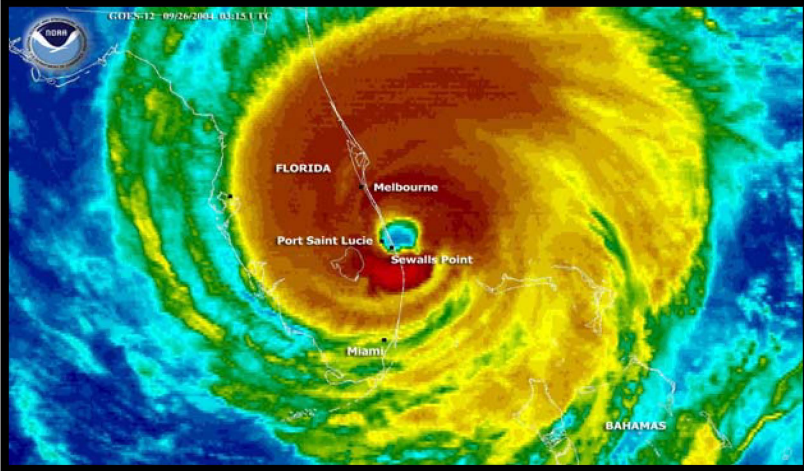


Indian River County Comprehensive Emergency Management Plan "Basic Plan" 2016 – 2020



Indian River County
Department of Emergency Services
Emergency Management Division
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RECORD OF CHANGES			
CHANGE NUMBER	DATE OF CHANGE	DATE ENTERED	CHANGE MADE AND BY WHOM
1	1/2/08	1/2/08	Basic Plan page vii: Changed Federal Response Plan to National Response Framework Etta LoPresti
2	5/1/11	5/1/11	Basic Plan page 144: Revision date for the Dept. of Emergency Services <i>Records Management Policies and Procedures</i> manual. Etta LoPresti
3	10/1/11	10/1/11	Basic Plan page 1: Removed Department of Community Affairs Etta LoPresti
4	4/15/13		No Changes – Etta LoPresti
5	11/20/13	12/20/13	Basic Plan page 109: Updated Board of County Commissioners organization chart. Etta LoPresti
6	4/15/14		No Changes – Etta LoPresti
7	8/19/14	8/19/14	Basic Plan page 137: Updated evacuation map. Etta LoPresti
8	9/3/15	9/3/14	Basic Plan page 90: Updated population by age chart. Etta LoPresti
9	1/2/15	1/2/15	Basic Plan page 5: Changed North Treasure Coast Chapter to Coast to Heartland Chapter of the American Red Cross Etta LoPresti

10	1/2/15	1/2/15	Basic Plan page 101: Updated ESF #6 American Red Cross chapter name change. Etta LoPresti
11	6/1/15	6/1/15	Basic Plan page 142: Updated shelter list. Etta LoPresti
12	7/7/15	9/3/15	Basic Plan pages 7-77: Updated hazard vulnerability to coincide with updated LMS. Etta LoPresti
13	9/3/15	9/3/15	Basic Plan page 87: Updated population estimates Etta LoPresti
14	9/3/15	9/3/15	Basic Plan page 88: Updated Figure 5, Population Centers Etta LoPresti
15	9/3/15	9/3/15	Basic Plan page 92: Updated Top Employers and Employment by Industry charts. Etta LoPresti
16	9/3/15	9/3/15	Basic Plan page 93: Updated housing demographics. Etta LoPresti
17	9/3/15	9/3/15	Basic Plan page 102: Changed primary ESF #11 to Salvation Army. Basic Plan page 102: Changed ESF #18 to Business & Industry. Updated ESF #8 to include SNS operations. Etta LoPresti
18	9/3/15	9/3/15	Basic Plan page 126: Updated agency names for ESFs 4, 5, 6, 7, 9, 10, 15, and 18. Etta LoPresti
19	9/3/15	9/3/15	Basic Plan page 154: Updated EAS radio stations. Etta LoPresti
20	9/3/15	9/3/15	Basic Plan page 149: Added information regarding 2 CFR Part 200, the Super Circular.

			Etta LoPresti
21	9/3/15	9/3/15	Basic Plan page 150-152: Updated Training and Exercise section. Etta LoPresti
22	9/8/15	9/8/15	Mitigation - Annex II page 3: Updated LMS approval information. Etta LoPresti
23	9/8/15	9/8/15	Damage Assessment – Annex III pages 8-9: Changed threshold amounts for large and small project grants. Etta LoPresti
24	9/8/15	9/8/15	Damage Assessment – Annex III page 11: Changed threshold amounts for Individuals and Households Program. Etta LoPresti
25	9/8/15	9/8/15	Emergency Shelter Plan – Annex V Attachment 1: Updated public shelter list. Etta LoPresti
26	9/8/15	9/8/15	Emergency Shelter Plan – Annex V Attachment 3: Updated order of shelter openings. Etta LoPresti
27	9/8/15	9/8/15	Emergency Shelter Plan – Annex V Attachment 4: Updated General Population Shelter Data. Etta LoPresti
28	9/9/15	9/9/15	Basic Plan page 89: Updated Migrant and non-English speaking population. Etta LoPresti
29	9/14/15	9/14/15	Basic Plan page 156: Updated resolutions. Added resolution for Post Disaster

			Redevelopment Plan. Etta LoPresti
30	9/14/15	9/14/15	Basic Plan page 164: Added information on FEMA super circular. Etta LoPresti
31	9/14/15	9/14/15	Added Annex VII: Public Outreach, Notification, and Crisis Communication Strategy. Etta LoPresti
32	9/14/15	9/14/15	Renamed Annex VIII <i>Communications to Amateur Communications</i> . Etta LoPresti
33	9/14/15	9/14/15	Removed <i>Terrorism Annex</i> (Annex XI) from CEMP and added to <i>Miscellaneous Plans</i> . Etta LoPresti
34	9/18/15	9/18/15	Basic Plan page 155-156: Updated ordinances and resolutions and added a comment in paragraph VII directing reader to a separate binder containing references and authorities to replace Appendix C. Etta LoPresti
35	9/18/15	9/18/15	Annex IA (Recovery) page 3, paragraph 2: Made reference to damage assessment software. Etta LoPresti
36	9/15/15	9/18/15	Annex IA (Recovery) page 4: Added ESFs 6 (Mass Care), 13 (Military Support) and 18 (Business & Industry) to support roles in damage assessment. Etta LoPresti
37	35	9/18/15	Annex IA (Recovery) page 4, number 3: Made reference to

			GeoCove software for damage assessment. Etta LoPresti
38	9/18/15	9/18/15	Annex IA (Recovery) page 7, number 2: Added Annex VII (Public Outreach, Notification, and Crisis Communication Strategy) as a reference. Etta LoPresti
39	9/18/15	9/18/15	Annex IA (Recovery) page 14, j: Added new Fire Rescue Station #13. Etta LoPresti
40	9/18/15	9/18/15	Annex IA (Recovery) pages 22-23: Updated the unmet needs section. Etta LoPresti
41	9/18/15	9/18/15	Combined Annex III (RIAT) with Annex IV (Damage Assessment). Created an updated Annex III (Damage Assessment). Etta LoPresti
42	10/29/15	10/29/15	Basic Plan, Page 1A: Added operational priorities to the Purpose statement. Etta LoPresti
43	12/5/15	12/5/15	Basic Plan, Page 51 F: Changed incorrect number of agriculture acres from 327,000 to 136,896. Etta LoPresti
44	1/28/16	1/28/16	Basic Plan, Pages 28, 31, 68, 73, 94, 96 and 158: Changed Vero Beach Municipal Airport to Vero Beach Regional Airport. Annex IA (Recovery Functions), Pages 9, 14 and

DRAFT
RESOLUTION 2016 -

*A RESOLUTION OF INDIAN RIVER COUNTY, FLORIDA,
BY AND THROUGH ITS BOARD OF COUNTY COMMISSIONERS
ADOPTING A COMPREHENSIVE EMERGENCY MANAGEMENT PLAN FOR
INDIAN RIVER COUNTY*

WHEREAS, Chapter 252, Florida Statutes, Disaster Preparedness Act, establishes a Division of Emergency Management (**DIVISION**) and prescribes the powers and responsibilities thereof; and

WHEREAS, Chapter 252, F.S., assigns to the Board of County Commissioners responsibility for disaster mitigation, preparedness, response, and recovery; and

WHEREAS, Chapter 252, F.S., requires each county to develop a county emergency management plan and program that is coordinated and consistent with the state comprehensive emergency management plan and program; and

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF INDIAN RIVER COUNTY, FLORIDA, that the 2012 **INDIAN RIVER COUNTY COMPREHENSIVE EMERGENCY MANAGEMENT PLAN (CEMP)**, as approved by the **DIVISION**, is hereby adopted. The resolution was moved for adoption by Commissioner _____, and the motion was seconded by Commissioner _____, and, upon being put to a vote, the vote was as follows:

Chairman	Bob Solari
Vice-Chairman	Joseph E. Flescher
Commissioner	Wesley S. Davis
Commissioner	Peter D. O'Bryan
Commissioner	Tim Zorc

The Chairman thereupon declared the resolution duly passed and adopted this day of _____, 2015.

**BOARD OF COUNTY COMMISSIONERS
INDIAN RIVER COUNTY, FLORIDA**

BY:
Bob Solari, Chairman

Attest:
Jeffrey R. Smith, Clerk

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EXECUTIVE SUMMARY

The Indian River County Comprehensive Emergency Management Plan (CEMP) is an operations oriented document authorized by the Board of County Commissioners and is in accordance with Chapter 252, Florida Statutes. The CEMP establishes the framework for an effective system to ensure that Indian River County will be adequately prepared to deal with the occurrence of emergencies and disasters. The plan outlines the roles and responsibilities of the state agencies, special districts, local governments and volunteer organizations. The CEMP unites the efforts of these groups for a comprehensive approach to reduce the County's vulnerability to a host of identified hazards.

This plan is structured to parallel federal activities set forth in the "National Response Framework" and state activities in the State "Comprehensive Emergency Plan" as well as describing how other resources will be coordinated to supplement County resources and response.

The CEMP is divided into three sections:

1. **The Basic Plan** section outlines the concept of operations, direction and control, and identifies responsibilities of all agencies and resources mobilized by the County in recovering from a disaster.
2. **The Response** section presents the County's strategy for disaster response. It outlines the Emergency Support Function (ESF) concept taken from the Federal Response Plan. Each ESF, at a minimum, contains a concept of operations and the responsibilities of the primary and support agencies that will respond to local government requests.
3. **The Recovery** section provides for the rapid and orderly start of rehabilitation and restoration of persons and property affected by a disaster.

Following Hurricane Andrew, recommendations from the "Governor's Disaster Planning and Response Review Committee Report" (The Lewis Report), guided revisions that were made to Chapter 252, F.S. The Basic Plan contains a planning strategy section that describes initiatives that are currently underway to ensure that the mandates of the law become operational.

This plan replaces the Florida Nuclear Civil Protection Plan, Florida Peacetime Emergency Plan, and National Response Plan. It does not supplant the Hazardous Materials Plan, which is not an operations-oriented document or the Florida Radiological Emergency Management Plan for Nuclear Power Plants, which was developed for response to radiological incidents under separate state and federal statutory authorities. However, this plan may be used to supplement the Florida Radiological Emergency Management Plan for Nuclear Power Plants, in order to provide a comprehensive response.

THE INDIAN RIVER COUNTY COMPREHENSIVE EMERGENCY MANAGEMENT PLAN

BASIC PLAN

I. INTRODUCTION

Chapter 252, Florida Statutes (State Emergency Management Act), requires the preparation and maintenance of this document, the Indian River County Comprehensive Emergency Management Plan (CEMP). The CEMP must be integrated into and coordinated with emergency management plans and programs of the state and federal government. The CEMP also establishes a framework through which Indian River County may prepare for, respond to, recover from, and mitigate the impacts of a wide variety of disasters that could adversely affect the health, safety and/or general welfare of the residents of Indian River County.

The CEMP is operations-oriented, and addresses coordinated local and regional evacuation, shelter, post-disaster response and recovery; rapid deployment and pre-deployment of resources; communications and warning systems; training exercises to determine the ability of local government to respond to emergencies; and clearly defined responsibilities for County departments through an Emergency Support Function (ESF) approach to planning and operations.

The CEMP describes the basic strategies, assumptions and mechanisms through which the County will mobilize resources and conduct activities to guide and support local emergency management efforts through response and recovery. To facilitate effective intergovernmental operations, the CEMP adopts a functional approach that groups the type of assistance to be provided under ESFs to address the functional needs of the County. Each ESF is headed by a lead agency, which has been selected based on its authorities, resources, and capabilities in the functional area. The ESFs serve as the primary mechanism through which outside assistance to Indian River County is managed. State assistance will be provided under the overall coordination authority of the State Coordinating Officer (SCO) representing the Florida Division of Emergency Management (FDEM) on behalf of the Governor.

A. PURPOSE

The plan establishes a framework for an effective system of comprehensive emergency management enabling the Indian River County Board of County Commissioners to discharge its statutory responsibility for providing direction and control during the period of any emergency. This plan, and all other plans and procedures developed by Indian River County Emergency Management, are developed in accordance with the hazards identified in the Indian River County Local Mitigation Strategy. The procedures also reflect operational priorities including life, safety, health, property protection, environmental protection, restoration of essential utilities, restoration of essential program functions and coordination among appropriate stakeholders unless otherwise noted by exception.

The purpose of the plan is to:

1. Reduce the vulnerability of people and communities of this county to damage, injury, and loss of life and property resulting from natural, technological or manmade emergencies, catastrophes, or hostile military or paramilitary action.
2. Prepare for prompt and efficient response and recovery to protect lives and property affected by emergencies.
3. Respond to emergencies using all systems, plans and resources necessary to preserve the health, safety and welfare of persons affected by the emergency.
4. Recover from emergencies by providing for the rapid and orderly start of restoration and rehabilitation of persons and property affected by emergencies.
5. Provide an emergency management system embodying all aspects of pre-emergency preparedness and post-emergency response, recovery, and mitigation.
6. Assist in anticipation, recognition, appraisal, prevention, and mitigation of emergencies that may be caused or aggravated by inadequate planning for, and regulation of, public and private facilities and land use.
7. This CEMP, by adoption, established the National Incident Management System (NIMS) as the standard for all operations encompassed by the plan within Indian River County. The NIMS system provides a common foundation for training and other preparedness efforts, communicating and sharing information with other responders and with the public, ordering resources to assist with a response effort, and for integrating new technologies and standards to support incident management. For the first time, all of the nation's emergency responders will use a common language, and a common set of procedures when working individually and together to keep America safe. The NIMS ensures that they will have the same preparation, the same goals and expectations, and most importantly, they will be speaking the same language. The Indian River County Emergency Services Director oversees NIMS compliance for this department.

B. SCOPE

This plan is countywide in scope and is supported by the five municipalities.

The scope of this plan is to accomplish the following:

1. Establishes fundamental policies, program strategies, and assumptions,
2. Establishes a concept of operations spanning the direction and control of an emergency from initial monitoring through post-disaster response and recovery,
3. Defines an interagency coordination mechanism to facilitate delivery of immediate county assistance, and County direction and control of response and recovery assistance from other counties, states, and the federal government,
4. Assigns specific functional responsibilities to appropriate County departments and agencies, as well as private sector groups and volunteer organizations,
5. Addresses the various types of emergencies (more specifically described in Section II-A, Hazard Analysis) which are likely to occur, from county emergency, to minor, major, or catastrophic disasters; and,
6. Identifies actions that County response and recovery organizations will take, in coordination with county and federal counterparts as appropriate.

C. METHODOLOGY

1. The Emergency Management Director is responsible for the development and maintenance of the Comprehensive Management Plan and ensuring that necessary revisions to this plan are prepared, coordinated, published and distributed. Staff has carefully analyzed Florida's Comprehensive Emergency Management Plan to assure the county's plan was consistent with and supportive of the state plan in both format and content. To conform to the compliance criteria, the following actions were taken:
 - a. All ESF primary and support agencies were identified, including public, private and volunteer.
 - b. All agencies were assembled. All agencies provided input and support in the construction of the plan.
 - c. A series of meetings was held to assure local participation in the planning process.
 - d. All involved departments demonstrated their support in the planning process, not by letter, but by their personal participation in planning meetings.

- e. All agencies reviewed the final draft of the plan and accepted the responsibilities assigned to them by the plan.
- f. Rosters of orientation seminars on concepts of operations or plan procedures are not attached to or an integral part of this formal plan; however, they are kept on file in the office of Emergency Management.
- g. A signed receipt is maintained for all recipients of the CEMP. Signature of this document acknowledges and accepts plan responsibilities (original receipts kept on file in the emergency management office). The distribution list is attached to this document and identified as Figure 1.
- h. All future amendments to this plan will be made in addendum form to recipients of the plan.
- i. The Indian River County Logistics and Resource Management Plan establishes the process and procedures for providing and coordinating logistics and resource management efforts required for emergency management and incident response programs and activities.
- j. An Emergency Management Advisory Group was established and approved in January 2015 which will promote local participation in the emergency management program.

Figure 1

CEMP CD DISTRIBUTION LIST	
AGENCY	DIVISION
INDIAN RIVER COUNTY	ATTORNEY'S OFFICE BCC OFFICE BUILDING DIVISION CLERK OF COURT COMMUNITY DEVELOPMENT COUNTY ADMINISTRATOR DEPARTMENT OF EMERGENCY SERVICES (Hard Copies) Animal Control Emergency Management (3) Fire Rescue Radiological EOC Library (2) Extras (5) ELECTION'S OFFICE ENGINEERING DEPARTMENT ENVIRONMENTAL HEALTH FACILITIES MANAGEMENT GENERAL SERVICES HEALTH DEPARTMENT HUMAN RESOURCES OFFICE OF MANAGEMENT & BUDGET PARKS DIVISION PROPERTY APPRAISER'S OFFICE PUBLIC WORKS PURCHASING RECREATION RISK MANAGEMENT ROAD & BRIDGE SCHOOL DISTRICT Superintendent Transportation Director SHERIFF'S OFFICE SOLID WASTE DISPOSAL DISTRICT TAX COLLECTOR TELECOMMUNICATIONS TRAFFIC ENGINEERING UTILITIES
FELLSMERE, CITY OF	CITY MANAGER POLICE CHIEF
INDIAN RIVER MEDICAL CENTER	RISK MANAGER
INDIAN RIVER SHORES, TOWN OF	PUBLIC SAFETY CHIEF TOWN MANAGER
ORCHID, TOWN OF	TOWN MANAGER
SEBASTIAN, CITY OF	CITY MANAGER POLICE CHIEF
SEBASTIAN INLET STATE PARK	PARK MANAGER
SEBASTIAN RIVER MEDICAL CENTER	RISK MANAGER
VERO BEACH, CITY OF	CITY MANAGER POLICE CHIEF
MISCELLANEOUS	AMERICAN RED CROSS, COAST TO HEARTLAND CHAPTER

2. The Indian River County Board of County Commissioners has approved this document and a current signed resolution can be found in the Compendium of Authorities binder located in the office of Emergency Management. Their approval establishes this plan as official policy for all participating departments/agencies. A Draft of the Resolution can be found in the beginning of this plan until such time the document receives approval from FDEM. Once the approved document goes before our Board of County Commissioners for formal approval, a signed Resolution will be placed in aforementioned binder.
3. Maintenance of plan currency is achieved in the following manner:
 - a. The Basic Plan will be reviewed and updated by Emergency Management staff by April 15th of each year and page changes distributed to all addressees no later than May 15th of each year.
 - b. Emergency Support Function (ESF) Annexes will be reviewed by the lead agency for the ESF in consultation with the support agencies. Recommendations for corrections will be forwarded to Emergency Management staff who will distribute applicable page changes to all plan recipients. Changes to the ESF Annexes do not need Board of County Commissioner approval as long as the spirit and intent of the Basic Plan has not changed. ESFs meet at least annually, during participation in the Annual Statewide Hurricane Exercise. During this time procedures and responsibilities are reviewed.
 - c. Hazard specific annexes will be developed as needed and reviewed at least annually and immediately after a disaster event for which the annex was written. The Annex will be initiated and maintained by the lead agency for that annex. Hazard specific annexes can be developed and added to/removed from the Indian River County CEMP, as needed, without Board of County Commissioner approval as long as the spirit and intent of the Basic Plan has not changed.
 - d. Standard Operating Guides (SOGs) should be developed and maintained by each tasked agency to support this plan.
 - e. There is no requirement to seek Board approval of the annual change after the CEMP has been adopted initially as long as the spirit and intent of the Basic Plan have not changed.

II. SITUATION

This section of the CEMP provides a description of the potential hazard considerations, geographic characteristics, demographics, economic profile and emergency management support facilities for Indian River County. Additionally, there are several planning assumptions that were considered in the planning process. For a complete vulnerability assessment, see the Indian River County Local Mitigation Strategy (State & FEMA approved on August 12, 2015 and adopted by Resolution #2015-078 by the Board of County Commissioners on July 7, 2015). Indian River County's LMS plan has been approved for a period of five (5) years and will expire on August 12, 2020.

A. HAZARD IDENTIFICATION, VULNERABILITY, AND RISK

Communities in Indian River County are vulnerable to three classifications of hazards: natural, technological, and societal as identified below. A complete analysis can be found in the county's Local Mitigation Strategy, as well as a chart depicting the hazard vulnerability by jurisdiction and population centers that can be found in Table 4.15 in Section 4, pages 84-85 of the county's Local Mitigation Strategy.

1. **Natural Hazards**

a. **Flood – Hazard Identification**

A flood is defined by the National Weather Service as any high flow, overflow, or inundation by water which causes or threatens damage. There are a number of flood types, such as:

River Flood – Occurs when water levels rise over the top of river banks due to excessive rain from tropical systems making landfall, persistent thunderstorms over the same area for extended periods of time, combined rainfall and snowmelt, or an ice jam.

Coastal Flood – The inundation of land areas along the coast causes by higher than average high tide and worsened by heavy rainfall and onshore winds (i.e., wind blowing landward from the ocean).

Storm Surge – An abnormal rise in water level in coastal areas, over and above the regular astronomical tide, caused by forces generated from a severe storm's wind, waves, and low

atmospheric pressure. Storm surge is extremely dangerous, because it is capable of flooding large coastal areas.

Inland Flooding – Occurs when moderate precipitation accumulates over several days, intense precipitation falls over a short period, or a river overflows because of an ice or debris jam, or dam or levee failure.

Flash Flood – Caused by heavy or excessive rainfall in a short period of time, generally less than six hours. Flash floods are usually characterized by raging torrents after heavy rains that rip through river beds, urban streets, or mountain canyons sweeping everything before them.

In Indian River County, several variations of flood hazards occur due to the different effects of severe thunderstorms, hurricanes, seasonal rains, and other weather-related conditions. For the majority of the County, the primary causes of flooding are hurricanes or tropical storms. However, the County's low-lying topography, combined with its subtropical climate, make it vulnerable to riverine as well as storm-associated flooding.

Flooding in Indian River County results from one or a combination of both of the following meteorological events:

- Tidal surge associated with northeasters, hurricanes, and tropical storms; and
- Overflow from streams and swamps associated with rain runoff.

When intense rainfall events occur, streams and drainage ditches tend to reach peak flood flow concurrently with tidal water conditions associated with coastal storm surge. This greatly increases the probability of flooding in the low-lying areas of the coastal zone. Areas along the Indian River are particularly susceptible to flooding under these conditions. The most flood prone areas in the eastern portion of the County feature poorly drained soils, a high water table, and relatively flat terrain, all of which contribute to their flooding problems. Flat terrain and heavily wooded areas aggravate flood problems by preventing rapid drainage in some areas.

Riverine flooding occurs when the flow of rainwater runoff exceeds the carrying capacities of the natural drainage systems. During extended periods of heavy rainfall, certain low-lying neighborhoods within the County are subject to considerable flood damage and isolation caused by the inability of natural and mechanical drainage systems to effectively remove the water. Heavy rainfalls can cause considerable damage to County infrastructure including roadbeds, bridges, drainage systems, and the water supply.

The buildup of uncontrolled sediment contributes to the problem of inadequate drainage in natural and mechanical drainage systems. When a storm produces an overwhelming amount of stormwater runoff, the accumulation of loose sediment causes flooding by clogging the drainage systems. This buildup of sediment in Indian River County waterways has led to the degradation of the national estuary. The County is currently working to address this issue by replacing bottom opening radial gates with tilting gates at four water control structures.

Long-term climate monitoring stations indicate that rainfall in Indian River County averages about 51.5 inches annually, with about half of this volume occurring during the 4 months from June through September. Only about 20% of the total annual volume of precipitation occurs during the four driest months, December through March. The maximum annual rainfall that has been recorded for the Vero Beach climatological station is 81.74 inches, (Indian River County Public Works, 2002).

In comparison to riverine flooding, coastal flooding is usually the result of a severe weather system such as a tropical storm or hurricane. The damaging effects of coastal floods are caused by a combination of storm surge, wind, rain, erosion, and battering by debris. All coastal property and inhabitants are subject to severe damage and loss of life resulting from floods caused by hurricane-associated storm surge. Some coastal property, road arteries, and bridge approaches are subject to severe flooding caused by rare astronomical tides as well.

Historical Flooding Events. Data on previous occurrences of flooding events in municipalities are limited; therefore, the following events are based on the best available data. Additional data can be found under the Tropical Storms/Hurricanes heading (4.1.2).

Flood of 1947. This flood is generally considered to be the most severe flood recorded in southern Florida. Heavy rainfall, including the rains from two hurricanes, occurred over a period of 5 months. Many parts of Martin County, to the south, were flooded for months, and there was extensive damage to dairy pastures and agriculture in general. Such a flooding event in Indian River County would be much more significant today because of the increase in land development along the eastern side of the County.

Flood of 1953. As occurred in 1947, this flood was preceded by 5 months of heavier than normal rainfall, which included a tropical storm in October. June through October rainfall was approximately 48 inches. Damage was heaviest in the beef cattle industry, with extensive losses of improved pastureland, which required supplemental feeding of cattle. Vegetable growers and dairy farmers also suffered significant losses as a result of this flood. There were significant damages to buildings and roads in the eastern part of the County as well.

Flash Flood of March 1993. The City of Vero Beach experienced a flash flood following heavy rains causing minor damage in 50 homes and washed out roads around Highway 60. The flood caused an estimated \$500,000 in damages.

The Unnamed Storm of October 1995. Almost exactly one year after the Tropical Storm Gordon flooding incident in 1994, a stalled frontal system dropped 15.5 inches of rain on Indian River County over a period of 39 hours.

Flooding of August 1999. The City of Sebastian experienced heavy rains in early August that flooded roads along U.S. Highway 1. The high water disabled six vehicles in the area as well. The City of Vero Beach experienced heavy rains producing flooding of some major roadways round the City in late August.

Flooding of June 2002. The Town of Fellsmere experienced flooding from heavy rains, which rendered some roads impassable and flooded two homes in the Fellsmere area. This storm caused an estimated \$10,000 in damage.

Flooding of August 2002. The City of Vero Beach experienced heavy rain measuring about 5 inches in a few hours, which flooded streets and three houses in the City. The storm caused an estimated \$50,000 in damage.

Extent/Probability/Impact. Flooding impacts related to tropical events are highlighted in the Tropical Storms/Hurricanes impacts profile. Indian River County has only experienced one flood event since the last LMS plan update (2010) and it was due to Tropical Storm Isaac (see below). There have been no flooding events recorded for Indian River County in the National Climatic Data Center database since 2012 (through April 2015).

In the past, flood waters in Indian River County have seldom exceeded 6" and would not be expected to ever exceed Flood Insurance Rate Map (FIRM) base flood elevations (BFEs) at any given location (i.e., one to two feet). Indian River County has experienced a total of 8 significant flooding (flood property and/or drown people/domestic animals) events between the periods of 1947-2015; therefore, there is a 12% annual chance of a significant flooding event to occur in Indian River County.

Vulnerability Assessment. In Indian River County, several variations of flood hazards occur due to the different effects of severe thunderstorms, hurricanes, seasonal rains, and other weather related conditions. For the majority of the county, the primary causes of flooding are hurricanes or tropical storms. However, the county's low-lying topography, combined with its subtropical climate, makes it vulnerable to riverine flooding.

Flooding events can have the following potential impacts within a community:

- Excessive water;
- Soil/beach erosion;
- Electric power outage;
- Surface and air transportation disruption;
- Navigable waterway impairment;

- Potable water system loss or disruption;
- Sewer system outage;
- Public health and safety: increased rates of diarrhea (including cholera and dysentery), respiratory infections, hepatitis A and E, typhoid fever, leptospirosis, and diseases borne by insects;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Agricultural/fisheries damage;
- Damage to critical environmental resources;
- Damage to identified historical resources;
- Fire;
- Toxic releases; and
- Stormwater drainage impairment.

b. **Tropical Storms/Hurricanes – Hazard Identification**

A tropical storm is a tropical cyclone with maximum sustained winds of at least 39 mph. Tropical storms are given official names once they reach these wind speeds. Beyond 74 mph, a tropical storm is called a hurricane, typhoon, or cyclone based on the storm location. A tropical cyclone has a defined cyclonic rotation and severe thunderstorms around a central low-pressure zone. A tropical cyclone is one step above a tropical depression, but a step below a hurricane in terms of intensity.

A ***Tropical Storm Watch*** is issued by the National Hurricane Center (NHC) when tropical-storm conditions are possible within the specified area. A ***Tropical Storm Warning*** is issued by the NHC when tropical-storm conditions are expected within the specified area.

Hurricanes are tropical cyclones with winds that exceed 74 mph and blow counter-clockwise about their centers in the Northern Hemisphere. They are essentially heat pumping mechanisms that transfer the sun’s heat energy from the tropical to the temperate and polar regions. This helps to maintain the global heat budget and sustain life. Hurricanes are formed from thunderstorms that form over tropical oceans with surface temperatures warmer than 81°F (26.5°C). The ambient heat in the sea’s surface and moisture in the rising air column set up a low pressure center and convective conditions that allow formation of self-sustaining circular wind patterns. Under the right conditions, these winds may continue to

intensify until they reach hurricane strength. This heat and moisture from the warm ocean water is the energy source of a hurricane. Hurricanes weaken rapidly when deprived of their energy source by traveling over land or entering cooler waters.

When a hurricane threatens the coast, advisories are issued by the NHC. The storm's current location and intensity are described along with its projected path. Advisories are issued at 6-hour intervals: 5:00 A.M., 11:00 A.M., 5:00 P.M., and 11:00 P.M., Eastern Time.

In addition to advisories, the NHC may issue a hurricane watch or warning. A **Hurricane Watch** is issued 48 hours in advance of the anticipated arrival of tropical-storm-force winds. A **Hurricane Warning** is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds.

Advisories and hurricane watches and warnings will frequently refer to the category of a storm. Hurricanes are classified using the Saffir-Simpson scale as follows:

- Category 1 – Winds 74 to 95 mph;
- Category 2 – Winds 96 to 110 mph;
- Category 3 – Winds 111 to 129 mph;
- Category 4 – Winds 130 to 156 mph; and
- Category 5 – Winds 157 mph or higher.

Hurricane damage occurs through two means – high winds and storm surge. Generally it is the wind that produces most of the property damage associated with hurricanes, while the greatest threat to life is from flooding and storm surge. Although hurricane winds can exert tremendous pressure against a structure, a large percentage of hurricane damage is caused not from the wind itself, but from flying debris. Tree limbs, signs and sign posts, roof tiles, metal siding, and other loose objects can become airborne missiles that penetrate the outer shells of buildings, destroying their structural integrity and allowing hurricane winds to act against interior walls not designed to withstand such forces. Once a structure's integrity is breached, the driving rains associated with hurricanes can enter the structure and completely destroy its contents.

Hurricane winds are unique in several ways:

- They are more turbulent than winds in most other types of storms;
- They are sustained for a longer period of time (several hours) than any other type of atmospheric disturbance;
- They change slowly in direction; thus, they are able to seek out the most critical angle of attack on a given structure; and
- They generate large quantities of flying debris as the built environment is progressively damaged; thus, amplifying their destructive power.

In hurricanes, gusts of wind can be expected to exceed the sustained wind velocity by 25% to 50%. This means a hurricane with sustained winds of 150 mph will have wind gusts exceeding 200 mph. The wind's pressure against a fixed structure increases with the square of the velocity. For example a 100-mph wind will exert a pressure of approximately 40 pounds per square foot on a flat surface, while a 190-mph wind will exert a force of 122 pounds per square foot on that same structure. In terms of a 4- by 8-foot sheet of plywood nailed over a window, there would be 1,280 pounds of pressure against this sheet in a 100-mph wind, and 3,904 pounds or 1.95 tons of pressure against this sheet in a 190-mph wind.

The external and internal pressures generated against a structure vary greatly with increases in elevation, shapes of buildings, openings in the structures, and the surrounding buildings and terrain. Buildings at ground level experience some reductions in wind forces simply because of the drag exerted by the ground against the lowest levels of the air column. High-rise buildings, particularly those located along the beachfront will receive the full strength of hurricane winds on their upper stories. Recent studies estimate that wind speed increases by approximately 37% just 15 feet above ground level.

The wind stream generates uplift as it divides and flows around a structure. The stream following the longest path around a building, generally the path over the roof, speeds up to rejoin the wind streams following shorter paths, generally around the walls. This is the same phenomenon that generates uplift on

an aircraft's wing. The roof in effect becomes an airfoil that is attempting to "take off" from the rest of the building. Roof vortexes generally concentrate the wind's uplift force at the corners of a roof. These key points can experience uplift forces two to five times greater than those exerted on other parts of the roof.

Once the envelope of the building has been breached through the loss of a window or door, or because of roof damage, wind pressure on internal surfaces becomes a factor. Openings may cause pressurizing or depressurizing of a building. Pressurizing pushes the walls out, while depressurizing will pull the walls in. Internal pressure coupled with external suction adds to the withdrawal force on sheathing fasteners. Damages from internal pressure fluctuations may range from blowouts of windows and doors to total building collapse due to structural failure.

During Hurricane Andrew, catastrophic failure of one- and two-story wood-frame buildings in residential areas was observed more than catastrophic failures in other types of buildings. Single-family residential construction is particularly vulnerable because less engineering oversight is applied to its design and construction. As opposed to hospitals and public buildings, which are considered "fully engineered," and office and industrial buildings, which are considered "marginally engineered," residential construction is considered "non-engineered." Historically, the bulk of wind damage experienced nationwide has occurred to residential construction. Fully engineered construction usually performs well in high winds due to the attention given to connections and load paths.

Hurricane winds generate massive quantities of debris that can easily exceed a community's entire solid waste capacity by three times or more. Debris removal is an integral first step toward recovery, and as such, must be a critical concern of all those tasked with emergency management and the restoration of community services.

A storm surge is a large dome of water often 50 to 100 miles wide and rising anywhere from 4 to 5 feet in a Category 1 hurricane and up to 20 feet in a Category 5 storm. The storm surge arrives ahead of the storm's actual landfall, and the more

intense the hurricane is, the sooner the surge arrives. Water rise can be very rapid, posing a serious threat to those who have waited to evacuate flood prone areas. A storm surge is a wave that has outrun its generating source and become a long period swell. The surge is always highest in the right-front quadrant of the direction the hurricane is moving in. As the storm approaches shore, the greatest storm surge will be to the north of the hurricane eye.

Such a surge of high water topped by waves driven by hurricane force winds can be devastating to coastal regions. The stronger the hurricane and the shallower the offshore water, the higher the surge will be. In addition, if the storm surge arrives at the same time as the high tide, the water height will be even greater. The storm tide is the combination of the storm surge and the normal astronomical tide.

Damage during hurricanes also may result from possible spawned tornadoes, and inland flooding associated with heavy rainfall that usually accompany these storms. Hurricane Andrew, a relatively "dry" hurricane, dumped 10 inches of rain on south Florida and left many buildings extensively water damaged. Rainwater may seep into gaps in roof sheathing and saturate insulation and ceiling drywall, in some cases causing ceilings to collapse.

Crop damage is another powerful effect of hurricanes and tropical storms. Tropical Storm Mitch in 1998 dropped as much as 10 inches of rain in some south Florida areas, which resulted in approximately \$20 million in crop damage in Palm Beach County alone (Associated Press, 1998). According to the University of Florida (2001), of Indian River County's 322,112 acres, 168,399 acres are farmland. With 52% of its land area being farmed, Indian River County is particularly vulnerable to crop damage resulting from the wind and rain from hurricanes and tropical storms. Hurricanes Charley, Frances, and Jeanne crossed citrus-producing counties in Florida in 2004, followed by Hurricane Wilma in 2005. Hurricanes Frances and Jeanne affected the Treasure Coast directly, making landfall three weeks apart in Martin County. A special census to measure the losses was conducted in mid-2005 in the four counties of Indian River, Martin, Palm Beach, and St. Lucie. Because of these hurricanes, Indian River and St. Lucie Counties only produced 36% of the state's grapefruit

in 2004-05, compared to the normal 66%. Overall, the number of boxes of Florida citrus was down 42% from the 2003-04 season, bringing a 17% drop in value for the same period (USDA, 2005). After the 2004 hurricane season, the rate of tree removal and burning efforts were intensified in an effort to eradicate canker from commercial groves before the onset of the 2005 hurricane season. Before the plan could be completed, hurricane Wilma contributed to the spread of canker from south Florida up through central Florida, far beyond the ability to control it with the existing eradication plan. Estimates placed the spread of the disease at 183,000 acres. The existing eradication plan would have required the destruction of one-fourth of the commercial acreage in Florida, an amount that would have devastated the citrus industry (Conner, 2006).

Historic Events. From 1930 through 1959, a total of 58 hurricanes struck the U.S. mainland; 25 of which were Category 3 or higher (major storms). Between 1960 and 1989, 43 hurricanes struck the U.S.; 16 of which were Category 3 or stronger. Most hurricane experts feel we are entering a period of increased hurricane formation similar to the levels seen in the 1930's and 1940's. Current hurricane risk calculations are complicated by climatic factors suggesting the potential for even greater hurricane frequency and severity in all of the world's hurricane spawning grounds. Since 1995, there have been 33 Atlantic hurricanes, and there were 10 in 1998 alone. Global warming may cause changes in storm frequency and the precipitation rates associated with storms. A modest 0.9°F (0.5°C) increase in the mean global temperature will add 20 days to the annual hurricane season and increase the chances of a storm making landfall on the U.S. mainland by 33%. The warmer ocean surface also will allow storms to increase in intensity, survive in higher latitudes, and develop storm tracts that could shift farther north, producing more U.S. landfalls.

Currently an average of 1.6 hurricanes strike the U.S. every year. Severe (Category 4 or 5 on the Saffir-Simpson scale) hurricanes strike the U.S. on the average of one every 5.75 years. Annually, hurricanes are estimated to cause approximately \$1.2 billion in damages. The proximity of dense population to the Atlantic Ocean, as well as the generally low coastal elevations, significantly increases the County's vulnerability. The potential for property damage and human

casualties in Indian River County has increased over the last several decades primarily because of the rapid growth this County has experienced since 1970, particularly along the vulnerable coastline areas.

From 1871 - 2013, 57 storms of hurricane intensity have passed within 125 miles of Indian River County. This represents an average of one hurricane every 2.49 years. The number of direct hits on the southeastern Florida coastline between 1871 and 2013 has been as follows (<http://www.hurricanecity.com/city/vero.htm>):

Probability.

- Tropical Storm (winds 39 to 73 mph) = 27 storms (19% annual probability);
- Category 1 Storms (winds 74 to 95 mph) = 12 storms (8% annual probability);
- Category 2 Storms (winds 96 to 110 mph) = 5 storms (4% annual probability);
- Category 3 Storms (winds 111 to 129 mph) = 5 storms (4% annual probability);
- Category 4 Storms (winds 130 to 156 mph) = 2 storms (1% annual probability); and
- Category 5 Storms (winds 157 mph >) = 0 storm (1% annual probability)

Extent. While it is possible for Indian River County to be impacted by a category 4 or 5 hurricane, according to the statistics above it is very unlikely. Indian River County has a history of impacts from tropical storms and category 1-3 hurricanes as defined by the Saffir-Simpson Hurricane Wind Scale. Impacts from these storms can cause major structure damage, trees to be uprooted, and near total power loss for several days to weeks after the storm passes.

Hurricane of September 1928. This hurricane made Florida landfall near the City of Palm Beach as a strong Category 4 hurricane with one of the lowest barometric pressures ever recorded in this area (928.9 millibars [27.43 inches]). It reached Lake Okeechobee with very little decrease in intensity. In all, 1,836 people were killed and another 1,870 injured during this storm's passage. Nearly all the loss of life was in the Okeechobee area and was caused by

overflowing of the lake along its southwestern shore.

Hurricane of September 1933. This major Category 3 hurricane passed over Jupiter Island with a barometric pressure of 947.5 millibars (27.98 inches). Maximum winds recorded were 127 mph. There was considerable property damage all along the Florida east coast, mostly in the area between Jupiter and Ft. Pierce. Severe waterfront damage was reported in Stuart, located in Martin County.

Hurricane of August 1949. This Category 3/Category 4 hurricane made landfall in Florida between Delray and Palm Beach with winds of 130 mph and a barometric pressure of 954.0 millibars (28.17 inches). As it moved inland, its center passed over the northern part of Lake Okeechobee. The levees in that area held, and no major flooding occurred. Damages in Florida were estimated at \$45 million. Tides of 11.3 feet at Ft. Pierce, 8.5 ft at Stuart, and 6.9 ft at Lake Worth were reported. Statewide, over 500 people lost their homes as a result of this storm.

Tropical Storm (Florence) of September 1960. Tropical Storm Florence deposited a total of 10 to 11 inches of rain countywide over a 5-day period from 20 to 25 September 1960. Fortunately, the previous month's rainfall had been rather low, and overall flooding was not extensive. The most significantly damaged area was in the Allapattah Marsh area north of the St. Lucie Canal. Several dike systems failed and allowed water to overrun several ranches.

Hurricane Andrew of August 1992. Hurricane Andrew was a small and ferocious Cape Verde hurricane that wrought unprecedented economic devastation along a path through the northwestern Bahamas, the southern Florida peninsula, and south-central Louisiana. Damage in the U.S. was estimated to be near 25 billion, making Hurricane Andrew the most expensive natural disaster in U.S. history. The tropical cyclone struck southern Dade County, Florida, especially hard, with violent winds and storm surges characteristic of a Category 4 hurricane on the Saffir/Simpson Hurricane Scale, and with a central pressure (922 millibars) that is the third lowest this century for a hurricane at landfall in the U.S. In Dade County alone, the forces of Hurricane Andrew resulted in 15 deaths and up to one-quarter million people left temporarily homeless.

An additional 25 lives were lost in Dade County from the indirect effects of Andrew. The direct loss of life seems remarkably low considering the destruction caused by this hurricane (Rappaport, 1993).

Tropical Storm (Gordon) of October 1994. Indian River County experienced a period of extensive growth during the 1970's and 1980's. Most of this growth took place in the form of residential and commercial land development in the eastern portion of the County along the major transportation corridor. The rain event associated with Tropical Storm Gordon in October 1994 was the most significant rain event to occur after this period of development.

Hurricane Floyd of September 1999. This large Category 4 storm moved parallel to the southeast Florida coast. While the storm did not make landfall in Florida, it did impact Florida coastal communities. Peak gusts associated with the storm were estimated to be as high as 155 mph. Fifty-seven deaths and 1.3 billion dollars in insured losses were attributed to the storm. Readings taken in Ft. Pierce indicate that sustained winds were 33 mph, and peak wind gusts were up to 49 mph. The ARC opened 7 shelters in Indian River County and served 2,000 meals during the hurricane.

Hurricane Irene of October 1999. This Category 2 hurricane made landfall in the Keys and moved north, heading back out to sea at the Jupiter Inlet. Insured property losses in Dade, Broward, and Palm Beach counties exceeded \$600 million. Total insured losses from the rest of the state totaled \$200 million. Over 700,000 customers were left without power following the storm. Readings taken in Ft. Pierce indicate that sustained winds were 42 mph, and peak wind gusts were up to 51 mph. Peak wind gusts in Vero Beach measured 71 mph.

Tropical Storm Leslie of October 2000. This tropical storm mainly impacted Miami-Dade and Broward counties, causing \$700 million in damage, \$500 million of which were agricultural crop losses. During this storm, the City of Sebastian experienced significant flooding.

Hurricane Gabrielle of September 2001. This hurricane made landfall on the west coast of Florida and traveled northeast across the state. The storm spawned a total

of 18 tornadoes. Insured losses associated with this storm totaled \$115 million. Total damage is estimated to be nearly \$230 million. Readings taken in Ft. Pierce indicate that sustained winds reached 27 mph, and peak wind gusts were up to 37 mph. Rain meters in Ft. Pierce indicated 1.97 inches of rainfall during this period.

Hurricane Frances of September 2004. This hurricane made landfall over the southern end of Hutchinson Island, Florida as a Category 2 hurricane. Frances gradually weakened as it moved slowly west-northwestward across the Florida Peninsula, and became a tropical storm just before emerging into the northeastern Gulf of Mexico near New Port Richey early on 6 September. The National Weather Service Melbourne Weather Forecast Office (WFO) estimated storm surge at 8 ft near Vero Beach and 6 ft around Cocoa Beach. Frances caused widespread heavy rains and associated freshwater flooding over much of the eastern United States. Storm-total rainfalls of 5-10 in were common elsewhere along Frances' track as a tropical cyclone. Frances caused an estimated \$850 million in damage to insured property in Indian River County. The storm spawned a total of 101 tornadoes – 23 in Florida. Sustained winds reached 105 mph. There was one fatality recorded in Indian River County.

Hurricane Jeanne of September 2004. Jeanne made landfall as a Category 3 hurricane on the east coast of Florida early on September 26 with the center crossing the coast at the southern end of Hutchinson Island just east of Stuart. Maximum winds at landfall are estimated at 121 mph. Widespread rainfall of up to 8 inches accompanied Hurricane Jeanne as it moved across eastern, central and northern Florida. A narrower band of 11 to 13 inches was observed in the vicinity of the eyewall track over Osceola, Broward and Indian River counties of east central Florida. Storm surge flooding of up to 6 ft above normal tides likely occurred along the Florida east coast from the vicinity of Melbourne southward to Ft. Pierce. Jeanne caused an estimated \$2 billion in damage to insured property Indian River County.

Hurricane Wilma of October 2005. Wilma made landfall in southwestern Florida near Cape Romano as a Category 3 hurricane on October 24 with sustained winds estimated to be around 120 mph. The hurricane crossed the

southern Florida peninsula in 4.5 hours, with the center emerging into the Atlantic just southeast of Jupiter. Maximum winds had decreased to near 109 mph (Category 2) during the crossing of Florida. Because the hurricane moved quickly across the southern Florida peninsula, however, the rain amounts were not very large in Florida and storm totals ranged generally from 3 to 7 inches. Some locations in southeast Florida had totals of only 1 to 2 inches -- or less. Wilma produced 10 tornadoes over the Florida peninsula on 23-24 October: one each in Collier, Hardee, Highlands, Indian River, Okeechobee, and Polk Counties, and four in Brevard County.

Tropical Storm Ernesto of August 2006. Ernesto made landfall at Plantation Key, Florida, in the upper Florida Keys, as a tropical storm with winds of 46 mph. The storm moved northward along the center of the Florida peninsula and within a weakness in the mid-level ridge, and the cyclone passed over Lake Okeechobee gradually turning and emerging over the Atlantic Ocean near Cape Canaveral, Florida. The storm dropped 3–6 inches of rain in many areas near the path of the storm’s center, from the Cape Canaveral area to Lake Okeechobee, in portions of southwestern Florida, and in isolated spots in the Upper Florida Keys.

Tropical Storm Fay of September 2008. Fay was a long-lived tropical storm that made eight landfalls – including a record four landfalls in Florida (Key West, Cape Romano, Flagler Beach and Carrabelle)– and produced torrential rainfall that caused extensive floods across the Dominican Republic, Haiti, Cuba, and Florida. Heavy rainfall was the most notable hazard caused by Tropical Storm Fay. Melbourne, Florida broke a 50-year old record for a rainfall event. There were numerous rainfall reports of more than 20 in reported across east-central Florida and amounts in excess of 10 in were common elsewhere across the central and northern Florida.

Tropical Storm Isaac (August 26-27, 2012). Persistent heavy rainbands from Tropical Storm Isaac produced widespread urban and lowland flooding across much of the county. Rainfall from the morning of August 26 until the evening of August 27 averaged 4 to 8 inches, with isolated totals of 14 to 17 inches, most of which fell during the morning and afternoon of August 27. The most significant impacts occurred near the coast from Winter Beach to Vero Beach and

Florida Ridge. Twenty seven manufactured homes and two single family homes were damaged by water intrusion and 20 roads were temporarily closed due to standing water during the height of the flooding.

For many years, the risk of significant loss of life and property due to hurricanes seemed small. Many, if not the majority of existing homes and business along the U.S. Atlantic and Gulf Coasts were located there during the 1970's and 1980's, a period of relatively inactive hurricane formation. Most of the people currently living and working in coastal areas have never experienced the impact of a major hurricane. Hurricanes that impacted Florida during the 1970's and 80's were infrequent and of relatively low intensity. Homeowners, business interest, and government officials grew to regard hurricane risk as manageable by private insurance supplemented occasionally by Federal disaster funding and subsidized flood insurance. The hurricane risk did not seem sufficient to warrant increased investment in mitigation. Two major hurricanes, Hugo in 1989 and Andrew in 1992, forced a re-evaluation of this risk assessment. While experts sometimes disagree on the annual cost, all sources agree that Hurricane Andrew was the most costly hurricane event ever to affect the U.S. Insured losses from Hurricane Andrew topped \$17 billion, and most sources agree that the total cost of Hurricane Andrew exceeded \$25 billion.

Florida is the most vulnerable state in the nation to the impacts of hurricanes and tropical storms. South Central Florida is particularly exposed to the dangers presented by hurricanes due to its topography. The region is largely a flat, low-lying plain. The potential for property damage and human casualties in Indian River County has been increased by the rapid growth of the County over the last few decades, particularly along the coastline. Population risk also has been exacerbated by some complacency due to the recent period of reduced hurricane frequency.

Florida not only has the most people at risk from hurricanes, but it also has the most coastal property exposed to these storms. Over the 30-year period from 1980-2010, Florida's population increased by 93%. At the end of 2008, there were 6.389 million residential risks, including 4.5 million of those risks coming from single-family homes. The residential property

exposure totaled \$2.1 trillion, of which Single-family homes accounted for \$1.777 trillion. (Florida Insurance Council 2013)

Vulnerability Assessment. Tropical storm/hurricane events can have the following potential impacts within a community:

- Excessive wind;
- Excessive water;
- Soil/beach erosion;
- Electric power outage;
- Surface and air transportation disruption;
- Navigable waterway impairment;
- Potable water system loss or disruption;
- Sewer system outage;
- Telecommunications system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Agricultural/fisheries damage;
- Damage to critical environmental resources;
- Damage to identified historical resources;
- Fire;
- Toxic releases; and
- Stormwater drainage impairment.

Hazus estimates the amount of debris that will be generated by hurricanes. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The probabilistic model estimates that a total of 50,920 tons of debris will be generated. Of the total amount, 43,304 tons (83%) is Other Tree Debris. Of the remaining 8,616 tons, Brick/Wood comprises 42% of the total, Reinforced Concrete/Steel comprises 0% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 143 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of eligible tree debris truckloads will depend on how the 5,037 tons of eligible tree

debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Risk Assessment. All communities within Indian River County are highly vulnerable to hurricanes, but they are not all vulnerable for the same reasons. The barrier island communities (Town of Orchid, Indian River Shores, and the beach side of the City of Vero Beach) are obviously highly vulnerable to both wind and storm surge damage from hurricanes. The communities fronting on Indian River County's estuaries and rivers are also highly vulnerable to flooding associated with hurricane winds and storm surge. Inland communities may have less hurricane vulnerability from flooding but more hurricane vulnerability from wind damage due to their older or less substantial type of construction.

c. **Tornado – Hazard Identification**

A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. It is generated by a thunderstorm or hurricane when cool air overrides a layer of warm air, forcing the warm air to rise rapidly. The most common type of tornado, the relatively weak and short-lived type, occurs in the warm season, with June being the peak month. The strongest, most deadly tornadoes occur in the cool season, from December through April (FDCA, 2004b). Occasional windstorms accompanied by tornadoes, such as the winter storm of 1993, also are widespread and destructive.

When a tornado threatens, only a short amount of time is available for life-or-death decisions. The NWS issues two types of alerts:

- Tornado Watch – means that conditions are favorable for tornadoes to develop.
- Tornado Warning- means that a tornado has actually been sighted.

Tornadoes are classified using the Enhanced Fujita-Pearson scale. On February 1, 2007, the Enhanced Fujita Scale replaced the original Fujita scale in all tornado damage surveys in the United States.

Historic Events. Florida ranks third in the United States in the number of tornado strikes, and the first in the number of tornadoes per square mile. The odds of a tornado striking any specific point in southeastern Florida are 0.04, or once per 250 years.

The damage from a tornado is a result of the high wind velocity and wind-blown debris. Florida's average is 50 tornadoes annually since 1950, causing an average of 3 fatalities and 52 injuries each year. According to the National Climatic Data Center Storm Events Database (<http://www.ncdc.noaa.gov/stormevents>), there have been 20 tornado events reported in Indian River County between 1950 and 2014. Eight were F0, four were EF0, six were EF1, and two were F2 magnitude events.

NCDC data indicates that there has been one tornado-related injury, no deaths, and \$1,940,000 in property damage associated with tornado events in the County.

The NCDC has recorded tornado events in unincorporated Indian River County, the City of Vero Beach, the City of Sebastian, Town of Fellsmere, and Wabasso (located in unincorporated County). No events have been recorded in the Town of Indian River Shores or Orchid.

During the tornado in December of 2002, the ARC provided services to three families hit by the tornado and opened a shelter for 38 families who were ordered to evacuate because their homes were deemed unsafe.

Extent. The National Climate Data Center (NCDC) indicates that there have been a total of 20 tornado incidents in Indian River County in the last 65 years, therefore there is a 3% chance of a tornado affecting our county in any given year. The majority of the events have been EF0 and EF1 as defined on the Enhanced Fujita Scale.

Vulnerability Assessment. Tornado events can have the following potential impacts within a community:

- Excessive wind;
- Electric power outage;
- Surface and air transportation disruption;

- Telecommunications system outage;
- Human health and safety;
- Psychological hardship; and
- Economic disruption.

Indian River County's vulnerability to tornadoes is compounded by the high concentration of mobile home residents in large mobile home communities. According to the 2000 U.S. Census, there are 6,786 mobile homes in Indian River County, representing 11.7% of the total housing units in the County. Three municipalities within Indian River County have significant concentrations of mobile homes. Sebastian has a total of 564 mobile homes, representing 7.6% of the total housing units. Wabasso has a total of 166 mobile homes, representing 31.9% of the total housing units. Fellsmere has a total of 397 mobile homes, representing 42.4% of the total housing units.

Risk Assessment. Historical data indicate the overall vulnerability of Indian River County to tornadoes is low, but some specific communities have a moderate to high vulnerability to this hazard due to the type of construction or numbers of mobile homes (manufactured housing units) within their boundaries. These communities include Sebastian, Wabasso, and Fellsmere.

Tornado risk is defined as the annual probability of significant structural damage and is divided into four probabilities of occurrence: <1 in 500, 1 in 500, 1 in 200, and 1 in 100.

- d. **Severe Thunderstorm/Lightning – Hazard Identification**
 A severe thunderstorm is defined as a thunderstorm containing one or more of the following phenomena: hail of at least 1 inch, surface wind speeds of 58 miles per hour or greater, or any combination of those two criteria (NOAA, NWS, 2014). Severe weather can include lightning, tornadoes, damaging straight-line winds, and large hail. Most individual thunderstorms only last several minutes; however, some can last several hours.

Long-lived thunderstorms are called super cell thunderstorms. A super cell is a thunderstorm that has a persistent rotating updraft. This rotation maintains the energy release of the thunderstorm over a much longer time than typical, pulse-type thunderstorms, which occur in the summer months. Super cell thunderstorms are responsible for producing the majority of

severe weather, such as large hail and tornadoes (NOAA, NWS, 2003). Downbursts also are occasionally associated with severe thunderstorms. A downburst is a strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can occur with showers too weak to produce thunder (NOAA, NWS, 2003). Strong squall lines also can produce widespread severe weather, primarily very strong winds and/or microbursts.

When a severe thunderstorm approaches, the NWS will issue an advisory. According to NOAA, NWS (1994) two possible advisories are as follows:

- Severe Thunderstorm Watch: Conditions are favorable for the development of severe thunderstorms.
- Severe Thunderstorm Warning: Severe weather is imminent or occurring in the area.

Historic Events. According to the NCDC, there have been a total of 61 thunderstorm events in Indian River County since 1953, causing a total of \$1.376 million in property damage. On 13 March 1993, a downburst in Vero Beach damaged eight homes and three commercial buildings. On 5 April 1995, a thunderstorm damaged several homes in the Windsor Subdivision in Wabasso. On 26 June 1995, a thunderstorm knocked down stadium lighting at Dodgertown in Vero Beach. In Sebastian, storms in May 1996 and August 2002 damaged a 20-passenger airplane and 3 moored vessels, respectively. In January of 1999, a thunderstorm in Vero Beach caused \$5,000 worth of damage to doors at the Vero Beach Regional Airport. In the past 5 years, the City of Vero Beach has recorded four severe thunderstorm events; and the Town of Indian River Shores has recorded three severe thunderstorm events, one of which reported moderate property damage (these were reports to NCDC through 11/2014).

NCDC has recorded 57 incidents of hail in Indian River County. The average accumulation for these events being 1.15 inches. The City of Vero Beach has recorded ten incidents of hail since 2004, the Town of Fellsmere, three; and the City of Sebastian, one (these were reports to NCDC through 11/14).

Because thunderstorms are hazards that are not bounded by geographic or topographic characteristics, there are no definite means to determine whether or not the extent of this hazard differs from jurisdiction to jurisdiction within Indian River County.

Perhaps the most dangerous and costly effect of thunderstorms is lightning. As a thunderstorm grows, electrical charges build up within the cloud. Oppositely charged particles gather at the ground below. The attraction between positive and negative charges quickly grows strong enough to overcome the air's resistance to electrical flow. Racing toward each other, the charges connect and complete the electrical circuit. Charge then surges upward from the ground at nearly one-third the speed of light and produces a bright flash of lightning (Cappella, 1997).

On average, lightning kills more people than any other weather event. Florida leads in the nation in lightning related deaths and injuries. Most lightning strike fatalities occur in June, July, and August. Between 1959 and 2013, there have been 468 lightning-related deaths in Florida (http://articles.orlandosentinel.com/2013-07-05/news/os-lightning-deaths-florida-20130705_1_lightning-alley-lightning-deaths-john-jensenus). Nationwide, lightning-related economic losses amount to over \$5 billion dollars per year, and the airline industry alone loses approximately \$2 billion a year in operating costs and passenger delays from lightning (National Lightning Safety Institute, 2004c).

Between 1959 and 2014, Indian River County recorded one lightning-related death (Wabasso) and seven injuries (4 Wabasso, 2 Sebastian, 1 Indian River Shores). According to the NCDC, two major lightning incidents caused \$1,050,000 in property damage. The majority of the damage came on 1 June 1997 when a lightning-related fire destroyed a million dollar home in Vero Beach. Between 1994 and 2009 there have been five lightning events recorded with the NCDC – resulting in seven injuries (4 in Wabasso and 3 in Sebastian) and one death (in Wabasso).

Extent/Probability. Indian River County averages more than 70 days with thunderstorms per year, with the most frequent

occurrences being between the months of July and September. With thunderstorms come lightning and Florida leads the nation for the number of lightning strikes. Both Florida and Indian River County have about 12 strikes per square kilometer per year in some places (National Lightning Safety Institute).

Vulnerability Assessment. Thunderstorm/lightning events can have the following potential impacts within a community:

- Excessive wind;
- Excessive water;
- Damaging hail;
- Electric power outage;
- Surface and air transportation disruption;
- Telecommunications system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Fire; and
- Stormwater drainage impairment.

Thunderstorms typically cause damage in a community by knocking down trees and power lines. Downed trees can block key roadways within a community, making emergency response more difficult. Downed power lines block roadways, disrupt businesses when power is lost, and pose threats to people when lines are severed. Mobile homes also are more susceptible during severe thunderstorm activity. According to the Housing Element of the Indian River County 2030 Comprehensive Plan, there are 7,193 mobile homes utilized as year-round dwelling units in the county. This represents 9.75 percent of the countywide housing stock in that category. Three municipalities within Indian River County have significant concentrations of mobile homes. Sebastian has a total of 564 mobile homes, representing 7.6% of the total housing units. Wabasso has a total of 166 mobile homes, representing 31.9% of the total housing units. Fellsmere has a total of 397 mobile homes, representing 42.4% of the total housing units.

Extent. In the United States, there are an estimated 25 million lightning flashes each year. In an average year, Florida sees around 1.4 million of these lightning strikes. This makes Florida

the “Lightning Capital of the United States.” Lightning occurs with every thunderstorm and, on average, Florida sees around 70-100 days a year with at least one thunderstorm in the state. Because of Florida’s vulnerability to thunderstorms and lightning, lightning is one of the most deadly weather hazards in the Sunshine State. This statistic makes Indian River County more vulnerable and having a higher probability to lightning having an impact on our community.

Risk Assessment. Vulnerability to severe thunderstorms and lightning is high in Indian River County, but many of the jurisdictions and population centers have only moderate vulnerabilities relative to these hazards. This variation in relative levels of vulnerability is again primarily due to construction practices and community characteristics. Working communities have a higher vulnerability to economic impacts by lightning than residential or retirement communities, all other factors being equal, while residential and retirement communities have a historically higher vulnerability in terms of lightning fatalities.

At the time of publication, a risk assessment model for severe thunderstorms was not available. The County can expect losses similar to what it experienced in the past, which is about an average of \$17,500 per year in property damage. The most vulnerable areas in Indian River County would be open areas such as the shoreline, golf courses, open fields (i.e., Vero Beach Regional Airport, Indian River Fairgrounds, sports arenas, etc.) This vulnerability is increased because these areas are where large populations congregate. There could also be a significant loss of life as well as economic impacts to transportation systems, tourism, etc.

e. **Wildfire – Hazard Identification**

Wildfire is defined by the Florida Forest Service (FFS) as any fire that does not meet management objectives or is out of control. Wildfires occur in Florida every year and are part of the natural cycle of Florida’s fire-adapted ecosystems. Many of these fires are quickly suppressed before they can damage or destroy property, homes and lives.

There are four types of wildfires:

- **Surface Fires:** Burn along the forest floor consuming

the litter layer and small branches on or near the ground.

- **Ground Fires:** Smolder or creep slowly underground. These fires usually occur during periods of prolonged drought and may burn for weeks or months until sufficient rainfall extinguishes the fire, or it runs out of fuel.
- **Crown Fires:** Spread rapidly by the wind, moving through the tops of the trees.
- **Wildland/Urban Interface Fires:** Fires occurring within the WUI in areas where structures and other human developments meet or intermingle with wildlands or vegetative fuels. Homes and other flammable structures can become fuel for WUI fires.

Florida is home to millions of residents who enjoy the state's beautiful scenery and warm climate. But few people realize that these qualities also create severe wildfire conditions. Each year, thousands of acres of wildland and many homes are destroyed by fires that can erupt at any time of the year from a variety of causes, including arson, lightning and debris burning. Adding to the fire hazard is the growing number of people living in new communities built in areas that were once wildland. This growth places even greater pressure on the state's wildland firefighters. As a result of this growth, fire protection becomes everyone's responsibility.

Florida's population has nearly tripled in the last century, and much of the growth has occurred in the undeveloped areas. The trend has created a complex landscape known as the **Wildland/Urban Interface**, a set of conditions under which wildland fires move beyond trees and undergrowth to threaten neighborhoods. Ensuring a home is compatible with nature can help save it and the entire community when wildfire strikes.

Florida's wildfire season is twelve months long. Indian River County has wildfires throughout the year. The most active part the year is typically December through the beginning of June. Generally, Indian River County experiences the greatest number of wildfires during April, May, and June. On average, Indian River County has 23 wildfires a year depending on weather conditions.

South Florida has several areas of spot building where homes

are built in neighborhoods with large, unmanaged properties nearby where little or no regular landscape maintenance is conducted. Local governments often require neighborhoods to maintain designated preserves or conservation areas where plants and wildlife must remain untouched. Work in the preserves is often restricted to minimize the impacts for wildlife and native vegetation. Yet these preserves must still be managed. Fire plays an important role because Florida plants and animals rely on it.

If the conservation areas are left unmanaged the accumulation of dead fuels and untreated new growth can create an undesirable effect, such as extreme fire behavior and habitat loss for the wildlife. Regular maintenance of preserves improves the chances for new growth. Otherwise, dead vegetation accumulates and causes fire danger to increase. These unmanaged areas force animals to forage outside their normal habitat. Regular food supplies run low for gopher tortoises and other species that rely on periodic fire to burn off the excess vegetation often found in these preserves.

Large undeveloped properties owned by city, county, state or federal agencies might have set as these areas as preserves or natural areas. A management plan is needed to reduce the hazardous buildup of dead vegetation. The Florida Forest Service continues to work together with municipalities in Indian River County to educate and facilitate mitigation in identified high risk areas.

A muck fire is a fire that consumes all the organic material of the forest floor and also burns into the underlying soil. It differs from a surface fire by being invulnerable to wind. If the fire gets deep into the ground, it could smolder for several years. In a surface fire, the flames are visible, and burning is accelerated by wind. Whereas in a muck fire, wind is not generally a serious factor (Canadian Soil Information System, 1996). Another extraordinary fact about muck fires has to do with their release of carbon dioxide. A peat bog that is on fire can release more carbon dioxide into the atmosphere than all the power stations and car engines emit in Western Europe in 1 year (Pearce, 1997). This type of fire could have a significant impact on global warming.

Historic Events. From 2009-2013, Indian River County has

had 124 wildfires that have burned 2,980 acres. Lightning, debris, children, or power lines were the most common ignition source for wildland fires in Indian River County (Florida Forest Service, 2014). Muck fires are not a frequent threat to Florida. However, during a drought in the 1980's, fires in the Everglades consumed the rich, dried out muck that had once been the bottom of the swamp. These fires burned deep into the ground and required alternative firefighting techniques. Muck fires occur very infrequently in Indian River County, and the only areas where this hazard might produce impacts are in the western portions of the County. At the present time, muck fires are not considered a significant hazard.

Vulnerability Assessment. Wildland fires can have the following potential impacts within our community:

- Electric power outage;
- Surface and air transportation disruption;
- Telecommunications system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Agricultural/fisheries damage;
- Loss of livestock;
- Damage to critical environmental resources;
- Damage to identified historical resources

Risk Assessment. The Florida Forest Service has developed a web-based Geographic Information System (GIS) mapping application called Fire Risk Assessment System (FRAS). This system provides statewide risk data that assists in determining high-risk areas and can be accessed at:

http://www.floridaforestservice.com/wildfire/wf_fras.html.

FRAS uses wildfire fuel types and densities, environmental conditions, and fire history to produce a Level of Concern (LOC), which is a number on a scale that runs from 1 (low concern) to 9 (high concern), for a given geographic area.

Low Wildfire Hazard -Homes are built with concrete and appropriate non-flammable roofing materials. Short grass, low shrubs and light duff are present. The forest and heavy

vegetation are not continuous throughout the community. Wildfires that do occur in these areas are less intense and easier to suppress because of the lower volume of fuel to feed and sustain the fire. (Vero Beach)

Medium Wildfire Hazard - Wildland vegetation is continuous throughout the community. Tall grass, medium shrubs, thick duff and ladder fuels are prominent in the area. Vegetation is less than 30 feet from homes. Homes are built with vinyl, plastic or other types of less fire-resistant materials. Access is limited and the concentration of fuel to feed fires causes more intense fire behavior. Fire suppression becomes more difficult and costly. (Fellsmere, Florida Ridge, Gifford, Olso, Roseland, Vero Beach South, Vero Lake Estates, Wabasso, and Winter Beach)

High Wildfire Hazard -Dense, highly flammable vegetation surrounds the neighborhood and is within a few feet of homes. A thick layer of vegetation is present on the forest floor. Access to the neighborhood is limited to one entrance and/or on poorly maintained roads. Homes are rarely built with fire-resistant materials. Continuous, overgrown vegetation limits access and creates intense wildfire conditions. Fire suppression is challenging and requires more resources (engines, dozers, and aircraft) and firefighters than normal. (Sebastian)

Hazard Rating Factors – Although there are many factors that affect the survivability of homes during wildfires, the following have been shown to be important in Florida.

- Access –Roadway and shoulder widths, road maintenance standards, turnarounds and road surface materials affect how quickly emergency crews can respond, as well as how quickly and safely residents can evacuate.
- Vegetation –Wildland vegetation (fuel) in Florida is highly variable both in amount and type and burns differently at different times of the year. Generally speaking, native vegetation is more likely to burn during the winter months when grasses and weeds have been killed by frosts and freezing temperatures. In addition, many plants found in Florida eco-systems have a waxy leaf surfaces or resinous sap. *These plants can burn even though the leaves are still green.* Both dead and live fuels also tend to

dry more rapidly in areas where extensive drainage systems have been constructed for development. The biggest concern for firefighters is how close the fuel (vegetation) is to the home. Firefighters recommend at least 30 feet of defensible space between home and woods.

- **Building Construction** –Construction materials such as vinyl soffits and siding and wood shake shingles have a greater potential for damage from wildfire than fire resistant building materials. Vinyl soffits will soften when exposed to heat or flames from a wildfire and fall away from the roof trusses. When this occurs, windblown embers (fire brands) can enter the attic area and ignite the ceiling/ roof.
- **Fire Protection** – The key to successful controlling any wildfire is starting suppression action (attacking the wildfire) while it is still small. Firefighter access to a dedicated supply of water is an important factor. A reliable water source that will be unaffected by a sudden power loss is much better than relying on individual residential well systems and “trucked in” water to fight a wildfire and protect homes. Numerous structures may be threatened simultaneously, requiring large quantities of water.
- **Utilities** – Above ground utilities can be both a cause of wildfire and also a hindrance to effective suppression. Florida Forest Service’s firefighting dozers and fire plows can fall into unmarked septic tanks or sever buried lines. If firefighters cannot respond or are delayed because of these hazards, there is a greater chance that threatened structures will be lost.

Vulnerability Summary. Florida has a year round fire season with the most active part taking place from April to July. The majority of wildfires in Florida (70-80 percent) are caused by humans with arson and escaped debris burning being the top two causes. The largest number of lightning-caused fires occurs in July. The drier months tend to be January, February and March but this is not always the case depending on drought conditions and frequency of frontal passages. Dry months, combined with low humidity and high wind have the highest number of fires reported.

Extent/Probability. The average occurrence in Indian River

County is 25 wildfires per year with an average of 24 acres per incident.

- f. **Extreme Temperatures (Freezing) - Hazard Identification**
A freeze is defined by the National Weather Service (NWS) as when the surface air temperature is expected to be 32 degrees or below over a widespread area for a climatologically significant period of time. The NWS issues a freeze warning when surface temperatures are expected to drop below freezing over a large area for an extended period of time, regardless of whether or not frost develops.

Hazard Identification. According to the U.S. Department of Agriculture and Consumer Services, a moderate freeze (Defined as 25°F to 28°F) may be expected every 1 to 2 years. Severe freezes (Defined as 24°F and below) may be expected on an average of once every 15 to 20 years. Freezes pose a major hazard to the agriculture industry in Indian River County on a recurring basis, and are a significant threat to the economic vitality of the State's vital agriculture industry. Agricultural lands represent nearly one-half of all land in Indian River County (University of Florida, 2001).

According to the 2010 U.S. Census, 37,504 residents (27%) in Indian River County are over the age of 65. Freezing conditions primarily affect agriculture and homeless indigents. When conditions are predicted to be below freezing, cold weather shelters may be opened. A survey of the County's homeless population was conducted in 2013, indicating that there are approximately 837 homeless individuals within the County (Florida Department of Children and Families, 2013). Inland communities away from the moderating influence of the ocean or the estuary are more vulnerable to temperature extremes as are areas with significant agricultural assets. (Council on Homelessness - Florida Department of Children and Families, 2013)

Historic Events. Indian River County has experienced four significant freezes between 1970 and the present. Florida has experienced a number of severe or disastrous freezes, when the majority of the winter crops are lost. The lowest temperature ever recorded in the state of Florida is -2°F (NCDC, 1999a) on February 13, 1899 in Tallahassee. Since December 1889, there have been at least 22 recorded severe

freezes; the most recent being in 2010, when a Secretarial Disaster Declaration was issued for crop losses estimated to be in the hundreds of millions of dollars. During this event, everything from fruits and vegetables to nursery plants and shrubs to tropical fish felt the effects of the freeze. There were no data available to document previous occurrences of severe freeze by jurisdiction.

During the 2013 revision process, data indicated that the likelihood and probability of future occurrences of severe winter storms in Florida tended to result more in flooding and tornadoes than in snow and ice. Based on all the historical evidence, it is anticipated that a moderate freeze may be expected in Florida every one to two years. Severe freezes, where the greatest numbers of winter crops are lost, may be expected on average once every five years based on historic FEMA-declared disasters.

Extent. The minimum temperature recorded in the Vero Beach area was 25 degrees (19 degree wind chill) on 12/14/10. This could be considered the minimum likely temperature to be experienced in the Vero Beach area.

Probability. Severe winter weather includes extreme cold, snowfall, ice storms, and/or strong winds, and can affect every state in the United States in some fashion. Areas where this weather is uncommon, such as Florida, are typically more affected by winter weather than regions that experience this more frequently. Agriculture is the state's primary vulnerability to this hazard since freezing temperatures can kill or damage winter crops. Significant economic impacts in Florida led the NCDC to maintain freeze and frost data throughout the state. The probability of winter storms and freezes for Indian River County is low considering the entire state of Florida maintains a five percent probability or higher of a freeze or frost annually, all of which are located in the upper half of Florida.

- g. **Extreme Temperatures (Heat) - Hazard Identification**
Temperatures that remain 10° or more above the average high temperature for a region and last for several weeks are defined as extreme heat (FEMA, 1993). Humid conditions, which add to the discomfort of high temperatures, occur when an area of high atmospheric pressure traps hazy, damp air near the ground.

Human bodies dissipate heat in one of three ways: by varying the rate and depth of blood circulation; by losing water through the skin and sweat glands; and by panting. As the blood is heated to above 98.6°, the heart begins to pump more blood, blood vessels dilate to accommodate the increased flow, and the bundles of tiny capillaries penetrating through the upper layers of skin are put into operation. The body's blood is circulated closer to the surface, and excess heat is released into the cooler atmosphere. At the same time, water diffuses through the skin as perspiration. The skin handles about 90% of the body's heat dissipating function.

Heat disorders generally have to do with a reduction or collapse of the body's ability to cool itself by circulatory changes and sweating, or a chemical (salt) imbalance caused by too much sweating. When the body cannot cool itself, or when it cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise and heat-related illness may develop. Studies indicate that, other things being equal, the severity of heat disorders tend to increase with age. Heat cramps in a 17-year old may be heat exhaustion in a 40-year old, and heat stroke in a person over 60.

When the temperature gets extremely high, the NWS has increased its efforts to alert the general public as well as the appropriate authorities by issuing special weather statements. Residents should heed these warnings to prevent heat-related medical complications. As a result of the latest research findings, the NWS has devised the "Heat Index" (HI). The HI, given in degrees Fahrenheit, is an accurate measure of how hot it really feels when relative humidity is added to the actual air temperature. The NWS will initiate alert procedures when the HI is expected to exceed 105°F for at least two consecutive days. Possible heat disorders related to the corresponding HI are listed below.

- Heat Index of 130°F or higher- Heatstroke/sunstroke with exposure for people in higher risk groups;
- Heat Index of 105°F-130°F – Sunstroke, heat cramps, and heat exhaustion likely and heatstroke possible with prolonged physical activity;
- Heat Index of 90°F-105°F – Sunstroke, heat cramps with

- prolonged exposure; and,
- Heat Index of 80°F-90°F – Fatigue possible with prolonged exposure and physical activity (NWS, 1999b).

Historic Events. The highest temperature ever recorded in the state was on June 29, 1931 at 109°F in Monticello at an elevation of 207 feet (NCDC, 2003b). From 1979-2003, excessive heat exposure caused 8,015 deaths in the United States. During this period, more people in this country died from extreme heat than from hurricanes, lightning, tornadoes, floods, and earthquakes combined. In 2001, 300 deaths were caused by excessive heat exposure. (CDC, 2009) There were no data available to document previous occurrences of extreme heat by jurisdiction.

Extent. The average annual high temperature for Indian River County is 81.4 degrees. The highest observed temperature recorded in Vero Beach was 100 degrees in June of 1950. The heat index, also known as the apparent temperature, is what the temperature feels like to the human body when relative humidity is combined with the air temperature. NOAA's National Weather Service Heat Index uses temperature and relative humidity to determine the apparent temperature. For example, if the air temperature is 100°F and the relative humidity is 55%, the heat index will be 124°F. The highest temperature in Indian River County would never be expected to exceed 124°F. Extreme heat is considered to have a low probability of occurrence, therefore this hazard will not be fully profiled.

Vulnerability Assessment. Extreme temperature events can have the following potential impacts within a community:

- Electric power outage;
 - Human health and safety;
 - Psychological hardship;
 - Economic disruption;
 - Agricultural/fisheries damage; and
 - Damage to critical environmental resources;
- Temperature extremes, both freezes and periods of excessive heat, impact communities with a larger population of older people to a greater extent than those with younger populations. According to the 2010 U.S. Census, 41,178

residents (29%) in Indian River County are over the age of 65 (<http://quickfacts.census.gov/qfd/states/12/12061.html>). Freezing conditions primarily affect agriculture and homeless indigents. When conditions are predicted to be below freezing, shelters are opened. A survey of the County's homeless population was conducted in 2013, indicating that there are approximately 837 homeless individuals within the County (<http://www.dcf.state.fl.us/programs/homelessness/docs/2013CouncilReport.pdf>). Inland communities away from the moderating influence of the ocean or the estuary are more vulnerable to temperature extremes as are areas with significant agricultural assets. During 2006–2010, about 2,000 U.S. residents died each year from weather-related causes of death. About 31% of these deaths were attributed to exposure to excessive natural heat, heat stroke, sun stroke, or all; 63% were attributed to exposure to excessive natural cold, hypothermia, or both; and the remaining 6% were attributed to floods, storms, or lightning. (<http://www.edc.gov/nchs/data/nhsr/nhsr076.pdf>). This number is greater than the number of deaths caused by hurricanes and tornadoes combined.

Extreme temperatures, especially freezes, can have significant impacts on agricultural economics in a community. In 2007, Indian River County's value of agricultural products sold was \$136 million (<http://www.freshfromflorida.com/Divisions-Offices/Marketing-and-Development/Education/For-Researchers/Florida-Agriculture-Overview-and-Statistics>). In 2008, 136,896 acres were designated for agricultural use. This represents over 51% of the unincorporated area of the county. More than 60,000 acres in Indian River County are devoted to citrus production. In 1997, the value of all farm lands and buildings in Indian River County was estimated to be \$1,243,117 (University of Florida, 2001).

Risk Assessment. At the time of publication, a risk assessment model for extreme temperatures was not available. The County can expect losses similar to what it has experienced in the past.

- h. ***Erosion (Soil) – Hazard Identification.*** Soil erosion is the deterioration of soil by the physical movement of soil particles

from a given site. Wind, water, animals, and the use of tools by man may all be reasons for erosion. The two most powerful erosion agents are wind and water, but in most cases, these are damaging only after man, animals, insects, diseases, or fire have removed or depleted natural vegetation. Accelerated erosion caused by human activity is the most serious form of soil erosion, and can occur so rapidly that surface soil may sometimes be blown or washed away down to the bedrock.

Undisturbed by man, soil is usually covered by shrubs and trees, dead and decaying leaves, or a thick mat of grass. Whatever the vegetation, it protects the soil when rain falls or wind blows. Root systems of plants hold soil together. Even in drought, the roots of native grasses, which extend several feet into the ground, help tie down the soil and keep it from blowing away. With the vegetation cover stripped away, soil is vulnerable to damage. Whether through cultivation, grazing, deforestation, burning, or bulldozing, once the soil is bare to the erosive action of wind and water, the slow rate of natural erosion is greatly increased. Losses of soil take place much faster than new soil can be created. With the destruction of soil structure, eroded land is even more susceptible to erosion.

The occurrence of erosion has greatly increased. This is because of the activities of modern development and population growth, particularly agricultural intensification. It also is in the field of agriculture that most efforts have been made to conserve soils, with mixed success (Union of International Associations, 1999).

Particles scattered by erosion can also cause problems elsewhere. Stormwater drainage systems, both natural and mechanical, are frequently clogged by loose sediment. If drainage systems are not cleared of uncontrolled sediment on a regular basis, they lose function.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

- i. **Erosion (Beach) – Hazard Identification.** Beach erosion is the wearing away of land and the removal of beach or dune sediments by wave action, tidal currents, wave currents, drainage or high winds. The wave climate impacting Indian

River County's 22.4 miles of shoreline has contributed to the long term erosion of the County's barrier island. As a result, the Florida Department of Environmental Protection (FDEP) has concluded that 15.7 miles of shoreline is "critically eroded". A critically eroded area is defined by FDEP as a segment of the shoreline where natural processes or human activity has caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreational interests, wildlife habitat, or important cultural resources are threatened or lost. To assist with its coastal management strategies and long term sustainability of its shoreline, the County has developed and adopted a Beach Preservation Plan (BPP), updated 2014. The BPP identifies the current shoreline conditions and provides cost effective strategies for future beach management along the County's shoreline in particular the FDEP classified critically eroded areas.

Wind, waves, and long shore currents are the driving forces behind coastal erosion. This removal and deposition of sand permanently changes beach shape and structure (Sea Grant Haznet, 1998). Most beaches, if left alone to natural processes, experience natural shoreline retreat. Historically, shoreline retreat is exacerbated by the effects of stabilized (jettied) coastal inlets, which interrupt the natural transport of sediment and promote erosion on the downdrift beaches. It has been estimated that on the east coast of Florida, as much as 80% of the observed erosion is directly attributable to the effects of stabilized inlets (Dean and Work 1993). As houses, highways, seawalls, and other structures are constructed on or close to the beach, the natural shoreline retreat processes may be interrupted. Construction along a historically erosive shoreline increases the likelihood of a property becoming threatened by shoreline retreat. The wave climate impacting the County's 22.4 miles of coastline has contributed to the long term erosion of the County's barrier island. The need for shore protection often results in property owners "hardening" the coast with a structure such as a seawall or revetment.

A seawall is a large concrete or steel sheet pile wall designed to protect buildings or other man-made structures from beach erosion. A revetment is a cheaper option constructed with "rip rap" such as large boulders, concrete rubble, or even old tires.

Although these structures may serve to protect beachfront property for a while, the resulting disruption of the natural

coastal processes has serious consequences for all beaches in the area. Seawalls inhibit the natural ability of the beach to adjust its slope to the ever-changing ocean wave conditions. Large waves wash up against the seawall and rebound back out to sea, carrying large quantities of beach sand with them. With each storm, the beach narrows, sand is lost to deeper water, and the long shore current scours the base of the wall. Eventually, large waves impact the seawall with such force that a bigger structure becomes necessary to continue to resist the forces of the ocean (Pilkey and Dixon, 1996).

However, other shoreline protection strategies are commonly used to address shoreline retreat such as beach nourishment. Beach nourishment is the process of replenishing sand lost as a result of erosion. In Indian River County, the preferred shoreline protection strategy is beach nourishment.

To assist with its coastal management strategies and the long term sustainability of its shoreline, the county adopted its first Beach Preservation Plan in 1988, with updates in 1998 and 2008; and is currently updating the plan again for completion in 2015.

Historic Events. Hurricanes Floyd and Irene (1999) and Hurricanes Frances and Jeanne (2004) caused significant beach erosion along the Atlantic Ocean. Oceanfront property in the City of Vero Beach, Town of Indian River Shores, and Town of Orchid also experienced beach erosion during these two events.

The 2005 hurricane season was a record breaking season with 27 named storms. Florida was impacted by Hurricanes Dennis, Katrina, Ophelia, Rita, and Wilma, and Tropical Storms Arlene and Tammy. While the cumulative impact of these storms exacerbated erosion conditions in south and northwest Florida, Indian River County was spared.

2008 was a relatively mild tropical storm season for Florida's beaches with Tropical Storm Fay affecting predominantly the Atlantic shoreline, and the gulf coast receiving the fringe impacts of Hurricanes Gustav and Ike.

Hurricane Sandy (October 26, 2012) caused an estimated \$12 million in total countywide beach erosion damages. As a result,

several emergency dune repair crossover repair projects occurred from 2012-2015.

Because of their location along the Atlantic Ocean and Intercoastal Waterway, the City of Vero Beach, Town of Indian River Shores, Town of Orchid, the City of Sebastian, and unincorporated County are more apt to experience beach erosion associated with wave or current action.

Extent. DEP has identified Indian River County as a medium-high risk to erosion. The beaches of Florida will continue to shift and change over time, especially when faced with the current levels of development. This is especially a high probability hazard, especially in conjunction with hurricanes, winter storms, and coastal flooding.

Probability. Nearly 495 miles of Florida's beaches, approximately 60 percent, are currently experiencing erosion. Erosion can have significant economic impacts on the state due to property damages, loss of beachfront property, and effects to tourism. Florida's rivers also routinely experience erosion. This is a high probability hazard for Florida, including Indian River County, and is constantly being monitored by local, state, and federal entities.

Vulnerability Assessment. Erosion can have the following potential impacts within a community:

- Soil/beach erosion;
- Navigable waterway impairment;
- Economic disruption;
- Damage to critical environmental resources; and
- Stormwater drainage impairment.

Indian River County's vulnerability to soil collapse and beach erosion is moderate along its entire coastline. The City of Vero Beach has a significant beach erosion problem, which resulted in two of the FEMA repetitive damage properties reported. Other beachfront communities report low to moderate erosion problems. Erosion also is a potential vulnerability for the communities located on both the Indian and Sebastian rivers. Vulnerability in the rest of the County is low to very low, with the exception of specific locations along some drainage canals.

The Department of Public Works has identified the following

areas as being in need of beach nourishment projects:

- Sectors 1 & 2 – R-4 to R-17;
- Sector 3 – R-20 to R-55;
- Sector 5 – R-74 to R-86; and,
- Sector 7 – R-97 to R-107.

Risk Assessment. FDEP updated a statewide assessment of beach erosion in 2014. In that assessment, FDEP defined the "critical erosion area" as a segment of shoreline where natural processes or human activity have caused or contributed to erosion and recession of the beach or dune system to such a degree that upland development, recreation interests, wildlife habitat, or important cultural resources are threatened or lost.

There are three critical erosion areas (15.7 miles) in Indian River County. The northern 9.5 miles (R1-R51.3) south of Sebastian Inlet is critically eroded threatening State Road AIA, Sebastian Inlet State Park facilities, the McLarty Treasure Museum, and private development along Ambersand Beach, Sanderling, Summerplace, and Wabasso Beach. The museum has a rock revetment, and inlet sand transfer is conducted south of the inlet. A beach restoration project has been constructed at Ambersand Beach. The northern 3.1 miles of Vero Beach (R70-R86) is critically eroded with development and recreational interests being threatened. Much of this area has seawalls, dune restoration, and small dune nourishment projects, although a major beach restoration has not yet been designed. In southern Indian River County a 3.1-mile segment (R99-R115.7) is critically eroded threatening development interests. A beach restoration project has been constructed along a portion of this area (FDEP 2010).

- j. **Droughts – Hazard Identification.** Drought is a normal, recurrent feature of climate, although many perceive it as a rare and random event. In fact, each year some part of the U.S. has severe or extreme drought. Although it has many definitions, drought originates from a deficiency of precipitation over an extended period of time, usually a season or more (National Drought Mitigation Center, 2010). It produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area producing physical

drought. This complexity exists because water is essential to our ability to produce goods and provide services (National Drought Mitigation Center, 2010).

In Indian River County, the primary sources of water are deep wells for utility systems and shallow wells for rural areas. Excess water from an interconnected series of lakes, rivers, canals, and marshes flows either north to the St. Johns River or east to the Indian River Lagoon (Indian River County Department of Emergency Services, 2002). When this cycle is disrupted by periods of drought, one of the most potentially damaging effects is substantial crop loss in the western agricultural areas of the County. In addition to obvious losses in yields in both crop and livestock production, drought in Indian River County is associated with increase in insect infestations, plant disease, and wind erosion. The incidence of forest fires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk.

The St. Johns Water Management District and County staff manage the County's water resources. Complementing the District's water management efforts during periods of critical water shortage, a countywide, uniform, forceful, contingency plan is in place to effectively restrict the use of water.

Historic Events. Florida experienced one of the most severe droughts in 2007 dating back to when records started in the early 1900s. Lake Okeechobee, the region's primary reservoir, was down to less than half a foot above its record low. The \$15 billion landscaping and nursery industries, which comprise Florida's largest agricultural sector, may have been the hardest hit. In November 2009 the lack of rainfall during rainy season led to Indian River County being named the driest county in the state and in danger of wildfires.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

Vulnerability Assessment. Drought can have the following potential impacts within a community:

- Economic disruption;
- Agricultural/fisheries damage;

- Damage to critical environmental resources; and
- Wildland fire.

While Indian River County is moderately vulnerable to impacts from drought due to the County's large agricultural land tax base, some communities are less vulnerable due to their location and non-agricultural economic base.

A few examples of direct impacts of drought are reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat. Social impacts include public safety, health, conflicts between water users, reduced quality of life, and inequities in the distribution of impacts and disaster relief. Income loss is another indicator used in assessing the impacts of drought; reduced income for farmers has a ripple effect throughout the region's economy (National Drought Mitigation Center, 2003).

The web of impacts is so diffuse that it is very difficult to come up with financial estimates of damages. However, FEMA estimates \$6 to \$8 billion in losses as the annual average (FEMA, 1995). The worst drought (36% of U.S.) in recent history occurred in July 1988, and the NCDRC reports the estimated cost as \$40 billion (National Drought Mitigation Center, 2010).

Risk Assessment. Indian River County overall, has a moderate vulnerability to the impacts from drought due to the County's large agricultural land tax base. The western area of the County is most vulnerable to the impacts of drought because this area is extensively involved in farming and ranching. As of 2012, the average annual market value of agricultural products in Indian River County was \$145 million (www.agcensus.usda.gov). The urbanized communities along the County's coast are less vulnerable due to their location and non-agricultural economic base. Potential impacts to Indian River County's potable water supply during drought conditions appear to be slight.

The Palmer Drought Index has become the semi-official drought index. It is most effective in determining long term drought—a matter of several months—and is not as good with short-term forecasts (a matter of weeks). It uses a 0 as normal,

and drought is shown in terms of minus numbers; for example, minus 2 is moderate drought, minus 3 is severe drought, and minus 4 is extreme drought. The Palmer Index can also reflect excess rain using a corresponding level reflected by plus figures; i.e., 0 is normal, plus 2 is moderate rainfall, etc.

Another reference tool is the Keetch-Byram drought index (KBDI), which is a continuous reference scale for estimating the dryness of the soil and duff layers. The index increases for each day without rain (the amount of increase depends on the daily high temperature) and decreases when it rains. The scale ranges from 0 (no moisture deficit) to 800 (prime drought condition). The range of the index is determined by assuming that there is 8 inches of moisture in a saturated soil that is readily available to the vegetation. In November, 2009, the lack of rainfall during rainy season led to Indian River County being named the driest county in the state of Florida and, according to the Florida Florida Forest Service, in danger of wildfires. According to the Keetch Bryam Drought Index, the county measured in at 649 when the normal range for that time of year is 271-420. Indian River County could reasonably expect to see a drought index of this magnitude.

- k. ***Seismic Hazards (Dam/Levee Failure) – Hazard Identification.*** Dam/levee failure poses a minor threat to population and property in Indian River County. All dams and levees are earthen structures and are State, regional, local, or privately controlled. The most significant risk related to dam/levee failure is flooding due to substantial rainfall and its eastward migration to final discharge in the Indian River Lagoon. Structural and non-structural techniques to slow and contain this runoff incorporate several drainage systems. Rainfall in excess of designed capacities could cause erosion of constructed drainage facilities and flooding of many areas including primary roadway evacuation routes (Indian River County Emergency Management, 2002). According to the National Inventory of Dams, there are five listed dams in Indian River County (South Relief Structure, Lateral C Structure, Main Canal Structure, North Relief Canal Structure, Lateral Structure #3 (United States Army Corps of Engineers, 1999).
Extent. Best available data do not indicate that there have been any dam or levee failures in Indian River County or the municipalities. The overall extent of seismic hazards in Indian River County is uniform throughout the individual jurisdictions

in the County.

- I. **Seismic Hazards (Earthquakes) – Hazard Identification.** Although Florida is not usually considered to be a state subject to earthquakes, several minor shocks have occurred over time, but only one caused any damage (USDOI, USGS, 2004).

Historic Events.

- In January 1879, a shock occurred near St. Augustine that is reported to have knocked plaster from walls and articles from shelves. Similar effects were reported in Daytona Beach. The shock was felt in Tampa, throughout central Florida, and in Savannah, Georgia as well (USDOI, USGS, 2004).
- In January 1880 another earthquake occurred, this time with Cuba as the focal point. Shock waves were sent as far north as the town of Key West (USDOI, USGS, 2004).
- In August 1886, Charleston, South Carolina was the center of a shock that was felt throughout northern Florida. It rang church bells in St. Augustine and severely jolted other towns along sections of Florida's east coast. Jacksonville residents felt many of the strong aftershocks that occurred in September, October, and November 1886 (USDOI, USGS, 2004).
- In June 1893, Jacksonville experienced a minor shock that lasted about 10 seconds. Another earthquake occurred in October 1893, which also did not cause any damage (USDOI, USGS, 2004).
- In November 1948, doors and windows rattled in Captiva Island, west of Ft. Myers. It was reportedly accompanied by sounds like distant heavy explosions (USDOI, USGS).

In November 1952, a slight tremor was felt in Quincy, a town located 20 miles northwest of Tallahassee. Windows and doors rattled, but no damage was reported (USDOI, USGS).

- m. **Seismic Hazards (Sinkholes and Subsidence) – Hazard Identification.** Sinkholes are a common feature of Florida's landscape. They are only one of many kinds of karst

landforms, which include caves, disappearing streams, springs, and underground drainage systems, all of which occur in Florida. Karst is a generic term that refers to the characteristic terrain produced by erosional processes associated with the chemical weathering and dissolution of limestone or dolomite, the two most common carbonate rocks in Florida. Dissolution of carbonate rocks begins when they are exposed to acidic water. Most rainwater is slightly acidic and usually becomes more acidic as it moves through decaying plant debris. Limestones in Florida are porous, allowing the acidic water to percolate through them, dissolving some limestone and carrying it away in solution. Over time, this persistent erosion process has created extensive underground voids and drainage systems in much of the carbonate rocks throughout the state. Collapse of overlying sediments into the underground cavities produces sinkholes (Florida Geological Survey, 1998).

The Florida Center for Instructional Technology (2008) has recorded six sinkholes in Indian River County. The first three sinkholes developed in 1981; two were located in Fellsmere and the other in Vero Beach. All three sinkholes are less than 10 feet in width. The fourth and largest developed in 1985, in Fellsmere and ranges from 31-80 feet in width. The fifth and sixth developed in 2002 and 2005, in Vero Beach and both are less than 10 feet in width. The Florida Center for Instructional Technology database does not document any sinkholes in Indian River Shores, Orchid, or Sebastian. (Maps, Etc., 2014)

Vulnerability Assessment. There are areas in western Indian River County where canal bank failures could cause or exacerbate flooding during heavy rain events or storms. This problem is, however, more related to soil erosion than to actual levee failure. There has never been any seismic activity, soil failures, and few sinkholes in Indian River County. While these hazards may exist, County vulnerability to them at this time is considered very low.

Seismic events can have the following potential impacts within a community:

- Electric power outage;
- Surface and air transportation disruption;

- Potable water system loss or disruption;
- Sewer system outage;
- Telecommunications system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Damage to identified historical resources;
- Fire;
- Toxic releases; and
- Stormwater drainage impairment.

The USDOJ, USGS and the Florida Department of Natural Resources Bureau of Geology have created a map illustrating sinkhole type, development, and distribution for the state of Florida. Sinkhole risk is categorized using four categories. According to this map, Indian River County lies in Area II, which is classified as having coverage between 30 and 200 feet thick, consisting of incohesive and permeable sand. Sinkholes are few, shallow, of small diameter, and develop gradually. Cover-subsidence sinkholes dominate in this area.

Extent: There is no risk assessment data available for seismic hazards (sinkhole only) in Indian River County.

- n. **Agricultural Pests and Diseases – Hazard Identification.** Florida is among the top three agriculture-producing states in the nation. Agriculture generates farm cash receipts of nearly \$6 billion annually, of which citrus and vegetable crops contribute more than 40%. The industry is susceptible to many hazards including freezes, droughts, and exotic pests or diseases. Agricultural crops are grown throughout the state, and every region is vulnerable to the effects of an exotic pests or disease infestation. As a result, Florida uses the second highest volume of pesticides in the nation.

Agriculture and citrus production play a key role in the Indian River County economy; 52% of the County is farmland. The main threats to the Indian River County agriculture industry are 1) Citrus canker, 2) Mediterranean fruit fly (Medfly), 3) Sugarcane pests, and 4) Tomato Yellow Leaf Curl Virus (TYLCV).

Extent. Best available data do not indicate that there have been incidents of agricultural pests and diseases in Indian River County or the municipalities.

- o. **Citrus Canker and Citrus Greening- Hazard Identification.** Citrus canker was found in Dade County in 2005, and by 2008 it had spread to 32 counties with Florida. Citrus canker is a bacterial disease of citrus that causes premature leaf and fruit drop. It affects all types of citrus, including oranges, sour oranges, grapefruit, tangerines, lemons, and limes. Symptoms found on leaves and fruit are brown, raised lesions surrounded by an oily, water-soaked area and a yellow ring or halo (Indian River County Agriculture Forum, 2009).

There is no known chemical compound that will destroy the citrus canker bacteria. In order to eradicate the disease, infected trees must be cut down and disposed of properly. It is a highly contagious disease that can be spread rapidly by windborne rain, lawnmowers and other landscaping equipment, animals and birds, people carrying the infection on their hands or clothing, and moving infected or exposed plants or plant parts.

Citrus greening, also known as huanglongbing (HLB) or yellow dragon disease is one of the most serious citrus diseases in the world. It is a bacterial disease that greatly reduces production, destroys the economic value of fruit, and can kill trees. It has significantly reduced citrus production in Asia, Africa, the Arabian Peninsula, and Brazil. Once infected, there is no cure for a tree with citrus greening disease. In areas of the world where citrus greening is endemic, citrus trees decline and die within a few years. The disease specifically attacks citrus plants and presents no threat to humans or animals.

- p. **Mediterranean Fruit Fly – Hazard Identification.** Another threat to Indian River County's agriculture industry is the Medfly. It is one of the world's most destructive pests and infests more than 250 different plants that are important for U.S. food producers, homeowners, and wildlife. It is considered the greatest pest threat to Florida's \$1.5 billion citrus crop, as well as endangering many other economically significant crops (Florida Department of Agriculture and Consumer Services, 1998a). For example, a Medfly outbreak in 1997 cost an estimated \$32 million to eradicate in Manatee,

Marion, Orange, Polk, and Sarasota counties (United States Department of Agriculture, 1999). If a long-term or widespread Medfly infestation were to occur, Florida growers would not be permitted to ship numerous fruit and vegetable crops to many foreign and domestic markets. The movement of fruits and vegetables, even within the state, would be disrupted, which could lead to higher prices in the supermarket. Costly post-harvest treatment of fruits and vegetables to meet quarantine restrictions of domestic and foreign markets would also be required. If the Medfly is not eradicated in Florida, ongoing pesticide treatments by homeowners and commercial growers will be necessary.

Adult Med flies are up to ¼ inch long, black with yellow abdomens, and have yellow marks on their thoraxes. Their wings are banded with yellow. The female Medfly damages produce by laying eggs in the host fruit or vegetable. The resulting larvae feed on the pulp, rendering the produce unfit for human consumption. In addition to citrus, med flies will feed on hundreds of other commercial and backyard fruit and vegetable crops.

Because med flies are not strong fliers, the pest is spread by the transport of larval-infested fruit. The major threats come from travelers, the U.S. mail, and commercial fruit smugglers. Several steps have been taken to prevent new infestations. State and Federal officials are working with postal authorities to develop ways to inspect packages suspected of carrying infested fruit. In addition, public education efforts carrying the message, "Don't Spread Med" are being expanded (Florida Department of Agriculture and Consumer Services, 1998b).

- q. ***Sugarcane Pests – Hazard Identification.*** Changes in sugarcane agriculture, including new disease and insect pests, have seriously impacted the quality of cane and juice delivered to the mill for processing. These changing developments affect the level of sucrose, purity, fiber, and color of cane, resulting in a loss of sugar and decrease in the quantity and quality of sugar produced (Legendre et al., 1998).

- r. ***TYLCV – Hazard Identification.*** The TYLCV is believed to have entered the state in Dade County sometime in early 1997 (Florida Department of Agriculture and Consumer Services,

1999). Symptoms vary among tomato types, but in general, leaves produced shortly after infection are reduced in size, distorted, cupped inward or downward, and have a yellow mottle. Fewer than 1 in 10 flowers will produce fruit after TYLCV infection, severely reducing yields.

The virus is transmitted by adult silverleaf whiteflies. Although frequent applications of pesticides help to decrease whitefly populations and suppress the spread of TYLCV, virus management through whitefly control is not possible in years where whitefly populations are high. Fortunately, the virus is not transmitted through seed or casual contact with infected plants.

Vulnerability Assessment. Agricultural pests and diseases can have the following potential impacts within a community:

- Human health and safety;
- Psychological hardship
- Economic disruption;
- Agricultural/fisheries damage; and
- Damage to critical environmental resources.

Agricultural pests and diseases are a more significant hazard in those areas of the County where agriculture is a more significant element in the economic base. The western portion of Indian River County is a major ranching area, and there are numerous nurseries and smaller agricultural-related businesses located throughout the County.

Risk Assessment. Because agricultural pests and diseases can have a significant impact on agricultural-related businesses, it is important to look at agricultural-related income to determine potential loss. Approximately 14 million cartons of “Indian River” fruit were exported during the 2006-2007 season. The State of Florida is the nation’s largest producer of fresh tomatoes and the crop value for the 2013-2014 season exceeds \$348 million (floridatomatoes.org, 2014). The Fellsmere and Wabasso areas are major agribusiness centers.

- s. ***Epidemics, Pandemics, Disease – Hazard Identification.*** Infectious diseases emerging throughout history have included some of the most feared plagues of the past. New infections

continue to emerge today, while many of the old plagues are still with us. As demonstrated by influenza epidemics, under suitable circumstances, a new infection first appearing anywhere in the world could travel across entire continents within days or weeks (Morse, 1995). Due to the potential of complex health and medical conditions that can threaten the general population, Florida's vulnerability to an epidemic is continually being monitored. With millions of tourists arriving and departing the state annually, disease and disease exposure (airborne, vector, and ingestion) are constantly evaluated and analyzed.

Primarily as a result of the entrance of undocumented aliens into south Florida, and the large number of small wildlife, previously controlled or eradicated diseases have surfaced. Health officials closely monitor this potential threat to the public health. The emphasis upon preventive medical measures such as school inoculation, pet licensing, rodent/insect eradication, water purification, sanitary waste disposal, health inspections, and public health education mitigate this potential disaster.

Another potential threat to south Florida's population is food contamination. Frequent news stories document that *E. coli* and botulism breakouts throughout the country are not that uncommon. Most recently, millions of pounds of possibly contaminated beef from the Hudson packing plant were seized by the Department of Agriculture and destroyed.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

Because epidemics are hazards that are not bounded by geographic or topographic characteristics, there are no definite means to determine whether or not the extent of this hazard differs from jurisdiction to jurisdiction within Indian River County.

Vulnerability Assessment. Florida is more vulnerable than many other states to possible outbreaks of infectious diseases due to the large number of international and U.S. tourists it attracts. The number of illegal aliens reaching U.S. shores also increases vulnerability to disease hazards. Indian River County's vulnerability to epidemic outbreaks is considered relatively low when assessed against other Florida counties,

primarily because its population is lower and it is not a key destination for illegal immigration. Medical facilities are adequate for current need, but would be stressed if forced to deal with a major disease outbreak.

- t. ***Tsunamis – Hazard Identification.*** A tsunami is a series of waves created when a body of water, such as in an ocean, is rapidly displaced. A tsunami has a much smaller amplitude (wave height) offshore, and a very long wavelength (often hundreds of kilometers long), which is why they generally pass unnoticed at sea, forming only a passing "hump" in the ocean. Tsunamis have been historically referred to as tidal waves because as they approach land, they take on the characteristics of a violent onrushing tide rather than the sort of cresting waves that are formed by wind action upon the ocean. Since they are not actually related to tides, the term is considered misleading and its usage is discouraged by oceanographers.

There is another phenomenon often confused with tsunamis called rogue waves. There remains debate as to whether these waves are related to tsunamis. They are included in this section as the mitigation plans address the threat in the same relative manner. The characteristics are:

- Unpredictable nature
- Little is known about the formation
- May be caused by regularly-spaced ocean swells that are magnified by currents or the atmosphere

Historic Events. The history of big waves hitting Florida is short:

- A powerful earthquake in Portugal in 1755 killed thousands there and launched a tsunami that hit much of the U.S. coast. Scientists don't know if that caused many deaths in Florida, which was sparsely populated at the time;
- An earthquake in Charleston, S.C., in 1886 triggered a wave that surged up the St. Johns River to Jacksonville, causing few if any deaths;
- An 18-foot rogue wave flooded the parked cars of sunbathers on Daytona Beach without warning in 1992. This event, called a meteorological tsunami

(or meteotsunami), was a tsunami-like wave phenomenon of meteorological origin. Tsunamis and meteotsunamis propagate in the water in the same way and have the same coastal dynamics. For an observer on the coast where it strikes, the two types would look the same and have the same impacts. Research is currently underway to better understand these events, with the goal of developing a protocol for issuing meteotsunami warnings along the U.S. coast.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

Vulnerability Assessment. Tsunami events occur most often in the Pacific Ocean, but they are a global phenomenon and all are potentially dangerous, though they may not damage every coastline they strike. Analyzing the past 150 years of tsunami records shows that the most frequent and destructive tsunamis to affect the U.S. have occurred along the coasts of California, Oregon, Washington, Alaska, and Hawaii.

However, the State of Florida is located within the Caribbean area, and over the past 156 years, the Caribbean has experienced more total tsunami events, which have ultimately resulted in over 2,500 deaths. Overall, Florida has experienced few destructive tsunami or rogue wave events, but there were several small events.

In 2012, The National Weather Service designated Indian River County as the first county in the state of Florida to be named TsunamiReady. The TsunamiReady program encourages communities to take a proactive approach to developing and implementing local tsunami plans and expanding public awareness in partnership with their local National Weather Service office. Although the chances of a tsunami impacting the east coast of Florida are extremely remote, computer modeling for a large tsunami originating from the Puerto Rico trench could inundate Indian River County beaches. The most significant impact of a tsunami would be strong waves in a 300-foot danger zone, which is the area east of A1A. Beaches would be evacuated and residents living along the coastline would be urged to move at least 15 feet up to the highest floor of a well-constructed building. Modeling results from a tsunami

triggered by a large Portugal earthquake suggest more significant tsunami impacts locally.

Risk Assessment. At the time of publication, no specific data were available to determine the local potential loss associated with a tsunami incident in Indian River County. However, state facility losses due to a tsunami impact to Indian River County are estimated to be \$22,422,125. The Tsunami Hazard Zone for Indian River County is identified as the area east of Highway A1A. There are no critical facilities (schools, fire rescue stations, government buildings, health care facilities, etc.) located within this area.

Probability: Florida has directly experienced few destructive tsunami and rogue wave events since 1900, with only five small recorded occurrences. The probability of future tsunami and rogue wave events in Indian River County is low.

2. Technological Hazards

a. **Radiological Accidents – Hazard Identification**

While an actual release of radioactive material is extremely unlikely and the immediate threat to life extremely low, vulnerability to a nuclear plant disaster could consist of long-range health effects with temporary and permanent displacement of population from affected areas. The potential danger from an accident at a nuclear power plant is exposure to radiation. This exposure could come from the release of radioactive material from the plant into the environment, usually characterized by a plume (cloudlike) formation. The area the radioactive release may affect is determined by the amount released from the plant, wind direction and speed and weather conditions (e.g., rain), which would quickly drive the radioactive material into the ground, hence causing increased deposition of radionuclides.

Thirty of the 67 counties in the State of Florida are involved in preparedness planning for a commercial nuclear power plant emergency. Emergency Planning Zones (EPZs) have been designated for each power plant to enhance planning efforts for an emergency. An EPZ is comprised of two zones, the 10-mile plume exposure zone and the 50-mile ingestion exposure zone (Nuclear Energy Institute, 2004). Specific coordinating procedures for response to a general emergency at a nuclear

power plant have been prepared in the form of standard operating procedures. These include emergency classification levels, which assist in notifying the public if a problem occurs at a plant. They are defined by four categories (FEMA, 2004):

- **Notification of Unusual Event** – The event poses no threat to plant employees, but emergency officials are notified. No action by the public is necessary.
- **Alerte**- An event has occurred that could reduce the plant's level of safety, but back-up systems still work. Emergency agencies are notified and kept informed, but no action by the public is necessary.
- **Site Area Emergency** – The event involves major problems with the plant's safety and has progressed to the point that a release of some radioactivity into the air or water is possible, but is not expected to exceed EPA Protective Action Guidelines (PAGs). Thus, no action by the public is necessary.
- **General Emergency** – The event has caused a loss of safety systems. If such an event occurs, radiation could be released that would penetrate the site boundary. State and local authorities will take action to protect the residents living near the plant. The alert and notification system will be sounded. People in the affected areas could be advised to evacuate, or in some situations, to shelter in place. When the sirens are sounded, radio and television alerts will have site-specific information and instructions.

The St. Lucie nuclear power generation plant is located 12 miles southeast of the City of Ft. Pierce on Hutchinson Island in St. Lucie County. The facility contains two reactors and is owned and operated by the Florida Power & Light Company. Counties within the 50-mile EPZ include all or portions of St. Lucie, Indian River, Glades, Osceola, Okeechobee, Brevard, Highlands, Palm Beach, and Indian River.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled

Vulnerability Assessment. Radiological accidents can have the following potential impacts on a community:

- Electric power outage;
- Surface and air transportation disruption;

- Telecommunications system outage;
- Human and health safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Damage to critical environmental resources; and
- Toxic releases.

Because of its location relative to the St. Lucie nuclear power plant, parts of Indian River County have a high vulnerability to a nuclear power plant accident or nuclear materials release. While the County's level of vulnerability is high, the frequency with which nuclear power plant accidents occur is very low, and the overall risk to the citizens of Indian River County is therefore considered low. Nuclear emergency in Indian River County has received massive emergency management attention at all levels of government. Emergency management planning and regulation relative to nuclear power plant accidents exists at the Federal, State, local, and corporate levels.

Risk Assessment.

Although extensive safeguards are required, accidents can occur. These could affect large populations through the accidental release of radiation. Other sources of radiological accidents can occur through transportation of radioactive materials and the launching of spacecraft from Kennedy Space Center. In addition, the King's Bay Nuclear Submarine Base is located in St. Mary's, Georgia, just across the state boundary of Northeast Florida. Although the facility has the potential to use and store nuclear materials, as a military facility it is not required to conduct the same radiological emergency preparedness programs as nuclear power plants, nor do they identify evacuation zones or ingestion pathways. Release of radiological materials due to a facility or transportation-related accident has the potential for affecting a number of Northeast Florida counties.

Extent: Due to the low probability of occurrence, this hazard will not be fully profiled.

- b. ***Power Failure – Hazard Identification.*** Power failure can

result from a variety of related causes, including sagging lines due to hot weather, flashovers from transmission lines to nearby trees, and incorrect relay settings. According to the electric utility industry's trade association, the potential for such disturbances is expected to increase with the profound changes now sweeping the electric utility industry.

To address times when generating capacity is tight, or falls below consumer demand due to State or local emergencies, the Florida Electrical Emergency Contingency Plan was developed. Alerts have been created to give early warning of potential electricity shortfalls and bring utilities, emergency management officials, and the general public to a state of preparedness. The Contingency Plan consists of four separate phases and procedures for each phase. (Florida Reliability Coordinating Council, 2011). The four phases are:

- **Generating Capacity Advisory** – A Generating Capacity Advisory is primarily for information purposes. It starts utility tracking activities, and it initiates inter-utility and inter-agency communication. No action by the public is required. General information may be distributed to consumers to forewarn them of conditions if necessary.
- **Generating Capacity Alert** – A Generating Capacity Alert starts actions to increase reserves. Available emergency supply options will be explored. When reserves fall below the size of the largest generating unit in the state, loss of that size unit to an unexpected mechanical failure could lead to blackouts somewhere since insufficient backup is available.
- **Generating Capacity Emergency** – A Generating Capacity Emergency occurs when blackouts are inevitable somewhere in Florida. Every available means of balancing supply and demand will be exhausted. Rolling blackouts, manually activated by utilities, are a last resort to avoid system overload and possible equipment damage. Frequent status reports are provided to agencies and the media. The Division of Emergency Management will consider using the Emergency Broadcast System to inform citizens of events and to direct them to available shelters if conditions warranted. Recognizing the consequences of a loss of electricity, individual utility emergency plans include provisions for special facilities critical to the safety and welfare of citizens.

- **System Load Restoration** – System Load Restoration is instituted when rolling blackouts have been terminated and power supply is adequate. It is the recovery stage, and efforts are made to provide frequent system status reports.

Historic Events. In the U.S., from 2 July to 10 August 1996, the Western States Utility Power Grid reported widespread power outages that affected millions of customers in several western states and adjacent areas of Canada and Mexico.

A massive power outage struck the northeast on Thursday, 14 August 2003. Areas affected by the outage included New York City and Albany, New York; Cleveland and Toledo, Ohio; Detroit and Lansing, Michigan; parts of New Jersey and Connecticut; as well as Toronto and Ontario, Canada. The most extensive power failure in history, it shut down 10 major airports, 9 power plants, affected 50 million people, and led to a declared State of Emergency in New York City. The Ford Motor Company lost production capability at 21 of its facilities. Two deaths and 71 fires were attributed to the outage in New York City alone (Gellman and Milbank, 2003). The preliminary economic impacts of this event are large. It is estimated that the power failure cost approximately \$1 billion, including \$800 million in unsold goods and services and \$250 million in spoiled food.

Starting Aug 31, 2005, Hurricane Katrina caused widespread power outages throughout Louisiana, Mississippi, Alabama, Florida, Kentucky and Tennessee. Exact totals are hard to even define especially in Louisiana parishes which became unoccupied for months. Power was also knocked out to 1.3 million customers when Katrina passed over Florida several days earlier. In total 2.6 million people were left without power as a result of the storm across the United States.

On February 26, 2008 a failed switch and fire at an electrical substation outside Miami triggered widespread blackouts in parts of Florida affecting four million people. The nuclear reactors at Turkey Point power plant were shut down on the 84 °F day. The failure knocked out power to customers in 35 southern Florida counties and spread into the northern Florida peninsula. The affected region ultimately ranged from Miami to Tampa on the state's west coast and Brevard County, home to

Cape Canaveral and the Kennedy Space Center, on the east.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

Vulnerability Assessment. Power failure can have the following potential impacts on a community:

- Electrical power outage;
- Surface and air transportation disruption;
- Potable water system loss or disruption;
- Sewer system outage;
- Telecommunication system outage;
- Human and health safety;
- Psychological hardship;
- Economic disruption; and
- Disruption of community services

Risk Assessment. Power failures have the same potential impacts in all Indian River County communities. The vulnerabilities of all communities to power failures is considered moderate. The power grid throughout Indian River County is diversified, and there are no single choke points or distribution nodes whose failure would disrupt power distribution to the entire community.

c. **Hazardous Materials Accidents – Hazard Identification.**

Hazardous materials accidents can occur anywhere there is a road, rail line, pipeline, or fixed facility storing hazardous materials. Virtually the entire state is at risk to an unpredictable accident of some type. Most accidents are small spills and leaks, but some result in injuries, property damage, environmental contamination, and other consequences. These materials can be poisonous, corrosive, flammable, radioactive, or pose other hazards and are regulated by the Department of Transportation. However, out of approximately 922 hazardous materials incidents reported statewide in 2013, 15 fatalities were reported, 245 were injured, and 5,603 were evacuated.

Emergencies involving hazardous materials can be expected to range from a minor accident with no off-site effects to a major accident, which may result in an off-site release of hazardous or toxic materials. The overall objective of chemical

emergency response planning and preparedness is to minimize exposure for a wide range of accidents that could produce off-site levels of contamination in excess of Levels of Concern established by the EPA. Minimizing this exposure will reduce the consequences of an emergency to people in the area near to facilities that manufacture, store, or process hazardous materials (Treasure Coast Regional Planning Council, 2014).

A large volume of hazardous materials is transported to and through the County by railroad and highway, air, water, and pipeline daily. Within Indian River County, there are a number of both public and private fixed facilities that produce or use hazardous materials. Coordinating procedures for hazardous material response are found within the County's Emergency Plan for Hazardous Materials.

Mishandling and improper disposal or storage of medical wastes and low-level radioactive products from medical use are also a hazard to Indian River County. For example, several years ago an incident occurred in New Jersey when improper disposal of medical wastes resulted in some of the used products ending up on Atlantic Ocean beaches.

Vulnerability Assessment. Hazardous materials events can have the following potential impacts within a community:

- Surface and air transportation disruption;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Fire; and
- Toxic releases.

A community's vulnerability to hazardous materials accidents depends on three factors. These are:

- The major transportation routes that pass through the community;
- The hazardous material generators located in or near the community; and
- The resources in terms of people and property are in an

area of possible impact from a hazardous materials release.

Overall, Indian River County has a moderate vulnerability to impacts from hazardous materials releases. There are relatively few major generators within the County, and those that do exist are generally away from major population centers. An area of high vulnerability for hazardous materials accidents is the City of Vero Beach, due to the transportation network (both highway and rail) that passes through the area.

Risk Assessment. Historic Events. Due to the low probability of occurrence, this hazard will not be fully profiled.

- d. **Transportation System Accidents – Hazard Identification.** Florida has a large transportation network consisting of major highways, airports, marine ports, and passenger railroads. The heavily populated areas of Indian River County are particularly vulnerable to serious accidents, which are capable of producing mass casualties. With the linear configuration of several major highways in Indian River County, such as interstate highways and the Florida Turnpike, major transportation accidents could occur in a relatively rural area, severely stressing the capabilities of local resources to respond effectively. Installing cameras on interstate highways and major transportation routes can assist in monitoring movement throughout the County, as well as provide for quicker response to traffic system accidents as well. A notorious example is the crash in the Everglades of ~~an~~ Jet Flight 597 on 11 May 1996, which resulted in 109 fatalities and cost millions of dollars, severely taxing the financial and public safety resources of Dade County (FDCA, 2001). Similarly, a major transportation accident could involve a large number of tourists and visitors from other countries, given Florida's popularity as a vacation destination, further complicating the emergency response to such an event. In the past, wildland fires in Florida have forced the closing of interstate highways, creating tremendous impacts on the transportation systems.

As a major industrial nation, the U.S. produces, distributes, and consumes large quantities of oil. Petroleum-based oil is used as a major power source to fuel factories and various modes of transportation, and in many everyday products, such as plastics, nylon, paints, tires, cosmetics, and detergents (EPA,

1998). At every point in the production, distribution, and consumption process, oil is stored in tanks. With billions of gallons of oil being stored throughout the country, the potential for an oil spill is significant, and the effects of spilled oil can pose serious threats to the environment.

In addition to petroleum-based oil, the U.S. consumes millions of gallons of non-petroleum oils, such as silicone and mineral-based oils and animal and vegetable oils. Like petroleum products, these non-petroleum oils are often stored in tanks that have the potential to spill, causing environmental damages that are just as serious as those caused by petroleum-based oils. To address the potential environmental threat posed by petroleum and non-petroleum oils, the EPA has established a program designed to prevent oil spills. The program has reduced the number of spills to less than 1% of the total volume handled each year (EPA, 1998).

Indian River County has about 18 miles of Atlantic Ocean coastline that is subject to contamination caused by an oil spill.

By Executive Order, the responsibility for preparing response plans for coastal oil spills is designated to the Florida Department of Environmental Protection, Division of Florida Marine Patrol (Indian River County Emergency Management Division, 2000). The Florida Coastal Pollutant Spill Plan has been prepared to coordinate response procedures and recovery efforts after a spill. There are two active oil field regions in Florida: in Escambia and Santa Rosa counties in the Panhandle, and Collier, Dade, Hendry, and Lee counties in southwest Florida.

Vulnerability Assessment. Transportation system accidents can have the following potential impacts within a community:

- Surface and air transportation disruption;
- Navigable waterway impairment;
- Human health and safety;
- Economic disruption;
- Disruption of community services;
- Fire; and
- Toxic releases.

Vero Beach Regional Airport began limited commercial air

service in the later part of 2015. The airport is also home to a major general aviation facility (Piper Aircraft) with two large flight schools, and considerable private and charter air traffic. Aviation is an important element of the economy in Indian River County, and this activity raises the County's vulnerability to aviation-associated accidents. Vulnerability to transportation system accidents also is associated with the highway and rail systems that run through the County. Individual community and population center vulnerabilities to this hazard are entirely dependent upon location. The cities of Vero Beach and Sebastian have higher vulnerabilities to rail system accidents. The western unincorporated portion of the County has a higher vulnerability to major highway accidents due to the presence of I-95. The Towns of Orchid and Indian River Shores have a low vulnerability in this area. The Florida East Coast Railroad blocks traffic to the hospital when trains pass through town; grade separated overpasses are necessary at 41st Street, Aviation Boulevard and 33rd Street, and 4th Street.

Risk Assessment. *Historic Events.* Due to the low probability of occurrence, this hazard will not be fully profiled.

- e. **Wellfield Contamination – Hazard Identification.** The development of wellfield protection programs is a major preventative approach for the protection of community drinking water supplies. Wellfield protection is a means of safeguarding public water supply wells by preventing contaminants from entering the area that contributes water to the well or wellfield over a period of time. Management plans are developed for the wellfield protection area that include inventorying potential sources of ground water contamination, monitoring for the presence of specific contaminants, and managing existing and proposed land and water uses that pose a threat to ground water quality.

Ground water is an essential natural resource. It is a source of drinking water for more than half of the U.S. population and more than 95% of the rural population (Browning). In addition, ground water is a support system for sensitive ecosystems, such as wetlands or wildlife habitats.

Between 1971 and 1985, there were 245 ground water related outbreaks of disease, resulting in more than 52,000 individuals being affected by associated illnesses (Browning). While most of these diseases were short-term digestive disorders caused

by bacteria and viruses, hazardous chemicals found in wells nationwide also pose risks to public health.

The 1986 amendments to the federal Safe Drinking Water act require states to implement wellfield protection programs for public water wells. Prevention strategies include maintaining the isolation distances from potential contamination sources, reporting to the state violations of the isolation distance, and asking a local governmental unit to regulate these sources.

Cleaning up contaminated ground water can be technically difficult, extremely expensive, and sometimes simply cannot be done. Contaminated ground water also affects the community by discouraging new businesses or residents from locating in that community.

Vulnerability Assessment. Wellfield contamination can have the following potential impacts within a community:

- Potable water system loss or disruption;
- Sewer system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption; and
- Disruption of community services.

Wellfield contamination has not been a major problem for most of Indian River County. There is some potential exposure to this hazard in the eastern portion of the County, but overall, the County vulnerability to this hazard is considered low. The County addresses the issue of wellfield contamination in the Comprehensive Growth Management Plan – Future Land Use Element.

Risk Assessment. Historic Events. Due to the low probability of occurrence, this hazard will not be fully profiled.

f. ***Communications Failure – Hazard Identification.***

As society emerges from industrial production into the age of information, we are seeing new kinds of technological accidents/disasters. Recently, a communications failure occurred that was the worst in 37 years of satellite service. Some major problems with the telecommunications satellite Galaxy IV drastically affected 120 companies in the paging

industry (Rubin, 1998). Radio and other forms of news broadcasts also were affected. The pager failure not only affected personal and business communications, but emergency management and medical personnel as well.

Although telephone calls by land lines are among the safest communication technology, and the most resistant to space weather effects, they have also been in rapid decline thanks to the wide spread adoption of cellular and mobile phones, especially among the under-30 population. According to an article in *The Economist* [2009] customers are discontinuing landline subscriptions at a rate of 700,000 per month, and that by 2025 this technology will have gone the way of telegraphy. Between 2005 and 2009, the number of households with cell phone-only subscriptions rose from 7% to 20%. In terms of space weather vulnerability, there is one important caveat. Without an electrical power grid, conventional land-lines fail, and cell phones may not be recharged even though the cell towers may have emergency back up power capability. An example of this vulnerability occurs whenever natural disasters strike and cell towers are unavailable, or the crushing load of cell traffic renders the local tower network unusable. Moreover, one does not have to wait for power grid failure to have an impact on cell phone access during episodes of solar activity (Space Weather – Impacts, Mitigation and Forecasting – (https://www.vsp.ucar.edu/Heliophysics/pdf/Odenwald_Space_Weather-Final.pdf)).

Vulnerability Assessment. Communication failure can have the following potential impacts within a community:

- Telecommunications system outage;
- Economic disruption; and
- Disruption of community services.

Communications failures have a greater potential to produce adverse economic impacts in business-based rather than retirement or residential communities. On the other hand, communications system failures in residential and retirement communities may put more human lives at risk. Indian River County's vulnerability to communications systems failures is generally considered moderate. The City of Vero Beach has a higher vulnerability to this hazard because it is the center of government and business within the County, and Fellsmere has a low vulnerability due to its location and small population

size. Basically, Indian River County's vulnerability to this hazard is no greater or less than most other Florida coastal counties.

Risk Assessment. Historic Events. Due to the low probability of occurrence, this hazard will not be fully profiled.

g. **Military Ordnance from WWII – Hazard Identification.**

Unexploded military ordnance is a hazard unique to Indian River County. The military used the Fort Pierce Naval Amphibious Training Base, an area of about 19,000 acres between Vero Beach and Jensen Beach, during World War II for amphibious training and to develop and test procedures for breaching and removing beach fortifications expected to be encountered in Europe and Japan. A variety of ordnance was tested against these fortifications. Training at the base included testing of bombs, rockets, and mines. Several explosive devices left over from these training missions have been found along the shores of Vero Beach and Ft. Pierce. Public exposure to unexploded ordnance could occur primarily as a result of three types of activities: earth moving (building construction, pool construction, and major landscaping), recreational diving, and use of beach areas. Unexploded ordnance also may wash ashore or be exposed after storms (Indian River County Department of Emergency Services, 2002). The U.S. Army Corps of Engineers (Jacksonville office) with the full cooperation of Indian River County Department of Emergency Management, is responsible for coordinating the disposal of any found items with the U.S. Navy, the U.S. Coast Guard, Florida Fish and Wildlife Conservation Commission and Indian River County.

The most recent finding, in January, 2014, was during an offshore removal action conducted by the U.S. Army Corps of Engineers (Corps) in Indian River County, south of Vero Beach, to address debris associated with past military activities in the area. Contractors discovered two suspected bombs in approximately 11 feet of water. An explosives and ordnance disposal unit from the Mayport Naval Station excavated the items and towed them approximately one mile offshore for assessment and possible underwater detonation.

Vulnerability Assessment. Unexploded military ordnance can have the following potential impacts within a community:

- Health and human safety;
- Psychological hardship;
- Damage to critical environmental resources; and
- Toxic release.

There is some exposure to risk from unexploded military ordnance in Indian River County, but the overall vulnerability of County residents to this hazard is very low. The communities most vulnerable to this hazard are the City of Vero Beach and the unincorporated areas along the eastern side of Hutchinson Island south of Vero Beach to the St. Lucie County line. While old military ordnance does occasionally surface along these beaches, there has never been a case where this ordnance was still live.

Risk Assessment. *Historic Events.* Due to the low probability of occurrence, this hazard will not be fully profiled.

3. Societal Hazards

a. ***Terrorism and Sabotage – Hazard Identification.***

(1) Terrorism

Terrorist attacks may take the form of induced dam or levee failures, the use of hazardous materials to injure or kill, or the use of biological weapons to create an epidemic. While there have not been any successful acts of terrorism committed in Florida in recent years, it is recognized that the state has many critical and high-profile facilities, high population concentrations, and other potentially attractive venues for terrorist activity that are inherently vulnerable to a variety of terrorist methods. Governmental/political, transportation, commercial, infrastructure, cultural, academic, research, military, athletic, and other activities and facilities constitute ideal targets for terrorist attacks, which may cause catastrophic levels of property and environmental damage, injury, and loss of life. Furthermore, a variety of extremist groups are known to operate within Florida, and potential terrorist attacks have been investigated and averted in recent years (Indian River County Department of Emergency Services, 2002).

Acts of terrorism also are capable of creating disasters that threaten the safety of a large number of citizens. The U.S. has been relatively untouched by the storm of terrorist activities experienced in other parts of the world; however, in recent years, an increasing incidence of terrorism has been recorded in this nation.

The Federal government has recognized that the U.S. has entered the post-Cold War era. As a result, Federal planning guidelines regarding military threats are in transition. However, nuclear weapons continue to be a serious planning concern especially in areas surrounding military installations (Indian River County Department of Emergency Services, 2002). Those involved with the emergency management of government monitor the influx of undocumented aliens into south Florida from areas unfriendly to the interests of the U.S.

Historic Events. On 11 September 2001, terrorists attacked the World Trade Center in New York City and the Pentagon in Washington, DC, crashing hijacked commercial airplanes into the structures. All told, approximately 3,000 civilians and emergency response personnel perished in the attack. The long-term economic and psychological impacts of this event are astounding. New York City alone experienced capital losses totaling 34 million dollars. The attack on the World Trade Center resulted in a loss of 12.5 million square feet of office space and damaged 7.7 million more. The insured losses associated with the event totaled 52 million dollars. The City estimates that 125,300 jobs were lost because of the attack (National Conference of State Legislatures, 2003). The September 11th attacks also had local connections to Indian River County as some of the New York City terrorists received flight training at the Vero Beach Regional Airport.

(2) ***Computer Accidents, Sabotage and Critical Infrastructure Disruption – Hazard Identification.***

The President's Commission on Critical Infrastructure

Protection (PCCIP) recently reported that there is increasing threat that the U.S. could suffer something similar to an "Electronic Pearl Harbor" (Rubin, 1998). Networked information systems present new security challenges in addition to the benefits they offer. Long-term power outages could cause massive computer outages, with severe economic impacts such as loss of sales, credit checking, banking transactions, and ability to communicate and exchange information and data. "Today, the right command sent over a network to a power generating station's control computer could be just as effective as a backpack full of explosives, and the perpetrator would be harder to identify and apprehend," states the PCCIP report.

With the growth of a computer-literate population, increasing numbers of people possess the skills necessary to attempt such an attack. The resources to conduct a cyber attack are now easily accessible everywhere. A personal computer and an Internet service provider anywhere in the world are enough to cause a great deal of harm. Threats include:

- Human error;
- Insider use of authorized access for unauthorized disruptive purposes;
- Recreational hackers - with or without hostile intent;
- Criminal activity - for financial gain, to steal information or services, or organized crime;
- Industrial espionage;
- Terrorism - including various disruptive operations; and
- National intelligence - information warfare, intended disruption of military operations.

The effects of such activities may take the form of disruption of air traffic controls, train switches, banking transfers, police investigations, commercial transactions, defense plans, power line controls, and other essential functions. As the Internet becomes more and more important, the loss of its services, whether by accident or intent, becomes a greater

hardship for those relying on this new form of communication. Computer failures could affect emergency communications as well as routine civilian applications, such as telephone service, brokerage transactions, credit card payments, Social Security payments, pharmacy transactions, airline schedules, etc.

Vulnerability Assessment. Terrorism and sabotage events can have the following potential impacts within a community:

- Electric power outage;
- Surface and air transportation disruption;
- Potable water system loss or disruption;
- Sewer system outage;
- Telecommunications system outage;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Damage to critical environmental resources;
- Damage to identified historical resources;
- Fire; and
- Toxic releases.

The possibilities for terrorism and sabotage in Indian River County are extremely limited, and the County's vulnerability to this hazard is very low. The City of Vero Beach has a slightly higher vulnerability to terrorism as the center of government, but this vulnerability is still considered low. The towns of Indian River Shores and Orchid have a slightly higher risk of what may be described as "celebrity terrorism" due to the national prominence of some of their citizens, but the overall community vulnerability still remains low.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

b. ***Civil Disturbance – Hazard Identification.***

As in any other area, Indian River County is subject to civil disturbances in the form of riots, mob violence, and a breakdown of law and order in a focalized area. Communities

with racial mixtures, gang violence, and drug trafficking are increasingly aware of the need to plan for civil disturbance emergencies (Indian River County Department of Emergency Services, 2002). Although they can occur at any time, civil disturbances are often preceded by periods of increased tension caused by questionable social and/or political events such as controversial jury trials or law enforcement actions (Indian River County Department of Emergency Services, 2002). Police services are responsible for the restoration of law and order in any area of the County.

Vulnerability Assessment. Civil disturbance can have the following potential impacts within a community:

- Surface and air transportation disruption;
- Human health and safety;
- Psychological hardship;
- Economic disruption;
- Disruption of community services;
- Damage to identified historical resources; and
- Fire.

The potential for civil disturbances in Indian River County is considered very low. The City of Vero Beach has a moderate vulnerability in this area, but in general, civil disturbance is not a significant hazard faced by Indian River County.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

c. ***Immigration Crisis – Hazard Identification.***

Florida's location as the nearest U.S. landmass bordering the Caribbean basin makes it a chosen point of entry for many migrants attempting to enter the country illegally. A major consequence of a mass arrival of illegal immigrants could be disruptive to the routine functioning of the impacted community, resulting in significant expenditures related to the situation. An example of this threat occurred in 1994, when the state responded to two mass migration incidents. In May 1994, there was an unexpected migration of approximately 100 Haitian refugees, while in August 1994, there was an influx of 700 Cubans (Florida Department of Community Affairs, 1998).

These events are typically preceded by periods of increasing tension abroad, which can be detected and monitored.

Enforcement of immigration laws is a federal government responsibility. However, it is anticipated that joint jurisdictional support of any operation will be required from the state and local governments.

The Atlantic shore of Indian River County is the frequent scene of the arrival of undocumented aliens, usually Haitian or Cuban. The county has both the history and the potential for the unannounced arrival of a large number of aliens. Until relieved of the responsibility by the state and federal governments, Indian River County must be capable of providing mass refugee care to include shelter, food, water, transportation, medical, police protection, and other social services.

Vulnerability Assessment. Immigration crises can have the following potential impacts within a community:

- Human health and safety;
- Psychological hardship;
- Economic disruption; and
- Disruption of community services.

Reviewing the data on past illegal immigration and mass population movements such as the Haitian influx and Cuban raft incidents of the 1980's indicates that illegal immigration has never reached a crisis state for the local authorities in Indian River County. Overall, the County vulnerability to this hazard is very low. Due to demographic features, the City of Vero Beach has a slightly higher, but still low vulnerability to illegal immigration impacts.

Extent. Due to the low probability of occurrence, this hazard will not be fully profiled.

b. ***Special Events (dignitary visits, festivals, etc.)***

Due to the low probability of occurrence, this hazard will not be fully profiled.

Figure 2. Indian River County hazard vulnerability by incorporated jurisdiction and population centers.

Hazard Category	Jurisdictions					Population Centers						County
	Town of Fellsmere	Town of Indian River Shores	Town of Orchid	City of Sebastian	City of Vero Beach	Uninc. Orchid Island	South County Area	Route 60 Area	Wabasso Area	Vero Lake Estates	Western County	Overall Vulnerability
Natural Hazards												
Flood	M	M	M	M	□	M	M	M	M	M	□	M
Tropical storm/Hurricane	M	M	M	M	M	M	M	M	M	M	□	M
Tornado	□	√	√	□	□	√	□	□	□	□	□	□
Severe Thunderstorm/Lightning	□	□	□	□	M	□	□	□	□	□	□	□
Wildfire	□	√	√	√	√	√	□	□	M	□	M	□
Extreme Temperatures	√	□	□	√	√	√	□	√	□	√	□	□
Erosion	F	□	□	√	M	□	√	√	√	√	F	□
Drought	□	√	√	□	□	√	□	√	□	√	√	□
Seismic hazards (sink holes/soils failure)	√	√	√	√	√	√	√	√	√	√	√	√
Agricultural pest and disease	√	□	□	√	□	√	□	□	M	√	M	□
Epidemic	□	√	√	□	□	√	□	□	□	□	√	□
Tsunami	F	□	□	□	□	□	□	F	□	F	F	F
Technological Hazards												
Radiological accidents including nuclear power plant accidents	□	□	□	□	M	M	M	M	□	□	□	□
Power failure (outages)	□	□	□	M	M	□	□	M	□	□	√	□
Hazardous materials accident	□	F	F	□	□	F	□	□	√	√	□	□
Transportation system accidents	√	F	F	□	M	√	□	□	□	√	√	√

Hazard Category	Jurisdictions					Population Centers						County
	Town of Fellsmere	Town of Indian River Shores	Town of Orchid	City of Sebastian	City of Vero Beach	Uninc. Orchid Island	South County Area	Route 60 Area	Wabasso Area	Vero Lake Estates	Western County	Overall Vulnerability
Wellfield contamination	□	√	√	□	□	√	□	□	□	√	√	□
Communications failure	√	√	√	√	□	√	√	□	√	√	F	√
Military ordnance	F	√	√	F	√	√	F	F	F	F	F	F
Societal Hazards												
Terrorism and sabotage	F	√	√	F	√	F	F	F	F	F	F	F
Civil disturbance	√	F	F	√	√	F	√	√	√	F	F	√
Immigration crisis	√	F	F	√	√	F	√	√	√	F	F	√

Unincorporated Hutchinson Island = Areas of the barrier not within city jurisdictions
 South County Area = The area south of the City of Vero Beach and west of the Indian River (Both sides of U.S. 1)
 Route 60 Area = Area west of the City of Vero Beach along Route 60 between the City and I-95
 Wabasso Area = The area to the south of the City of Sebastian
 Vero Lake Estates = The large development area west and south of the City of Sebastian
 Western County = Area west of I-95

M = High, □ = Moderate, √ = Low, and F = Very Low

B. GEOGRAPHIC INFORMATION

Indian River County is located in southeast central Florida, along the Atlantic Ocean coast. The County has a total area of approximately 543 square miles (347,520 acres) of which 41.1 square miles (26,298 acres) are water, and 502 square miles (321,280 acres) are land area. Included in the land area are five (5) municipalities containing approximately 37.2 square miles (23,830 acres). Indian River County is about 33 miles wide from east to west and 22 miles long from north to south. In addition to the Atlantic Ocean on the east, the County is bounded by Brevard County on the north, St. Lucie County on the south and Okeechobee and Osceola Counties on the west.

The mainland topography of Indian River County is generally low in elevation, without significant deviation. However, two ridges parallel the coast, one about 1 mile inland from the Indian River with elevations up to 30 feet, the other about 10 miles inland with similar elevations. The coastal barrier islands have typical dune topography with dune elevations of about 15 feet.

In Indian River County, the average rainfall is approximately 55 inches per year. This rainfall is unevenly distributed, much of it occurring during the summer and early fall months. The two geographic ridges that parallel the coast generally divide the drainage area of Indian River County. Areas west of the inland ridge are relatively flat and drain westward to the St. John's Marsh, aided by extensive canals, which have been constructed for agricultural use. The basin area between the ridges is generally low and relatively flat. The South Prong of the St. Sebastian River and a network of manmade canals provide drainage of the northern portion of this basin area. The central and southern portions have essentially no natural watercourses. This area is drained by an extensive network of manmade canals and ditches that are interconnected and joined with Main Relief, North Relief, and South Relief Canals and that discharge into the Indian River.

The occurrence of floods is an important concern for communities with coasts subject to storm events, or for any community with water bodies and waterways having flood hazard areas. A flood hazard is any land area that is susceptible to being inundated by water from any source. Flooding is a temporary condition of partial or complete inundation of normally dry land areas. Floods can occur throughout the Indian River County area anytime during the year; however, they are most frequent during the rainy season from May to October. The streams and canals in the low area between the parallel ridges, as well as those that discharge into the St. John's River, are subject to flooding from prolonged heavy rainfalls.

Low, swampy, inland areas are subject to flooding during wet periods and coastal areas of the county are subject to storm surge flooding resulting from hurricane or tropical storm activity. Areas along the Indian River Lagoon may also experience flooding from storm surge caused by hurricane winds piling water against shorelines, causeways and bridges. A diagram of FEMA flood zones for Indian River County is attached to this document and identified as Figure 3.

FEMA Flood Zones for Indian River County, FL

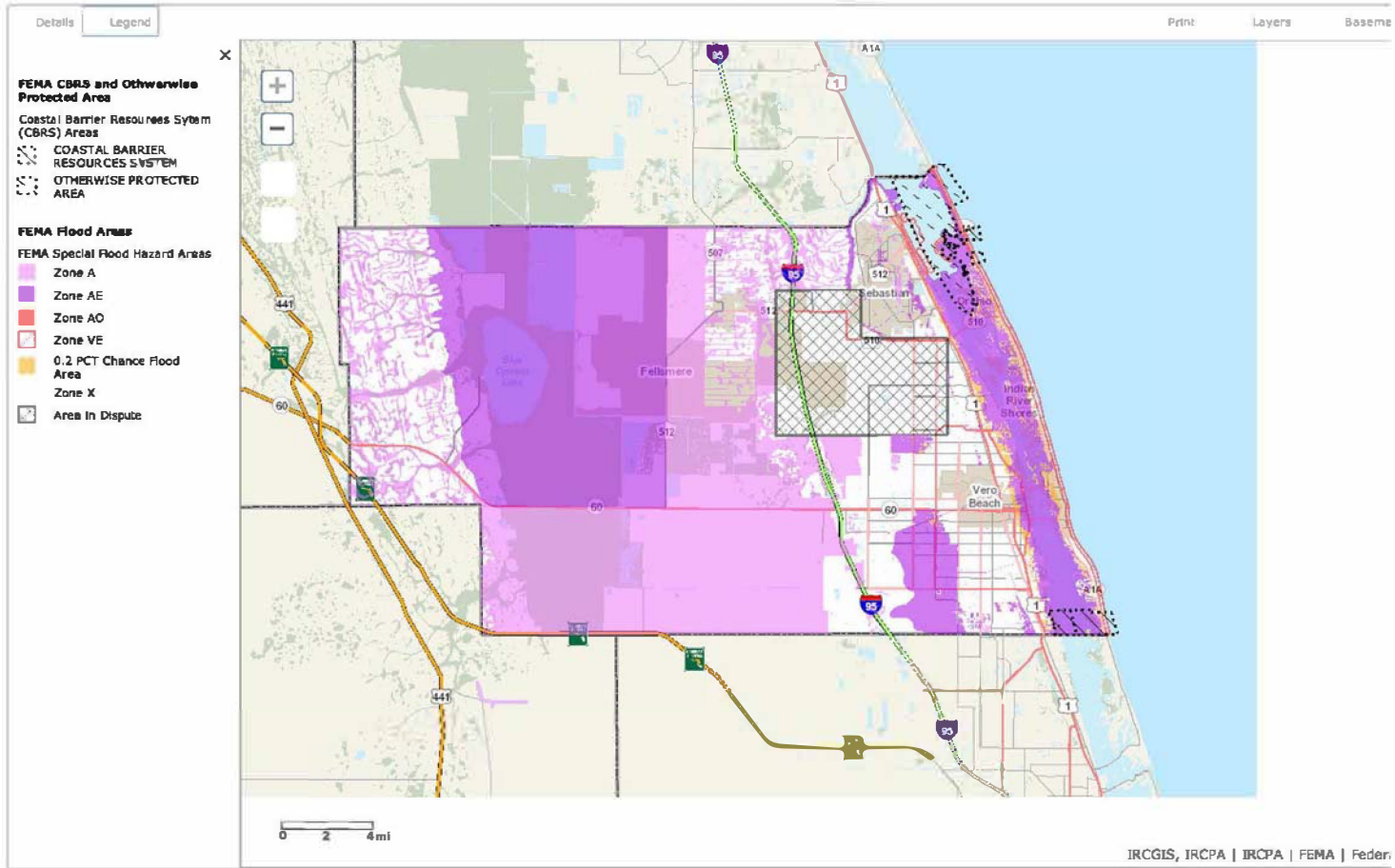


Figure 3
FEMA Flood Zones for Indian River County

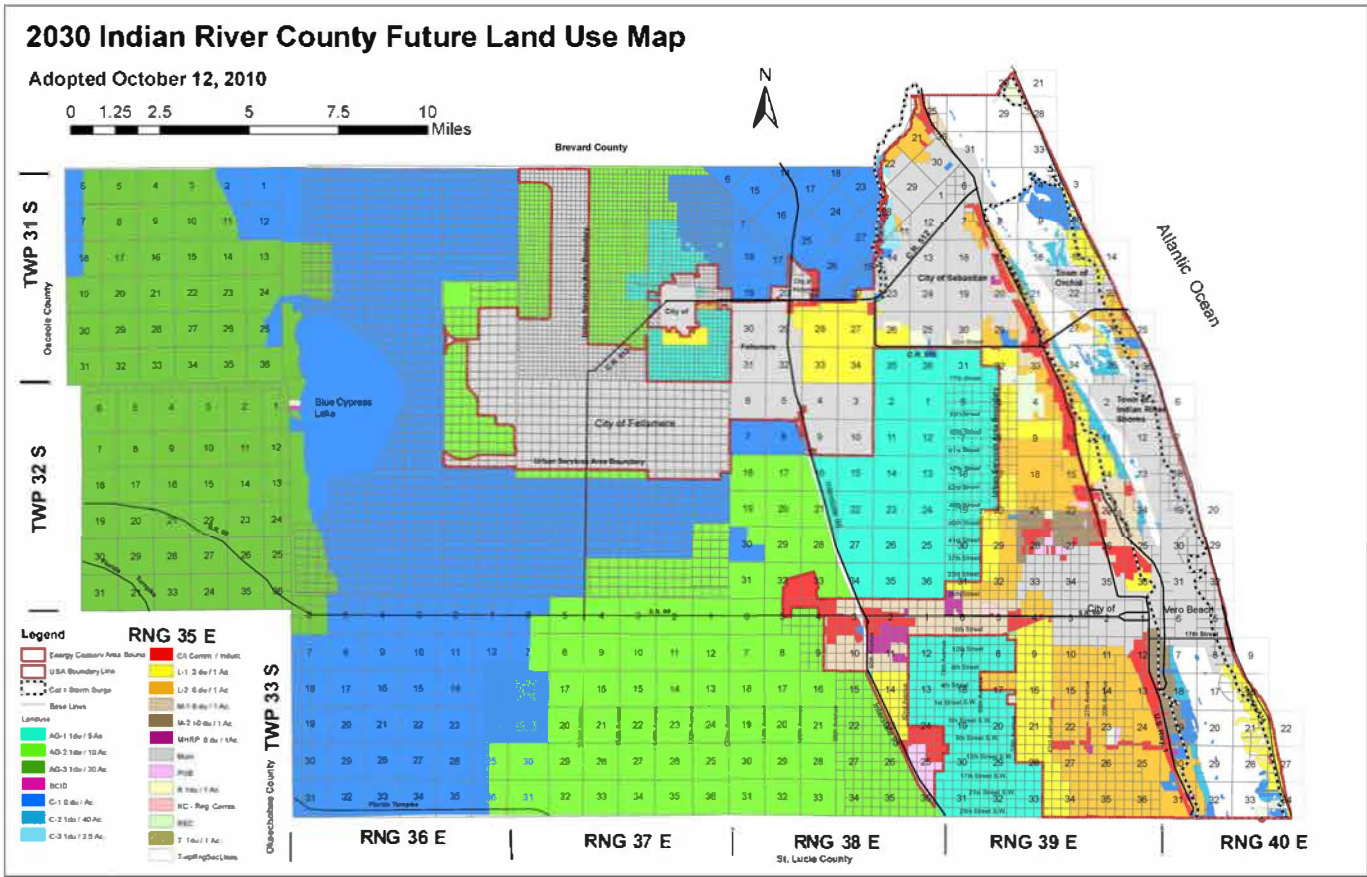
Nearly two-thirds of the total land area is west of Interstate 95; however, more than 90% of the population resides in the eastern third of the County, and is vulnerable to the effects of both man-made and natural disasters. The City of Fellsmere is the only community in the western part of the County. The land along the western boundary of the County is used primarily for range and pasture land with few residential structures. To the east is the St. Johns marsh, a large freshwater marsh extending the entire length of the County. Included in this significant wetland is the 6,000-acre Blue Cypress Lake. The land between the marsh and I-95 is devoted primarily to agriculture, and subject to disaster caused by weather phenomena. Other than the City of Fellsmere in the north, there is little human settlement in this area.

The eastern portion of the County can be divided into two major areas: the mainland and the barrier island. The southern portion of the eastern mainland is the most highly developed area and contains the highest population concentration in the County. The central area of the mainland has experienced sparse development. Residential and commercial activities are concentrated along the U.S. 1 corridor. A chart depicting the existing land uses in the coastal area is attached to this document and identified as Figure 4.

Figure 4

EXISTING LAND USES (2010*)	
	ACRES
A. RESIDENTIAL	<u>32,761</u>
(1) Single family	15,823
(2) Multi-family	1,926
(3) Mobile homes	1,084
(4) Vacant residential	13,068
B. COMMERCIAL	5,235
C. INDUSTRIAL	749
D. AGRICULTURAL	136,896
E. RECREATIONAL	1,283
F. CONSERVATION (PUBLICLY OWNED)	105,186
G. PUBLIC FACILITIES	722
H. OTHER	3,050
TOTAL UNINCORPORATED LAND AREA	272,392

Source: *Indian River County 2030 Comprehensive Plan



The northern mainland portion of the County contains Sebastian, the second largest city in population. Sometime in the near future, Sebastian is expected to become the largest city in the County. Agricultural uses in this area are confined to areas south of the city.

The barrier island can be characterized as three distinct areas. The northern third of the island is the least developed. Natural vegetation and citrus groves cover much of the area. The Town of Orchid, known for its high quality citrus, is located in this northern portion of the island. The Pelican Island Wildlife Refuge, the first in the nation, occupies several small islands in the Indian River lagoon as well as some wetland area on the barrier island.

The Sebastian Inlet Recreation Area occupies the northernmost tip of the island. Portions along this part of the island are designated as undeveloped coastal barrier.

The island is approximately 22 miles long and averages in width from 100 feet to 1 1/2 miles. The average height above mean sea level is eight feet with highs of sixteen feet and lows of two feet above mean sea level. The island is accessible by four bridges that connect it to the mainland. One bridge, a two-lane, is located in St. Lucie County and provides access to the Island from the extreme South. Three bridges in Indian River County provide accessibility to the island:

- A two-lane bridge in the North county area (Wabasso)
- A four-lane (Merrill Barber Bridge) located in mid-county
- A four-lane (17th Street Bridge) also located in mid-county approximately ten (10) blocks south of the Barber Bridge

Orchid (Hutchinson) Island provides a land barrier to the mainland of any activity operated in the Atlantic Ocean for the entire coastal area of the County.

Indian River County is enriched with a diversity of upland and wetland ecological communities, varying in composition as the county extends from the Atlantic Ocean and Indian River Lagoon westward to the St. Johns Marsh and Blue Cypress Lake. A Soil Conservation Service (SCS) publication entitled "26 Ecological Communities of Florida" identifies at least thirteen different ecological communities within Indian River County.

The major ecological communities within Indian River County are identified as follows:

- South Florida Coastal Strand
- Sand Pine/Xeric Scrub
- South Florida Flatwoods
- Tropical/Coastal Hammocks
- Freshwater Wetlands
- Indian River Lagoon and Associated Estuarine Wetlands
- Near shore Atlantic Ocean

Of particular concern are those ecological communities located in the eastern portion of the county, where development pressures conflict with the preservation of diminishing habitats. Tropical hammock communities and coastal scrub communities are examples of habitats found almost exclusively in Florida that are in danger of disappearing or being drastically reduced, along with their unique flora and fauna. A balance of natural system preservation and the rights of property owners to develop land is an important issue to be considered as county population and development growth continues.

C. DEMOGRAPHICS

In 2014, the estimated countywide population is 140,928, up 25% from 2000. The Treasure Coast has experienced tremendous growth since the 1960's, and this trend is expected to continue. According to a FEMA Post-Disaster Recovery and Redevelopment Guide, St. Lucie County was ranked 20th of the Atlantic and Gulf Coast counties with the largest population growth rates between 1960 and 1990. The County's growth rate during this time period was 256.4%. The county is supported by an economy based primarily on tourism, light industry, and agriculture. Area wise, this provides approximately 274 persons per square mile throughout the entire county. However, the majority of the County's population resides within the eastern ten miles of the County, or approximately 600 persons per square mile. A chart representing the estimated* population centers in the county is attached to this document and identified as Figure 5.

Additional statistics reveal that much of the immigrating population has produced a median age in the County that is nearly ten years greater than that of the median age of the United States.

Figure 5

POPULATION CENTERS IN THE COUNTY (2010 Census)	
MUNICIPALITY	POPULATION
Unincorporated County	91,363
Vero Beach	15,220
Sebastian	21,929
Fellsmere	5,197
Indian River Shores	3,901
Orchid	415
Total County Population	138,025
Census Designated Places (2000 Census)	
Gifford	9,590
Wabasso	609
Roseland	1,472
Vero Beach South	23,092
Florida Ridge	18,164
South Beach	3,501
North Beach	243
Winter Beach	965
West Vero (S.R. 60 Corridor)	7,138
Wabasso Beach	1,853
Unallocated	12,354
Total Unincorporated	78,981

¹ <http://www.citypopulation.de/php/usa-census-florida.php?adm2id=12061>

Population by Age

Persons 0 to 4 years	6,508
Persons 5 to 17 years	19,444
Persons 18 to 64 years	74,572
Persons 65 years and over	37,504

<http://censusviewer.com/county/FL/Indian%20River>

Indian River County houses inmates in two locations. The Indian River County Jail, located in the unincorporated area of central Indian River County, inmate population ranges from the least serious misdemeanor violations to the most serious felony violations of Florida Law and includes male and females with a wide range of age groups from senior adults to juvenile offenders. The jail recently underwent renovations (2007) and has increased the inmate housing capacity to 612. The Indian River Correctional Institution, located in the unincorporated area of south Indian River County, was established in 1976 to house youthful offender male inmates (aged 14-18). It is designated to accept 381 minimum, medium, custody and limited medical grade inmates. Indian River Correctional Institution provides academic, vocational and self-betterment programs. More information on critical facilities can be found in a database maintained by the office of Emergency Management.

There are 48,638 single-family residential units and 17,967 multi-family residential units in the County (*SOURCE: INDIAN RIVER COUNTY COMMUNITY DEVELOPMENT DRAFT 2030 COMPREHENSIVE PLAN: FUTURE LAND USE ELEMENT*). Additionally, there are approximately 7,193 mobile home/recreational vehicle dwellings in the county, many of which are situated in large mobile home villages. Approximately 85% of all the facilities listed above are located within ten miles of the east coast. A current inventory of mobile home parks is maintained on file in the office of Emergency Management.

Agricultural production and processing are an important component of the County's economy. The seasonal nature of citrus production has required the use of migrant labor during peak harvesting season (February/March). According to a September 10, 2004 farmworker housing report prepared for the Florida Housing Finance Corporation by the Shimberg Center for Affordable Housing, there were 1,696 migrant farm laborers within the county in 2002. In addition to the 1,696 migrant farm laborers, there were 240 household members that accompanied migrant farm laborers. Additionally, Census data gathered in 2010 suggests that approximately 14.3% (19,738) of citizens residing in Indian River County speak a language other than English.

The Atlantic beaches and the excellent climate in the County provide the basis for a year-round tourist industry. There are numerous hotels and

motels in the County as well as retail and service establishments geared to serving the tourist trade. Transient population constitutes customers, seasonal visitors and employees who live/work in the area for less than 60 days per year, including farm workers. The total projected transient/seasonal population for Indian River County averages 23,356, many of whom congregate on the barrier island. (Source: Indian River County 2030 Comprehensive Plan, Chapter 1 Introductory Element, p.28, Table 1.22).

D. PERSONS WITH SPECIAL NEEDS

In July of 1989, the Indian River County Department of Emergency Services formed a committee to address people with special medical needs. Since then, the goal of the Special Needs Shelter Program is to provide a safe place for persons requiring medical assistance to temporarily shelter during an evacuation from either a man-made or natural disaster, rather than inundating local hospitals with a large number of people that a specially equipped and staffed shelter could adequately handle. Candidates for the Special Needs Shelter are encouraged to register with our office in advance. The registration process is described in specific detail in Annex V (Emergency Shelter Plan) attached to this document. The average number of residents registered annually for the Special Needs Shelter is 300. The average geographic distribution of special needs registrants is as follows: City of Fellsmere (2%), City of Sebastian (28%), City of Vero Beach (41%) and the unincorporated area of Vero Beach (33%).

E. CLIMATOLOGY

Indian River County is affected by its coastal location. Thunderstorms average 80 days a year. Annually, 132 days have rainfall of at least .01 inches on the average, and there are 74 clear days, 159 partly cloudy days, and 132 cloudy days. Annually, we receive approximately 55 inches of rainfall. Sea breezes modify the climate of a narrow coastal belt a few miles wide. The sea breeze quickly reduces high afternoon temperatures and provides a flow of air when one would otherwise not exist.

The sea breeze is most prevalent in summer, when winds in the County average 9.4 mph. In addition, the mixing height (thickness of a layer of air resting on the ground surface, in which vigorous vertical mixing occurs) is thickest during the summer and thinnest in the winter.

High-risk areas relative to hurricane and flood effects have been identified and designated based on elevation and proximity to coastal waters. Development density of any specific area has been considered in the allocation of shelter space. The vulnerability of nursing homes and congregate care centers to the adverse effect of severe weather, primarily based on elevation and construction, requires special consideration in evacuation plans.

The chief industries of the heavily populated east coast are light manufacturing, citrus production and processing, selected service trades, construction, aircraft manufacturing (Piper), real estate, wholesale and retail trade.

F. ECONOMIC PROFILE

Indian River County has long been a popular resort area, attracting thousands of visitors and residents for our array of recreational and entertainment activities, and our lifestyle.

The county's population, which has grown steadily to just over 140,000, is supported by an economy based primarily on tourism, light industry, and agriculture. Services account for over 24% of Indian River County's employment; retail trade, 21%; agriculture, forestry, and fishing, 5.32%; and manufacturing 3.8%.

Approximately 136,896 acres of Indian River County is devoted to agriculture, with the largest percentage in pastures and ranges, followed by citrus groves, woodlands, row crops, and a variety of other uses. The county is at the center of the world famous Indian River Citrus District.

Hurricanes impact not only the communities, but the local economies. The total property damages in Indian River County during the 2004 hurricanes were \$2 billion. Nearly 50,000 structures suffered moderate to total damage. Over 70% of the grapefruit crop was lost and 50% of the orange crop was lost either directly to hurricane wind damage or indirectly from crop eradication due to canker spread attributed to hurricane winds.

The emergency management office strives to concentrate on hazard mitigation as a strategy to enhance and protect the local economy prior to disasters. We routinely distribute to businesses copies of the FEMA publication entitled "Disaster Planning Guide for Business and Industry." The guide is a manual for small business owners to use for developing their own emergency plans and preparations.

Top Employers in Indian River County:

RANK	EMPLOYER	TYPE	EMPLOYEES
1	School Dist. of Indian River Co.	Government	2,113
2	Indian River County	Public Administration	1,328
3	Indian River Medical Center	Health Care	1,753
4	Publix Supermarkets	Food and Beverage Stores	1,250
5	Piper Aircraft	Manufacturer	850
6	City of Vero Beach	Government	424
7	John's Island	Residential Resort	526
8	Indian River Estates	Retirement/Life-care	350
9	Wal-Mart	Retail	693

SOURCE: INDIAN RIVER COUNTY CHAMBER OF COMMERCE (2015)

Employment for Indian River County by Industry:

INDUSTRY CLASSIFICATION	EMPLOYEES	% OF TOTAL EMPLOYMENT
Accommodations, Food Services	5,066	24.54%
Agriculture, Forestry & Fishing	3,033	21.23%
Arts, Entertainment, Recreation	2,246	17.09%
Construction	2,918	7.70%
Educational Services	3,143	5.58%
Finance, Industry, Real Estate	2,495	5.32%
Health Care, Social Assistance	8,518	4.64%
Information Technology	596	3.81%
Manufacturing	2,120	8.6%
Professional, Scientific, Technical	2,193	1.31%

SOURCE: INDIAN RIVER COUNTY CHAMBER OF COMMERCE (April 2014)

Indian River County ranks fifth in the state in per capita income. Its per capita income in 2013 was \$54,448, exceeding the state average of \$41,497, according to the U.S. Bureau of Economic Analysis. The Quarterly Census of Employment & Wages reported by the Agency for Workforce Innovation indicates that workers in Indian River County were paid about \$9,088 per quarter, on average, for the third quarter of 2014. This equates to an hourly wage of \$18.93 and an annual wage of \$36,352 based on a 2,080 hour work-year. (Source: 2014 Agency for Workforce Innovation Quarterly Census of Employment & Wages).

Recent estimates (2010 U.S. Census) show that about 15 percent of all Indian River County residents live at or below the poverty level, compared to 16 percent statewide. Over 16 percent of all children (birth to 17 years) are in households at or below the poverty level, compared to 17 percent statewide.

The home ownership rate for Indian River County was reported at 75 percent for the period of 2009-2013. Home ownership was highest in Indian River Shores (96%), Orchid (95%), and Sebastian (87%), and lowest in Vero Beach (64%), Fellsmere (71%), and the unincorporated areas of the county (78%).

The median sales price for 2014 in Indian River County for a single family home was \$177,500 and the average median sales price for a condominium was \$130,000, according to the Shimberg Center for Affordable Housing, Florida Housing Data Clearinghouse (<http://flhousingdata.shimberg.ufl.edu/a/profiles?action=results&nide3000>)

The median gross rent in 2013 was \$854 per month compared to a statewide median rent of \$990. With over 15,000 units of new construction projected for the unincorporated areas by 2025, housing in this area is expected to grow at twice the rate of the next highest area, Sebastian, which is projected to add nearly 7,000 units.

In 2014, there were an estimated 49,079 homes and 17,967 multi-family units in Indian River County. In 2025 the demand for single-family homes is projected to be 62,597 and for multi-family units to be 17,295. To meet housing demands, the Shimberg Center projects that Indian River County will need 20,328 additional single family homes and 4,498 multi-family units by 2025.

Construction reflects these projections. Housing starts in Indian River County totaled 14,089 from 2000 to 2005. Housing starts jumped 28 percent from 2002 to 2003 and jumped another 66 percent from 2004 to 2005. Modest increases were reported for the other years in this time

period: 6 percent from 2000 to 2001, -2.5 percent from 2001 to 2002, and 2 percent from 2003 to 2004.

Housing units are considered to be substandard if they are overcrowded, do not have heat, or lack complete kitchens or plumbing. In Indian River County in 2000:

- 1,431 housing units (2.9% of all units) were overcrowded, meaning that they housed more than one person per room, compared to a statewide percentage of 6.5%.
- 447 units (0.9%) did not use home heating fuel, compared to a statewide percentage of 1.8%.
- 272 units (0.5%) lacked complete kitchen facilities, compared to a statewide percentage of 0.5%.
- 108 units (0.2%) lacked complete plumbing facilities, compared to a statewide percentage of 0.4%.

G. EMERGENCY MANAGEMENT SUPPORT FACILITIES

1. **Critical Facilities** - Indian River County and its municipalities have identified all critical facilities required for an immediate emergency response following a major emergency/disaster event, and other facilities or areas necessary to support recovery operations. Several categories of critical facilities have been included. Specific details can be found in the Critical Facilities Inventory retained on file in the office of Emergency Management.
2. **Logistical Staging Areas (More detailed information on staging areas can be found in Annex 1A (Recovery Functions)).**
 - a. **Materials and Supplies**
 - (1) City of Vero Beach Regional Airport (Primary)
3400 Cherokee Drive, Vero Beach
 - (2) Sebastian Elementary School (Primary)
400 C.R. 512, Sebastian
 - (3) Barber Street Sports Complex (Secondary)
1115 Barber Street, Sebastian
 - (4) Indian River County Fairgrounds (Secondary)
7900 58th Avenue, Wabasso

b. Volunteers

- (1) Hobart Park
5350 77th Avenue, Wabasso

c. Disaster Field Offices (DFOs)

Following a major or catastrophic disaster that exceeds the State's ability to respond, in which the Emergency or Major Disaster Declaration is granted by the President, federal assistance to disaster victims becomes available under three program areas: Individual Assistance, Public Assistance, and Hazard Mitigation. The administration of these programs is coordinated through a joint federal/state effort in a DFO, which is usually located in the impacted area. The following areas have been pre-determined to house DFOs:

- (1) Sebastian City Hall
1225 Main Street, Sebastian
- (2) Fellsmere City Hall
22 S. Cypress Street, Fellsmere
- (3) Indian River Co. Administration Bldg.
1801 27th Street, Vero Beach
- (4) City of Vero Beach Community Center
2266 14th Avenue, Vero Beach

d. Disaster Recovery Centers (DRCs)

Should the President authorize a Declaration of Disaster, Disaster Recovery Centers will open to provide the public access to apply for federal assistance funding. The centers will provide residents and businesses with information on available programs and assist applicants with completion of the necessary forms/documentation. The following locations have been designated as sites for Disaster Recovery Centers.

- (1) Indian River County Administration Bldg.
1801 27th Street, Vero Beach

- (2) Sebastian City Hall
1225 Main Street, Sebastian
- (3) Fellsmere City Hall
22 South Cypress Street, Fellsmere
- (4) Indian River County Main Library
1600 21st Street, Vero Beach
- (5) Indian River County North Library
1001 C.R. 512, Sebastian
- (6) Vero Beach Police Department
1055 20th Street, Vero Beach
- (7) Indian River Shores City Hall
6001 A1A, Indian River Shores
- (8) Town of Orchid City Hall
7707 U.S. #1, Suite 3, Vero Beach

e. Storage Depots

- (1) Barber Street Sports Complex -
1115 Barber Street, Sebastian
- (2) Indian River County Fairgrounds -
7900 58th Avenue, Wabasso
- (3) City of Vero Beach Regional Airport -
3400 Cherokee Drive, Vero Beach

3. Landing Zones have been identified and coordinated with the Florida National Guard. These coordinates have been transmitted to the appropriate agencies.

a. The primary landing zone is located at:

- Vero Beach Regional Airport
Latitude 27°39' 33"/Longitude 080°25' 08"

b. The secondary landing zone is located at:

- Sebastian Airport
Latitude 27°48' 77"/Longitude 080°29' 74"

H. PLANNING ASSUMPTIONS

1. A disaster may occur with little or no warning and may escalate far more rapidly than the ability of any single local response organization to handle. The success of rapid response depends on:
 - a. Multi-discipline, impact assessment teams;
 - b. Procedures to ensure quick and effective decision-making, such as pre-deployment and aggressive training of elected officials and responders on responsibilities and emergency assignments; and
 - c. Procedures to rapidly implement local mutual aid, state mutual aid and possibly federal assistance.
2. Effective hurricane preparedness requires continual public awareness and education programs, so that citizens will take appropriate advance action based upon the category of the hurricane expected.
3. Evacuation and shelter strategies must be based on citizen cooperation with staggered evacuation and best-available shelter options until the shelter deficit can be reduced.
4. A strategy based upon sheltering people with special needs that provides varying levels of care. The intent of the strategy is to establish minimum standards so that the general population and service providers will understand the level of care that can be reasonably expected at regular shelters. Persons needing greater care should be prompted to register for special assistance. Planning at the County and state level will depend on pre-identification of populations and determination of resource shortfalls and contingencies.
5. The Emergency Operations Center (EOC) will be activated and staffed with lead agencies that become a part of an ESF concept. The primary agency for each ESF will be responsible for coordinating the planning and response activities of their respective support agencies.

III. CONCEPT OF OPERATIONS

A. LEVELS OF DISASTER

Chapter 252, Florida Statutes, requires each county to develop and maintain a County Emergency Management Plan (CEMP). This CEMP must contain provisions to ensure that the county is prepared for minor, major, and catastrophic disasters. Therefore, a resolution was passed by the Indian River County Board of County Commissioners adopting this county's CEMP. A signed copy of the resolution can be found as a preface to this document.

1. Minor Disaster

Any disaster that is likely to be within the response capabilities of local government and results in only minimal need for state or federal assistance.

In accordance with this CEMP, this definition translates into a Level III or Level II activation of the EOC.

2. Major Disaster

Any disaster that will likely exceed local capabilities and require a broad range of state and federal assistance.

In accordance with this CEMP, this definition translates into a Level II or Level I activation of the EOC. The SEOC will be notified, and potential state assistance will be coordinated.

3. Catastrophic Disaster

Any disaster that will require massive state and federal assistance, including immediate military involvement.

In accordance with this CEMP, this definition translates into a Level I activation of the EOC. The SEOC will be notified and may be requested to pre-deploy to the EOC; potential federal assistance will involve response as well as recovery needs.

B. ORGANIZATION

1. Normal Operations (Indian River County Government Structure)

Indian River County is part of the 19th Judicial District in Florida. There is an elected five member Board of County Commissioners and five elected Constitutional Officers (Property Appraiser, Tax Collector, Supervisor of Elections, Sheriff and Clerk of the Circuit Court). Each commission member represents one of five districts, elected at large (Countywide) for staggered terms of four years. The Commission elects the Chairman and Vice-Chairman. A County Administrator is appointed by the Board and is responsible for administrative and fiscal control of the resources of the County.

The County Administrator's primary responsibility is to efficiently and effectively implement the goals and policies of the Board while meeting the needs of the citizens of Indian River County by providing an acceptable level of service and maintaining a solid financial position. The Administrator is directly responsible for all County departments except Constitutional Officers, the County Attorney, the BCC Executive Aide and their respective employees and staff.

2. Emergency Operations

Direction and control of all emergency management activities remain under the Indian River County Board of County Commissioners at all times (the line of succession is established in county ordinance 91-17). The organization and staffing structure of the Indian River County Comprehensive Emergency Management Plan are tailored to meet the needs of specific emergencies and disasters. Organizational structure and identification of operational and support roles within the EOC, which depicts the total preparedness, response, recovery and mitigation system, can be found in the EOC Suggested Operating Procedures attached and identified as Appendix C. Specific roles and responsibilities for each incident management function are defined in the Florida Incident Field Operations Guide and are followed by Indian River County where applicable.

3. Implementation of the concept of operations is carried out through the organizational structure described by the emergency support functions (ESFs). The Emergency Management Director, in consultation with the Board of County Commissioners, leads the organization. This organizational concept is compatible with the current concept implemented by FDEM and FEMA and is identified in the *EOC Suggested Operating Procedures*, attached to this document and identified as Appendix C.

4. The Emergency Management Director, or his designee, is responsible (subject to Board approval) for activating the plan and directing preparedness, response, recovery and mitigation operations.
5. ESFs represent groupings of types of assistance activities that the County is likely to need from the State. The ESF primary agencies identified below serve as essential functions during emergency operations for Indian River County. For a complete listing of primary and secondary agencies and their respective ESFs, see the ESF Matrix attached to this document and identified as Figure 6. ESFs and lead agencies include:

**ESF #1 Transportation - Indian River County School Board
Transportation Department**

To coordinate transportation systems and provide emergency transport of goods for other ESFs.

**ESF #2 Communications - Indian River County Department of
Emergency Services, Emergency Management Division**

To provide emergency radio and telephone communications services to organizations involved in the response and recovery operation and to support the private sector in restoration of the affected public grids.

**ESF #3 Public Works and Engineering - Indian River County
Public Works Department**

To evaluate infrastructure damage and coordinate emergency debris clearing of essential roads. Will also coordinate emergency contracting, engineering services, demolitions and fuel shortages.

**ESF #4 Firefighting - Indian River County Department of
Emergency Services, Fire Rescue Division**

To detect and suppress wildland, rural and urban fires. Also, to provide incident management teams to assist in command and control operations. Directs all search and rescue operations.

**ESF #5 Information and Planning - Indian River County
Department of Emergency Services, Emergency Management
Division**

To collect, analyze and disseminate critical information on emergency operations for decision-making purposes.

**ESF #6 Mass Care – Coast to Heartland Chapter of the American
Red Cross**

To manage and coordinate shelters, feeding and first aid for disaster victims.

ESF #7 Resource Support - Indian River County Department of Emergency Services, Emergency Management Division

To secure resources through mutual aid agreements, or procure resources for other ESFs as needed.

ESF #8 Health & Medical Services - Indian River County Health Department

To identify health and medical needs, provide trained health and medical personnel, and to provide supplies and emergency facilities in the affected area, as well as in shelters.

ESF #9 Urban Search and Rescue - Indian River County Department of Emergency Services, Fire Rescue Division

The Fire Services Division is the lead agency for locating, extricating and providing emergency assistance to victims trapped in debris or wreckage created by the disaster.

ESF #10 Hazardous Materials - Indian River County Health Department (Environmental)

To provide inspection, containment, and cleanup of hazardous materials accidents or releases.

ESF #11 Food and Water - Indian River County Department of Emergency Services, Emergency Management Division and the Salvation Army

To coordinate with ESF #6 to identify the food and water needs of disaster victims, and to ensure that supplies of food and water (or vouchers to obtain them locally where possible) are provided.

ESF #12 Energy and Utilities - Indian River County Utilities Department

To coordinate and direct the restoration of water, sewer, electrical power and phone service.

ESF #13 Military Support – Indian River County Emergency Management

To coordinate RIAT assignments and National Guard resources to assist in the ESFs where needed.

ESF #14 Public Information - Indian River County Department of Emergency Services, Emergency Management Division

To establish and manage Joint Information Centers (JIC), and to coordinate the dissemination of all disaster-related information to the media and the general public.

ESF #15 Volunteers and Donations – The United Way of Indian River County

To manage the receipt and distribution of donated goods and services to meet requests in the wake of a disaster.

ESF #16 Law Enforcement and Security - Indian River County Sheriff's Office

To provide armed escorts to emergency workers or transport caravans and security to emergency facilities, as well as general law enforcement services during an emergency.

ESF #17 Animal Protection - Indian River County Department of Emergency Services, Animal Control Division.

To coordinate and provide adequate shelter and care for animals.

ESF #18 Business & Industry - Indian River County Department of Emergency Services, Emergency Management Division

To coordinate and provide adequate shelter and care for citizens with non-hospital special medical needs.

FIGURE 6-1

ESF MATRIX - PRIMARY AND SUPPORT AGENCIES

AGENCY	ESF																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
9-1-1 COMMUNICATIONS		S																
AMERICAN RED CROSS - COAST TO HEARTLAND CHAPTER					S	P	S	S			P			S	S			
BELLSOUTH		S										S						
CIVIL AIR PATROL	S			S					S									
COMMUNICATIONS INT'L.		S																
SENIOR RESOURCE ASSOCIATION, INC.	S																	
DISASTER MEDICAL SVCS								S										
FEDERAL AVIATION ADMINISTRATION									S									
FELLSMERE, CITY OF							S											
Building Department			S															
Police Department				S					S	S						S	S	
Public Works			S					S		S		S						
FELLSMERE FARMS WATER CONTROL DISTRICT												S						
FLORIDA, STATE OF																		
Communications, Div. of		S																
Department of Law Enforcement									S	S						S		
Fire Chiefs' Association				S					S									
Forestry Service				S														
Highway Patrol				S														
Marine Patrol				S					S									
National Guard	S			S		S	S	S	S	S	S	S	S			S		
FLORIDA EMERGENCY PREPAREDNESS ASSOC.					S		S											
FLORIDA POWER & LIGHT												S						
																		S
HUMANE SOCIETY																		P
INDIAN RIVER COUNTY																		
Agricultural Extension																		S
Animal Control								S										P
BCC Office							S											
Building Department			S															
Community Development			S															
County Admin. Office					S		S											

AGENCY	ESF																	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Emergency Management		P			P		P			P	P	S	P	P				P
Emergency Medical Services	S			S				S	S									
Environmental Health			S							P							S	
Fire Services				P					P	S				S				
General Services			S				S											
Office of Mgt. & Budget							S											
Personnel							S											
Property App. Office					S									S				
Health Dept.					S	S		P	S		S	S		S				
Public Works	S		P	S			S	S		S		S						
School District	P			S		S		S	S		S							
Sheriff's Office	S			S	S				S		S			S		P	S	
Solid Waste Disp. Dist.			S															
Telecommunications Div.												S						
Utilities			S	S				S				P						
HOLMES REGIONAL MEDICAL CENTER FIRST FLIGHT																		
INDIAN RIVER COUNTY VOLUNTEER AMBULANCE SERVICE	S																	
INDIAN RIVER FARMS WATER CONTROL DIST.												S						
INDIAN RIVER MEDICAL CENTER								S										
INDIAN RIVER MOSQUITO CONTROL DISTRICT								S										
INDIAN RIVER SHORES, TOWN OF							S											
Building Department			S															
Public Safety				S				S	S	S						S	S	
Public Works								S				S						
JOHN'S ISLAND SECURITY									S									
MEDICAL EXAMINER'S OFFICE								S										
ORCHID, TOWN OF							S											
RACES/ARES		S																
ST. JOHNS WATER CONTROL DISTRICT												S						
SALVATION ARMY						S	S	S			S							
SEBASTIAN AIRPORT							S											
SEBASTIAN, CITY OF							S											
Community Development			S															
Police Department				S					S	S						S	S	
Public Works			S					S		S		S						

AGENCY	ESF																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
SEBASTIAN RIVER MEDICAL CENTER								S										S	
TAMPA GENERAL HOSPITAL																			
UNITED STATES																			
Air Force													S						
Army	S					S	S	S				S	S						
Coast Guard	S			S					S										
Marine Corps													S						
Military Reserve Units													S						
Navy													S						
Patrick Air Force Base									S										
UNITED WAY OF INDIAN RIVER COUNTY															P				
VERO BEACH, CITY OF																			
Airport	S																		
Customer Services		S												S					
Electric Power Resource										S		S							
Finance								S											
Human Resource								S							S				
Marina	S																		
Planning & Zoning			S																
Police Department				S					S	S	S					S	S		
Public Works & Eng.			S						S		S								
Purchasing								S											
Recreation	S																		
Solid Waste/GMS					S				S				S						
Transmission & Dist.																			
Water & Sewer									S				S						
IRC VOLUNTARY ORGANIZATIONS ACTIVE IN DISASTER (IRC VOAD)															S				
VETERINARY COMMUNITY																		S	
VNA/HOSPICE																			S

Agency Responsibilities in the Recovery Phase

	Damage Assessment	Debris Management	Information and Planning	Resource Support	Community Relations	Unmet Needs	Emergency Housing	Disaster Recovery Centers	Public Information	Public Assistance Programs
School District (ESF #1)	S		S		S			S		
RACES (ESF #2)			S		S			S		
Public Works Dept. (ESF #3)	S	P								
Fire Division (ESF #4)	S			S	S			S		
Emergency Management (ESF #5)	S		P	P	P	S		P	P	P
American Red Cross (ESF #6 and ESF #11)	S		S		S	P	P	S		
Public Health (ESF #8)					S	S	S	S		
Environmental Health (ESF #10)	S							S		
Utilities Dept. (ESF #12)	S									
Military Support (ESF #13)			S	S				S		
VOAD (ESF #15)				P	S	S		S		S

Figure 6-2

	Damage Assessment	Debris Management	Information and Planning	Resource Support	Community Relations	Unmet Needs	Emergency Housing	Disaster Recovery Centers	Public Information	Public Assistance Programs
Law Enforcement (ESF #16)	S		S		S			S		
Bldg. Dept.	S						S			
Civil Air Patrol	S									
Community Development	S						S			
Debris Consultant Services		S								
General Services				S				S		
Property Appraiser's Office	P		S		S					
Salvation Army					S	S				
Solid Waste Disposal District	S	S								
Purchasing				S						

P= Primary Agency S=Support Agency

Figure 6-2 (Continued)

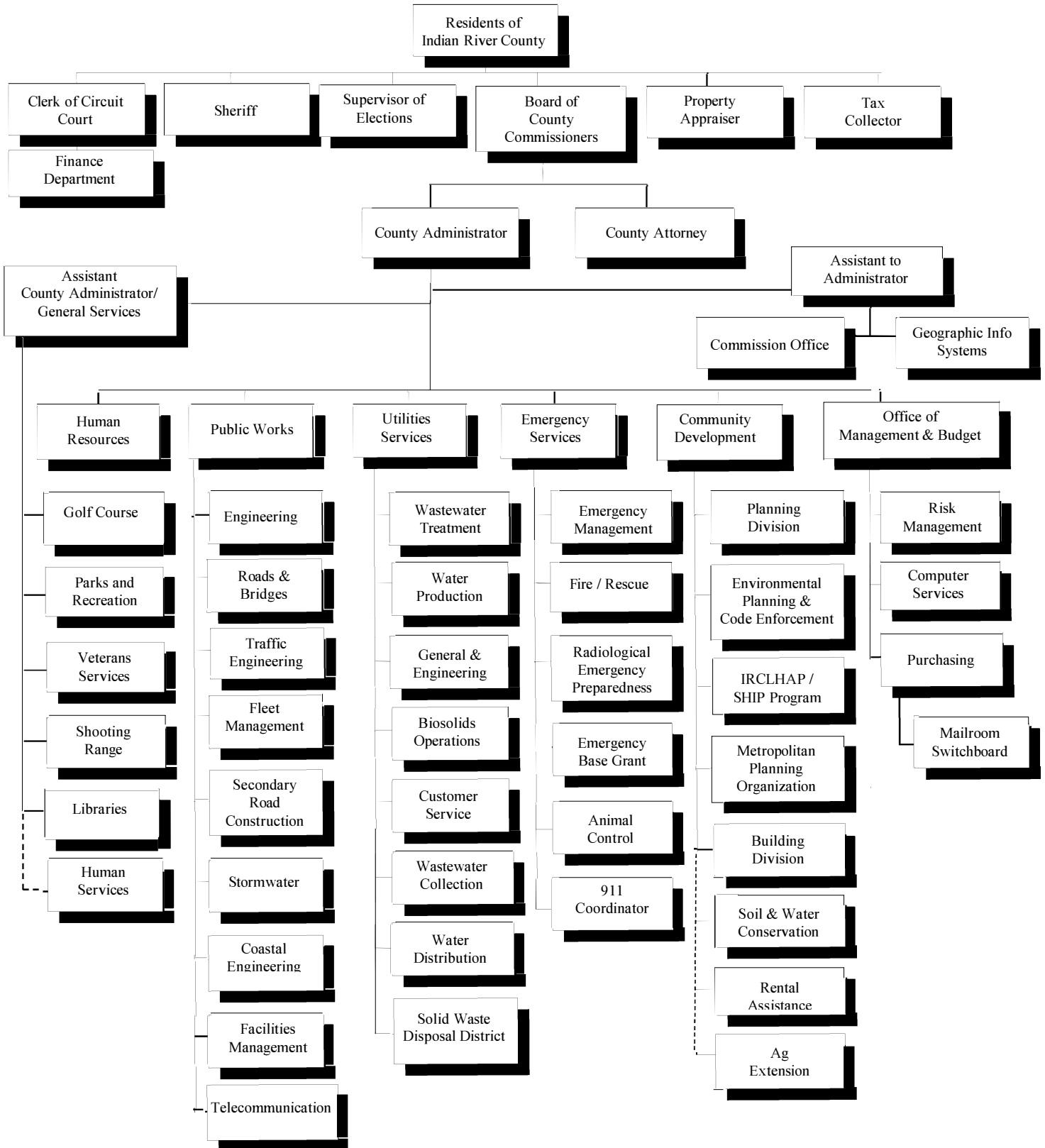
Figure 6-3

Agency Responsibilities for Hazard Mitigation

	Pre-Disaster Mitigation	Post-Disaster Mitiation
Emergency Management (ESF #5)	S	S
Local Mitigation Strategy Working Group	P	P

P = Primary Agency
S = Support Agency

Figure 6-4. Indian River County BCC Departmental Organization Non-Emergency Structure



Indian River County Emergency Operations Center Functions

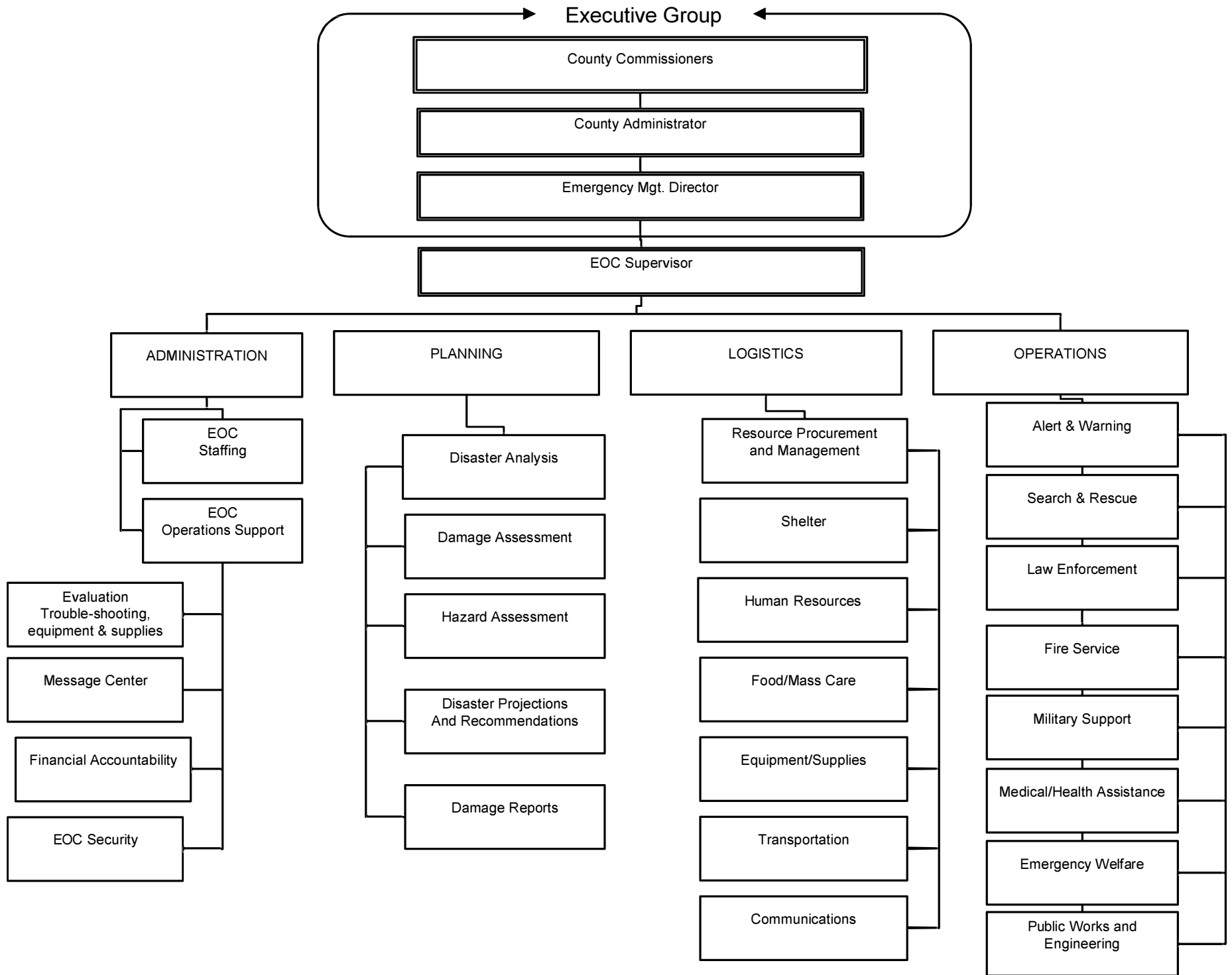
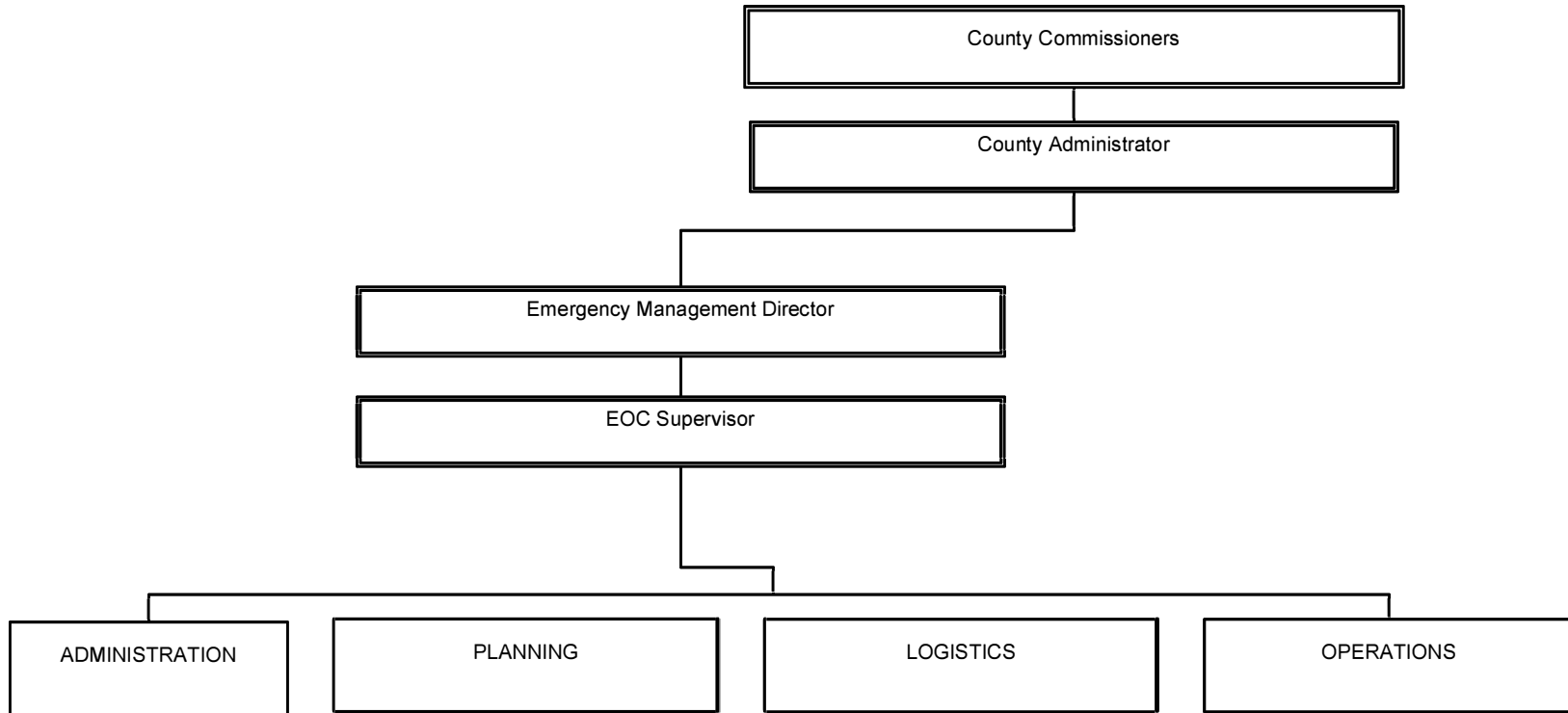


Figure 6-5

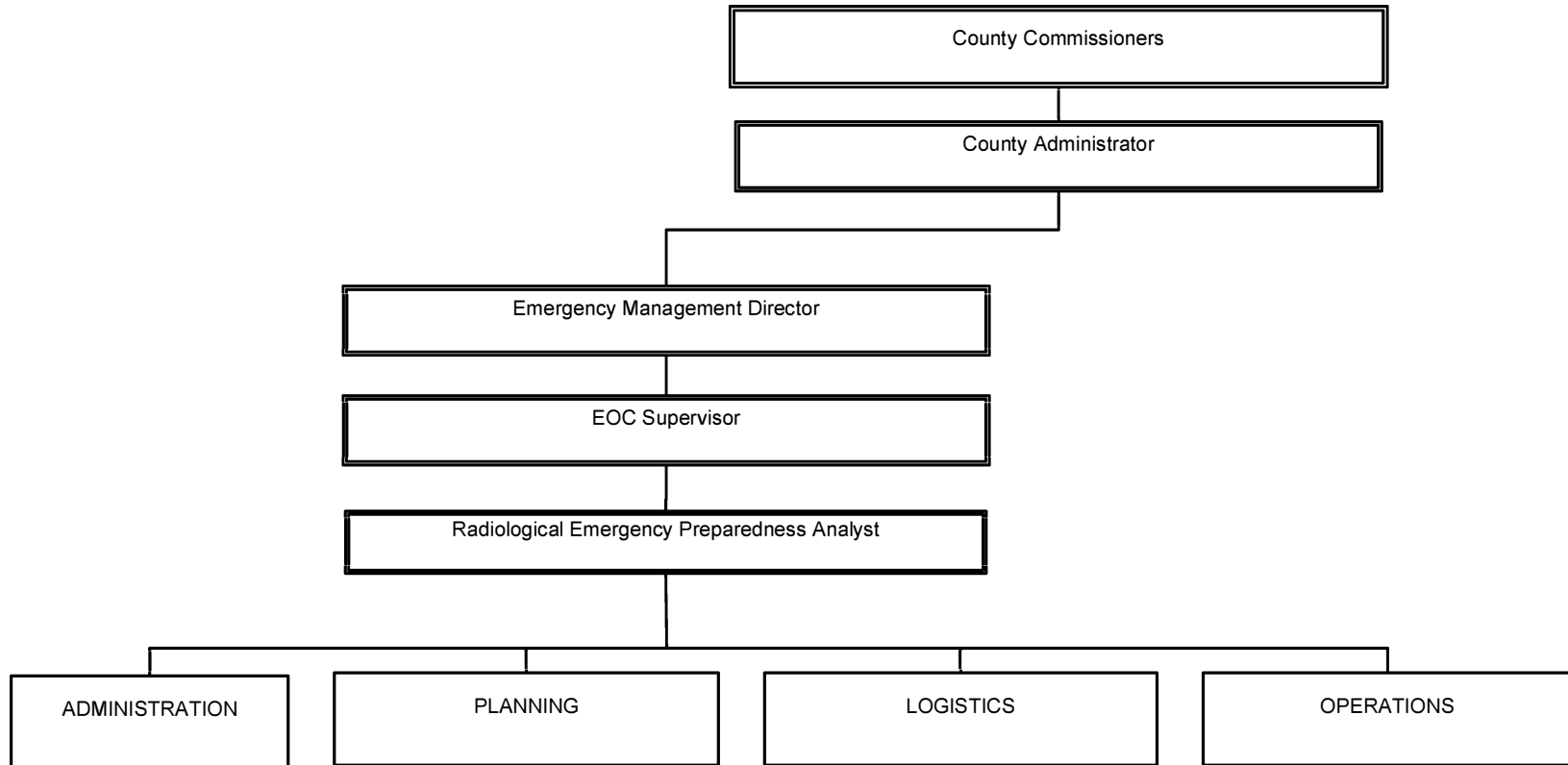
Indian River County Emergency Operations Center Supervision of EOC



- Responsibilities:**
1. Oversees functional groups in the implementation of decisions made from the Executive Group.
 2. Ensures that EOC procedures are followed.
 3. Resolves coordination issues as necessary with input from the Emergency Management Director.

Figure 6-6

Indian River County Emergency Operations Center Supervision of EOC (During Nuclear Power Plant Events)



Responsibilities:

1. Oversees functional groups in the implementation of decisions made from the Executive Group.
2. Ensures that EOC procedures are followed.
3. Resolves coordination issues as necessary with input from the Emergency Management Director.

Figure 6-7

Indian River County Emergency Operations Center Administration Group

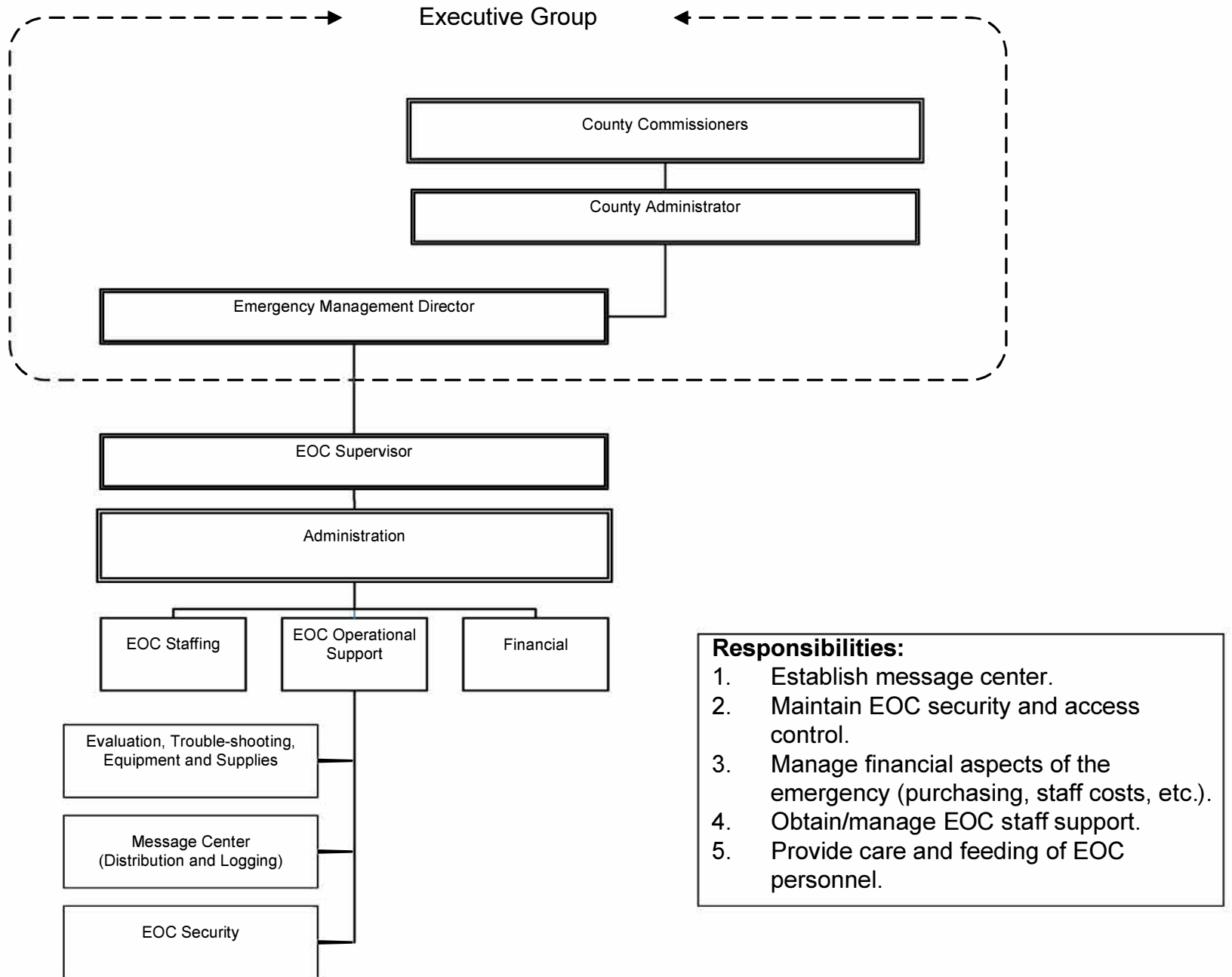
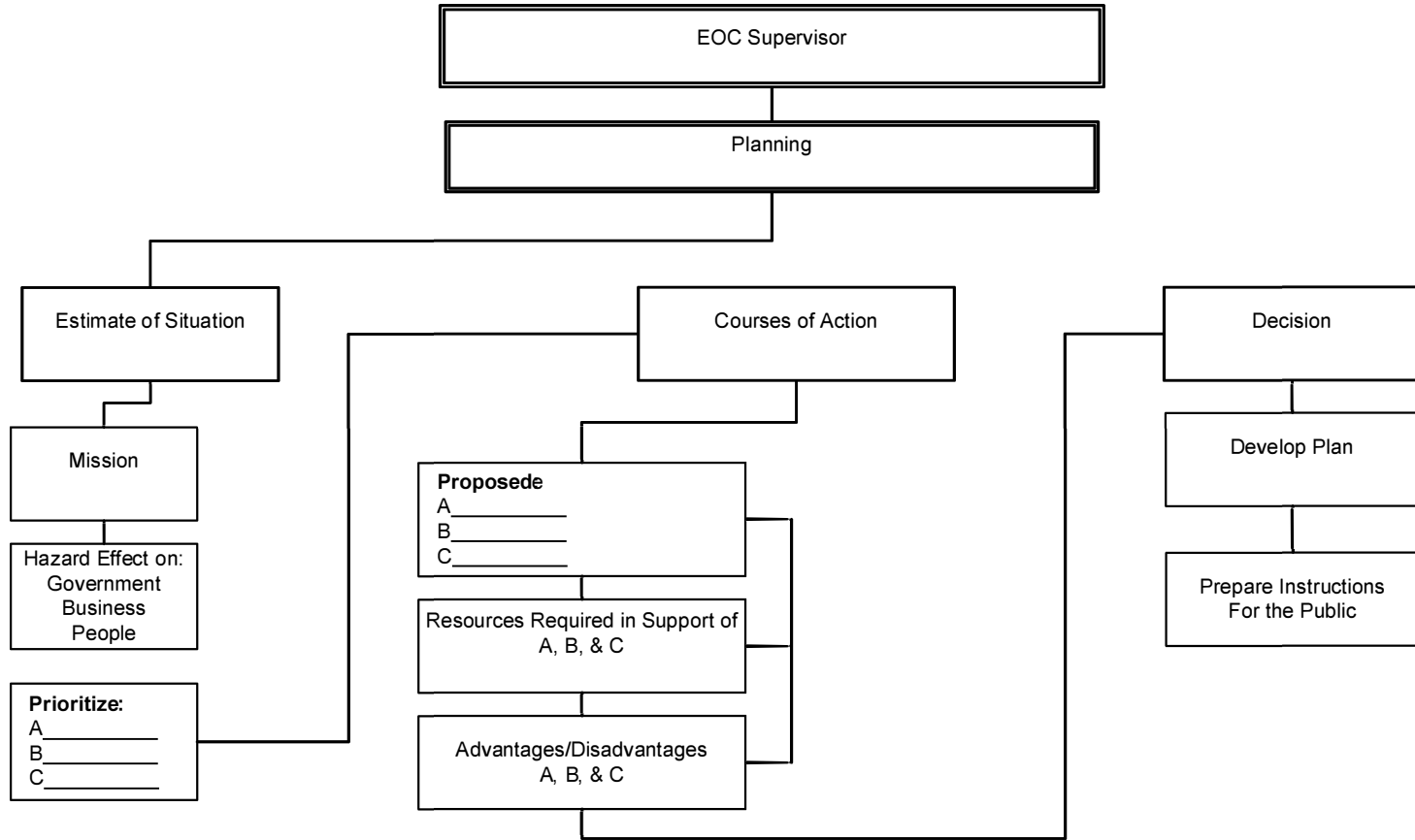


Figure 6-8

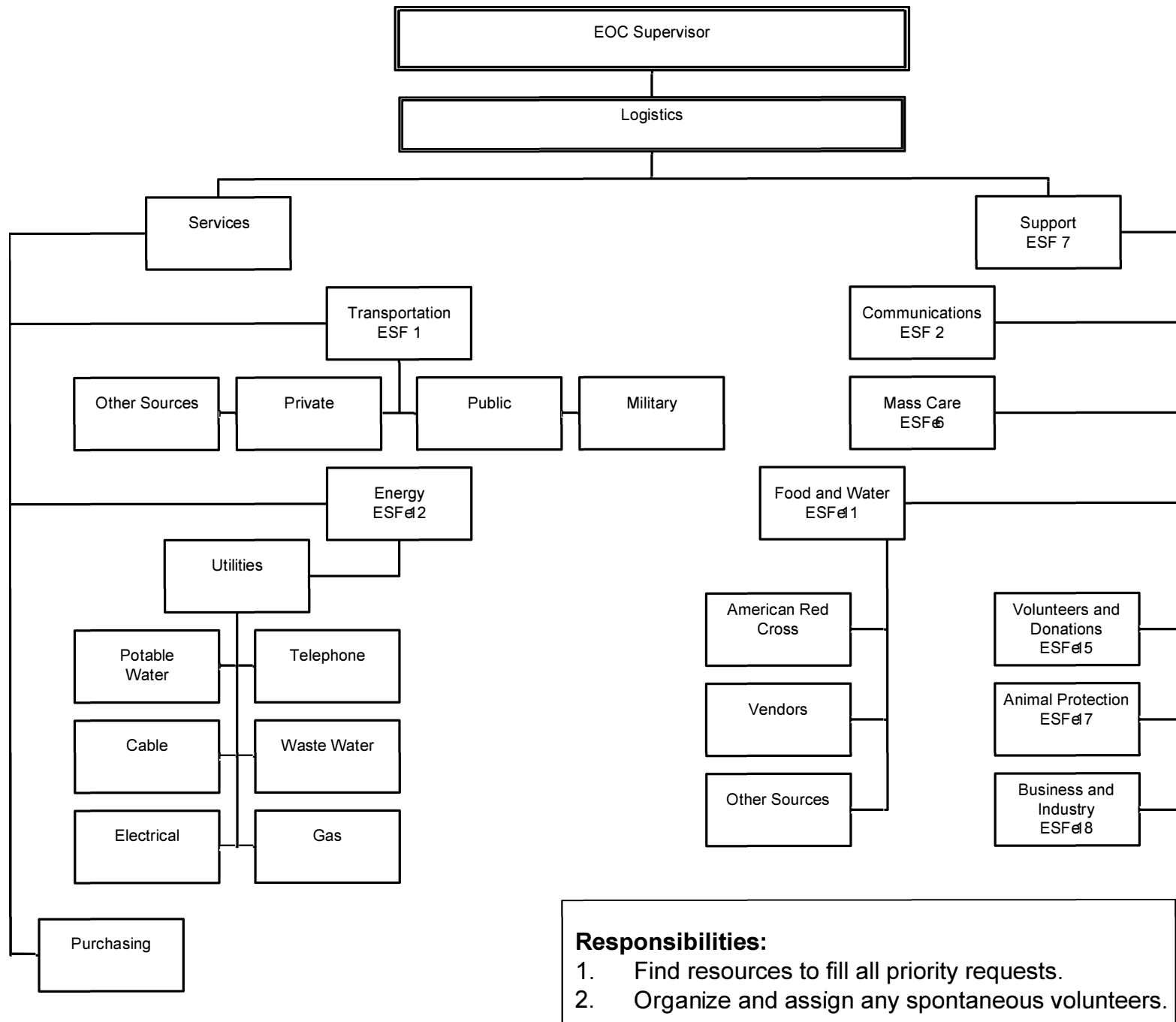
Indian River County Emergency Operations Center Planning Group



- Responsibilities:**
1. Establish message center.
 2. Maintain EOC security and access control.
 3. Manage financial aspects of the emergency (purchasing, staff costs, etc.).
 4. Obtain/manage EOC staff support.
 5. Provide care and feeding of EOC personnel.

Figure 6-9

Indian River County Emergency Operations Center Logistics Group



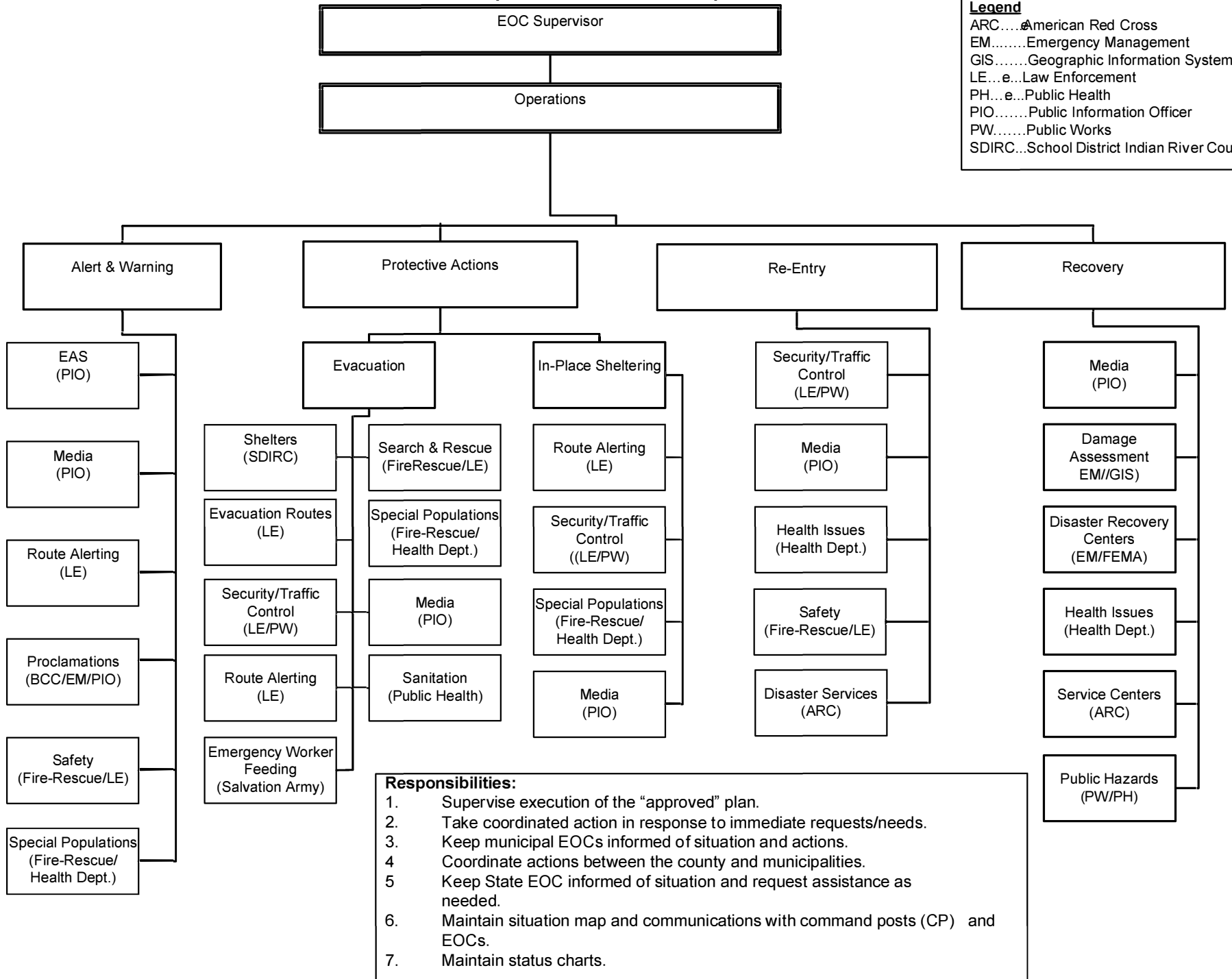
Responsibilities:

1. Find resources to fill all priority requests.
2. Organize and assign any spontaneous volunteers.

Figure 6-10

Indian River County Emergency Operations Center Operations Group

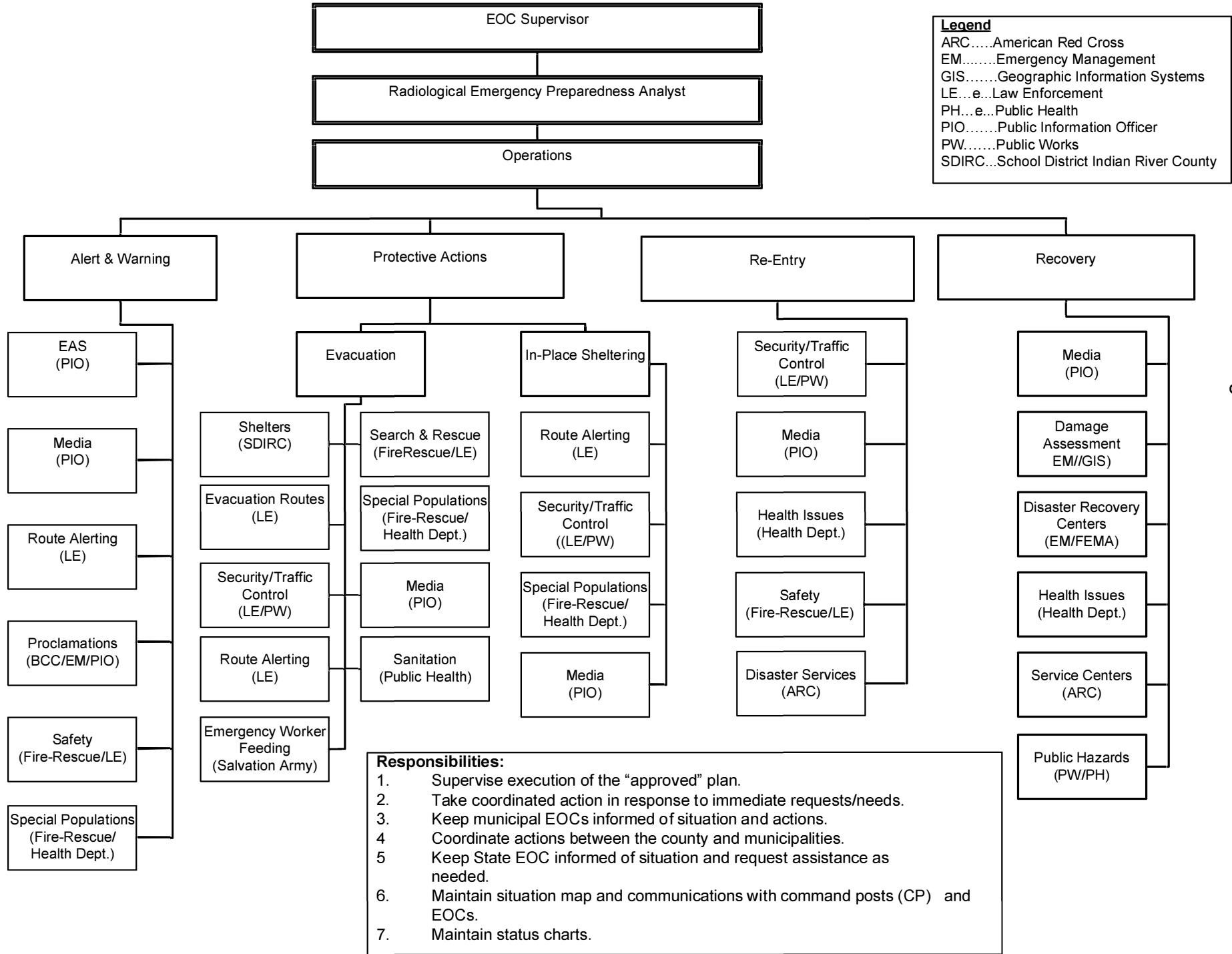
Legend	
ARC.....	American Red Cross
EM.....	Emergency Management
GIS.....	Geographic Information Systems
LE...e...	Law Enforcement
PH...e...	Public Health
PIO.....	Public Information Officer
PW.....	Public Works
SDIRC...	School District Indian River County



- Responsibilities:**
1. Supervise execution of the “approved” plan.
 2. Take coordinated action in response to immediate requests/needs.
 3. Keep municipal EOCs informed of situation and actions.
 4. Coordinate actions between the county and municipalities.
 5. Keep State EOC informed of situation and request assistance as needed.
 6. Maintain situation map and communications with command posts (CP) and EOCs.
 7. Maintain status charts.

Figure 6-11

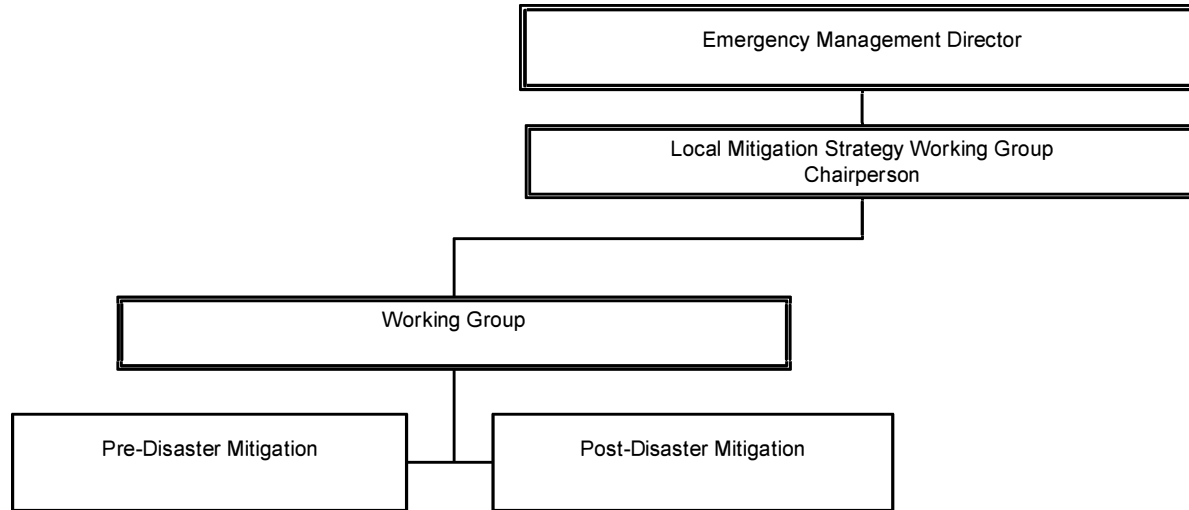
Indian River County Emergency Operations Center Operations Group (During Nuclear Power Plant Events)



Legend
 ARC.....American Red Cross
 EM.....Emergency Management
 GIS.....Geographic Information Systems
 LE...e...Law Enforcement
 PH...e...Public Health
 PIO.....Public Information Officer
 PW.....Public Works
 SDIRC...School District Indian River County

Figure 6-12

Indian River County Emergency Operations Center Operations Group Primary Functions (Mitigation Phase)



Note:

1. The LMS Working Group has been organized to serve as the policy body for the LMS program and is responsible for coordinating hazard mitigation activities within the county for both pre- and post-disaster scenarios.
2. The support entities of the LMS Working Group include representatives from the County, including Community Development, Engineering, Emergency Services, Public Works and the Sheriff's Office; each municipality and members of the private and non-profit community.

Figure 6-13

Indian River County Emergency Operations Center Operations Group Primary Functions (Recovery Phase)

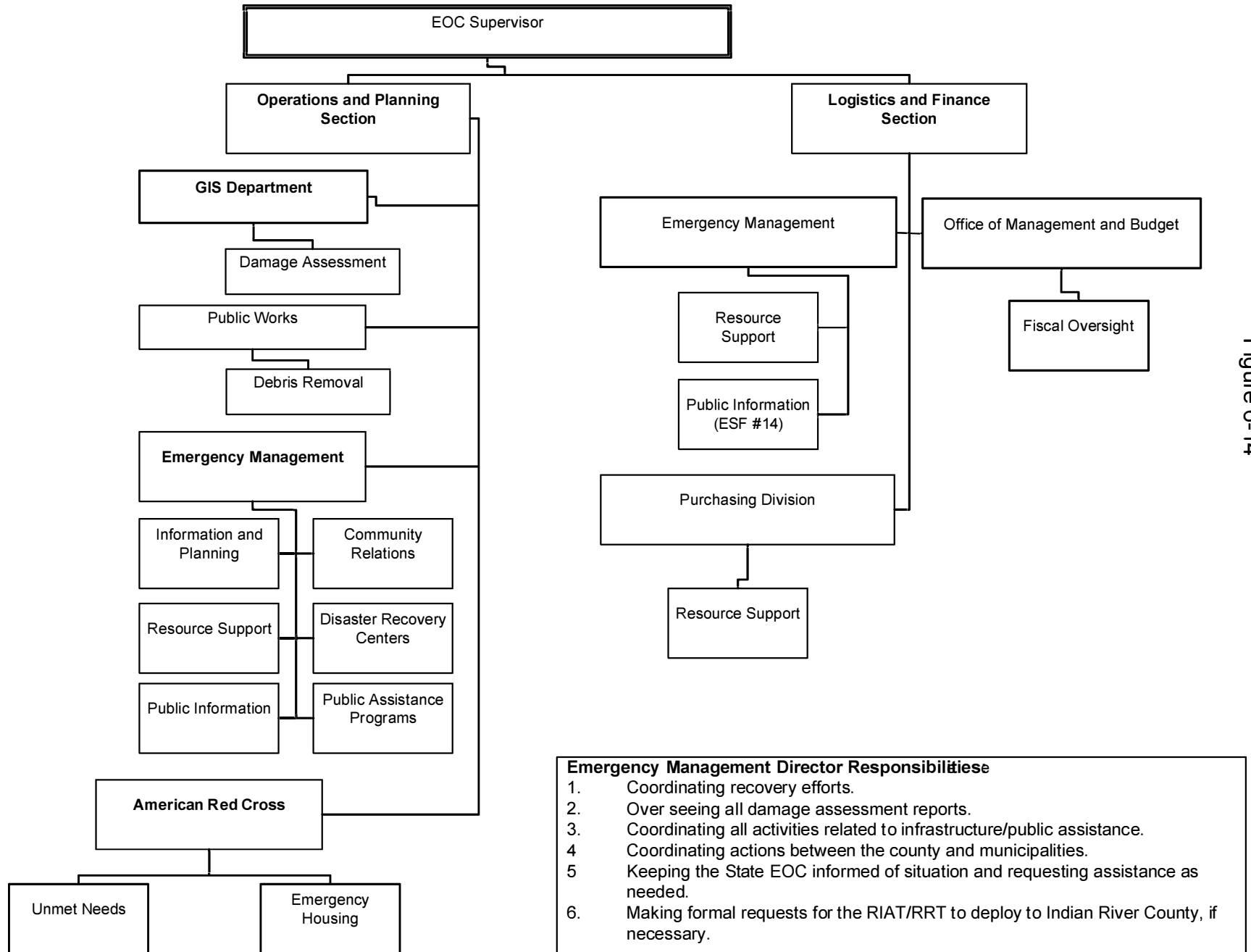


Figure 6-14

C. GENERAL

1. Local units of government call for assistance during events in which their own resource and response capabilities are overwhelmed. The County will provide assistance to municipalities within their borders, and then turn to the state for assistance when their capabilities are overwhelmed. The County and the state together determine whether inter-county mutual aid or direct state assistance is needed.
2. The Emergency Management Director, or his designee, will activate the EOC at any time a threat of danger to Indian River County becomes imminent. The EOC will then become the central command post for coordinating the operational, logistical and administrative support needs of response personnel located in the EOC or in the field.
 - a. The Primary EOC is located at 4225 43rd Avenue in Vero Beach and will be the first choice for EOC operations.
 - b. The first alternate EOC will be the auditorium of the Indian River County Sheriff's Office, located at 4055 41st Avenue. This site will be designated only if conditions threaten the primary location. The Emergency Management Director, or his designee, will make the decision to move to this location if it becomes necessary (See Indian River County's COOP/COG plan for specific details).
 - c. A second alternate EOC will be chosen given the existing conditions at the time.
4. The County must be able to respond quickly and effectively to developing events that may require the County to enact a Mutual Aid Agreement. When an event or potential event is first detected, the EOC initiates activation (monitoring). Communications are maintained between the County EOC and the SEOC; the county commissioners and Governor may be notified.
5. As County operations progress, the Emergency Management Director may advise the Board of County Commissioners to declare a local state of emergency and make a formal request for state assistance. The request is channeled through FDEM to the Governor's Office. At the same time, FDEM may recommend that the Governor declare a statewide emergency.
6. After impact of a major or catastrophic emergency, Rapid Impact Assessment Teams (RIATs) may be deployed at the request of the Emergency Management Director. These teams, under the auspices

of the Florida National Guard (FNG) and ESF #13 (Military Support), will be deployed via aircraft or land transport to augment local assessment of the immediate human needs (food, water, health/medical, housing), and the damage to infrastructure (transportation, communications and utility systems). The disaster assessment is used to identify those emergency actions that are necessary to preserve life and property in the impacted area. See Annex III of the CEMP for more information.

7. The County EOC serves as the central clearinghouse for information collection and coordination of response and recovery resources within the County, including the cities within the County. During a major or catastrophic emergency in Florida, un-impacted counties are also requested to activate their EOC. This system allows the SEOC to coordinate the delivery of intra-state mutual aid in an organized manner through the County network.

D. DIRECTION & CONTROL

1. Discussion of decision-making authority retained at county level:
 - a. The on-scene commander or commanders in an emergency response are local officials, usually a representative from emergency management, law enforcement, or fire rescue. Overall, local coordination and commitment authority for local assets is retained by local elected officials, and delegated to the County Emergency Management Director.
 - b. The Emergency Management Director is responsible for the activation and maintenance of the operational readiness of the EOC, directing county evacuation, opening shelters, requesting state assistance and all recovery activities within the county. County authorities, through the Emergency Management Director, may also activate mutual aid agreements with neighboring counties, and will coordinate mutual aid agreements between municipalities within the county.
2. Maintaining consistency with the Federal Emergency Management Agency and State Emergency Operations Center, the following are the levels of activation used by the County EOC:
 - a. Level I - Full Scale Activation:
In a full-scale activation, all lead and support agencies are notified. Emergency Management personnel, volunteers and

all ESFs will staff the EOC.

b. Level II - Partial Activation of EOC:

This is a limited agency activation. All primary, or lead, ESF agencies are notified. Emergency Management personnel and necessary ESFs will staff the EOC.

c. Level III - Monitoring Activation:

This is typically a "monitoring" phase. Notification will be made to those agencies and ESFs who would need to take action as part of their everyday responsibilities.

3. The Emergency Management Director will recall all Department of Emergency Services personnel once the EOC has been activated. Staff would then be placed on 12-hour shifts to ensure 24-hour staffing of the EOC and field operations. This arrangement will remain in effect until released by the Emergency Management Director.
4. Upon activation of the EOC, the use of EOC tracking software will be initiated. Similar software is utilized by FDEM and is a sophisticated way of controlling and documenting the flow of information within the EOC. See Annex II -Support Functions, ESF #5 (Information and Planning) for more detailed information.
5. All mission requests and messages logged into our EOC tracking system will be monitored and tracked by ESF #5. Situation Reports will be printed on a regular basis and forwarded to the Emergency Management Director for his/her review and dissemination.
6. The Emergency Management Director and/or the EOC Supervisor is responsible for developing and maintaining SOPs and checklists, which detail how assigned responsibilities will be implemented to support this plan.
7. Discussion of decision making authority of the SCO, GAR, Deputy SCO response, SERT leader, and SERT ESFs:
 - a. The SERT Leader, or some other designee within the DCA at the State level, decision-making authority and commitment of state assets is retained at the SEOC. The SERT Leader may issue mission assignments to the lead agencies of the state ESFs. Mission assignments and mutual aid agreements, brokered by the state, are tracked in the SEOC by a staff person reporting to the SERT Leader.

- b. In the event of federal assistance, a SCO will be appointed to interface directly with the federal government. Depending on the complexity of the event and the need to broaden span-of-control, the SCO may be supported and assisted by the GAR and Deputy SCOs for Response and Recovery. The Deputy SCOs are responsible for ensuring close coordination between federal and state representatives and anticipating the needs and conflicts in the operation as it progresses.

8. Discussion of Direction and Control for Evacuation

- a. The majority of evacuations are site specific and related to a specific public safety hazard; the first arriving public safety officer usually initiates this type of evacuation. The Emergency Management Director, or his designee, will direct county-wide evacuations greater than a minor incident in scope. Planned evacuations with notice, such as would occur when hurricane warnings are announced, may be initiated following a decision by the Board of County Commissioners. In such cases, the evacuation will be coordinated and administered by the County officials using local government resources in accordance with County evacuation plans. Indian River County is a participant in the Statewide Mutual Aid Agreement for Catastrophic Response and Recovery to provide expanded resource capability. These agreements will be developed, coordinated and amended by the Emergency Management Director. During any county administered evacuation that does not require activation of the SEOC, state assistance may be provided under the various state agencies' normal statutory authority through coordination by FDEM.
- b. However, in the event of a multi-county, regional or interregional evacuation, the Governor or the GAR may issue an evacuation order in support of a local order. This decision will be made following consultation with the SCO, the Deputy SCO for Response, and the SERT leader and representatives of the impacted counties.
- c. All state assistance and support of such evacuations will be coordinated from the SEOC under the direction and control of the SERT Leader. Decisions on evacuation issues, such as lifting tolls on state toll facilities, locking down drawbridges, deploying and pre-deploying personnel, determining regional evacuation routes, directing people caught on evacuation routes to safe shelter, ensuring the sufficiency of reasonably priced fuel, and addressing any emergency medical issues

relative to evacuation. The following types of decisions will be made after coordination between the SERT Leader, the affected State ESF and the impacted counties.

9. Discussion of Direction and Control for Shelter

The decision of opening shelters is a responsibility of the Emergency Management Director. Should a request for assistance be made to the SEOC, it will be to support the local sheltering plan with assistance in staffing shelters, identifying additional shelters, and managing shelters with a shortfall of resources. The SEOC will coordinate through ESF #6 (Mass Care) any requests for assistance from other ESFs that will be needed to support multi-county, regional and interregional shelter operations.

- a. The SERT Leader, following discussions with the GAR, ESF #6 (Mass Care) and the representatives of the impacted counties, will provide information regarding the status of evacuation orders and the potential for shelter needs on a county, regional, inter- regional, and/or statewide basis.
- b. All state assistance and support of sheltering will be coordinated from the SEOC through ESF #6 (Mass Care), under the direction and control of the SERT Leader. Decisions on sheltering issues will be made after coordination between appropriate State ESFs, impacted counties and the SERT Leader.

10. Discussion of Relationship between Primary and Support Agencies in the ESFs:

- a. An agency may be designated "the primary" for an ESF for a number of reasons. The agency may have a statutory responsibility to perform that function, or through its programmatic or regulatory responsibilities, the agency may have developed the necessary expertise to lead the ESF. In some agencies, a portion of the agency's mission is very similar to the mission of the ESF; therefore, the skills to respond in a disaster can be immediately translated from the daily business of that agency. Whatever the reason an agency is designated as the "primary" agency, that agency has the necessary contacts and expertise to coordinate the activities of that support function. For a list of primary agencies and their respective emergency support functions, see the Primary Agency Listing attached to this document and identified as Figure 7.
- b. Upon activation of the EOC, the primary agencies for the ESFs will

send a representative to the EOC to coordinate that ESF. It is up to the primary agency's discretion as to how many, if any at all, support agencies will accompany them at the EOC. Due to the limited space available in the EOC, the attendance of support agencies should be closely coordinated with the Emergency Management Director.

- c. The primary agency for the ESF will be responsible for obtaining all information relating to ESF activities and requirements caused by the disaster and disaster response.

This information gathering will frequently require the lead agency to step outside traditional information gathering protocols.

- d. The County will respond to local requests for assistance through the ESF process. Within the EOC, requests for assistance will be tasked to the ESF for completion. The primary agency will be responsible for coordinating the delivery of that assistance to the disaster area.
- e. Resource requests unable to be obtained locally will be forwarded to ESF #5. ESF #5 will submit a resource request to FDEM through their online tracking system. ESF #5 will be responsible for tracking that resource request from mission tracking number assignment through delivery.

FIGURE 7 - PRIMARY AGENCY LISTING

ESF #	FUNCTION NAME	PRIMARY AGENCY	PRIMARY STATE AGENCY
1	TRANSPORTATION	I.R. Co. School Board Transportation Department	Department of Transportation
2	COMMUNICATIONS	I.R. Co. Department of Emergency Services - Emergency Management Division	Department of Management Services
3	PUBLIC WORKS AND ENG.	I.R. Co. Public Works Department	Department of Transportation
4	FIREFIGHTING	I.R. Co. Department of Emergency Services - Fire Rescue Division	State Fire Marshal
5	INFORMATION AND PLANNING	I.R. Co. Department of Emergency Services - Emergency Management Division	ESF 5/SERT Planning Section
6	MASS CARE	American Red Cross - Coast to Heartland Chapter	Department of Business and Professional Regulation
7	RESOURCE SUPPORT	I.R. Co. Purchasing	Unified Logistics
8	HEALTH AND MEDICAL	I.R. Co. Health Department	Department of Health
9	URBAN SEARCH AND RESCUE	I.R. Co. Department of Emergency Services - Fire Rescue Division	State Fire Marshal
10	HAZARDOUS MATERIALS	I.R. Co. Environmental Health	Department of Environmental Protection State Emergency Response Commission
11	FOOD AND WATER	Salvation Army	Department of Agriculture and Consumer Services
12	ENERGY AND UTILITIES	I.R. Co. Utilities Department	Public Service Commission
13	MILITARY SUPPORT	I.R. Co. Department of Emergency Services - Emergency Management Division	Florida National Guard
14	PUBLIC INFORMATION	I.R. Co. Department of Emergency Services - Emergency Management Division	Florida Division of Emergency Management
15	VOLUNTEERS AND DONATIONS	I.R. Co. Department of Emergency Services – United Way	Governor's Commission on Volunteerism and Community Service
16	LAW ENFORCEMENT AND SECURITY	I.R. Co. Sheriff's Office	Florida Attorney General
17	ANIMAL PROTECTION	I.R. Co. Department of Emergency Services - Animal Control Division/Humane Society	Department of Agriculture and Consumer Services
18	BUSINESS AND INDUSTRY	I.R. Co. Department of Emergency Services – Emergency Management Division	Florida Department of Economic Opportunity

11. SERT Support Staff

- a. Upon activation of the SEOC, the FDEM becomes the support staff to the SERT. The SERT support staff is charged with ensuring that the SEOC procedures for information management and decision-making are timely and accurate.

12. Discussion of Mission Assignments

- a. The SERT Leader, SCO, or Deputy SCO will issue mission assignments to the primary state agency for the ESF based on the local government's identified resource shortfall. Resource tasking to the state agencies will be accomplished through the ESFs on a mission assignment basis. The "tasking on a mission assignment basis" means that a local government resource shortfall will be addressed through assigning a mission to address the shortfall rather than tasking specific pieces of equipment or personnel.
- b. The primary state agency for that ESF will be responsible for identifying the particular resource or resources that will accomplish the mission and coordinate the delivery of that resource to the local government.

13. Discussion of Mutual Aid Agreements and Memoranda of Understanding

- a. Mutual aid agreements and memorandum of understandings are an essential component of emergency management planning, response and recovery activities. Copies of all mutual aid agreements, memoranda of understanding and any other agreements within the jurisdiction and with other jurisdictions around the state that relate to emergency management activities can be found on file in a binder entitled *Compendium of Authorities and References* located in the Indian River County Emergency Management office. These agreements for reciprocal emergency aid and assistance, in case of emergencies, can increase resources and improve response and recovery efforts. The Emergency Management Director, or his designee, is responsible for the development and coordination of mutual aid agreements and memoranda of understanding. FDEMs EM Constellation will be utilized to monitor and track mission requests and responding to a mutual aid request will be made accordingly, including documentation for billing.

- b. Chapter 252, Florida Statutes, authorizes FDEM to make available any equipment, services, or facilities owned or organized by the state or its political subdivisions for use in the affected area, upon request by the Emergency Management Director. The FDEM is authorized to reinforce emergency management agencies in areas stricken by emergencies.
- c. The Statewide Mutual Aid Compact will have the participating political subdivision communicate requests for mutual aid through the FDEM; any responses from assisting parties will be directed from and coordinated by the FDEM. Municipalities will coordinate requests through the County Division of Emergency Management. This will ensure that the County and State are aware of and coordinates all resources that are mobilized.

DEM's coordination of mutual aid agreements is critical to the direction and control of the overall response and recovery efforts. Without DEM as the control point, severely impacted political subdivisions may not receive the type and amount of assistance needed if each political subdivision independently requests and executes agreements.

In accordance with Chapter 252, Florida Statutes, Florida also has mutual aid agreements and memorandum of understanding with other states and private organizations. These agreements provide additional resources for FDEM to have access to if needed.

The SERT support staff will monitor and coordinate all requests and executed agreements. Records will be maintained of agreement participants to effectively administer this activity.

14. Transition from EOC to the DFO EOC

- a. A Presidential Disaster Declaration means that several federal aid programs will be implemented. The administration of the federal aid programs will be conducted from a DFO that FEMA will establish in the disaster area. The establishment of post-disaster aid programs is described as the start of the recovery phase.
- b. The "response phase" and "recovery phase" of the disaster will, for a period of time, be occurring simultaneously. The "response phase" will be coordinated and conducted through the ESFs located at the EOC. The "recovery phase" will be

coordinated and conducted at the EOC with a transition to the DFO as appropriate.

E. NOTIFICATION AND WARNING – (Refer to the *Indian River County Comprehensive Emergency Management Plan, Annex VI, Communications Plan*)

1. **EMnete** The Indian River County Department of Emergency Services operates a 24-hour emergency communications center, either at the main office location during routine business hours or at the Indian River County Sheriff's Office during off-hours. The primary point to point (County Warning Point to State Warning Point) communication system is the Emergency Management Network (EMnet). The system has a special computer that will automatically failover to a satellite connection if the local internet connection fails. EMnet features electronic messaging, point-to-point voice calling, and voice conference call capabilities. Indian River County is also authorized to transmit Emergency Alert System messages to Florida broadcasters as well as the Integrated Public Alert and Warning System, which can notify citizens via smart phones, weather radios, and other devices.
2. **NAWAS** - The primary point-to-point (County Warning Point to State Warning Point) voice communications mechanism is currently NAWAS. NAWAS is a 4-wire telephone system used to convey warnings between Federal, State and local governments. The original mission of NAWAS was to warn of an imminent enemy attack or an actual missile launch upon the United States. NAWAS still supports this mission but the system is now used to communicate information about all hazards. NAWAS is operated and maintained by the Federal Emergency Management Agency (FEMA). The Federal NAWAS circuit connects FEMA's national and regional facilities with the Warning Points for each US State and Territory, as well as the National Weather Service offices and certain US Defense Installations. The State of Florida also has a State NAWAS circuit, with stations installed at most of the State's 67 County Warning Points or EOCs. Transmissions on FL NAWAS are independent from the federal circuit, however FEMA can bridge FL NAWAS with the national system to transmit on FL NAWAS in a major emergency. It will be used to provide us with severe weather information, emergency notifications (incoming and outgoing) and other appropriate emergency management business or functions.
3. **AT&T** - The primary communication system operative through the Department prior to, during, or after an emergency is AT&T, a commercial carrier telephone service. When a determination has been made that inter-county resources will be required, appropriate DEM

personnel will notify the ESF leaders from the required ESF. The ESF leaders will be responsible for alerting or notifying necessary personnel within their respective ESFs.

4. **SLERS** – State Law Enforcement Radio System (SLERS) is used by the State Watch Office (SWO) and the FDEM Regional Coordinators to report their current location or communicate updates about incidents they are responding to. Indian River County Emergency Management has a SLERS radio that provides the counties with a redundant means of communication during an emergency.
5. **Telecommunications Device for the Deaf (TDD)** - Across all age groups, in the United States, approximately 1,000,000 people (0.38% of the population, or 3.8 per 1,000) over 5 years of age are "functionally deaf;" more than half are over 65 years of age. About 8,000,000 people (3.7%) over 5 years of age are hard of hearing (that is, have some difficulty hearing normal conversation even with the use of a hearing aid). Again, more than half of those who are hard of hearing are over 65 years of age. While it is uncertain how many deaf or hearing-impaired residents are in Indian River County, our office is prepared to handle these calls through the use of a Telecommunications Device for the Deaf (TDD). A TDD is a machine that can be connected to the telephone providing deaf and hard-of-hearing people with a way to use a telephone without an interpreter. TDD users type their messages on a standard typewriter keyboard, which is read on a display by the receiver using compatible equipment. The Indian River County Department of Emergency Services' TDD telephone number is published in the BellSouth Text Telephone Directory annually. The County switchboard is also equipped with TDD equipment, thus facilitating a transfer of a caller, if necessary. Television stations also display information via visual crawlers for the hearing impaired.
6. **Language Line** - In order to broaden our capabilities with speaking with the non-English speaking communities of Indian River County, we subscribe to Language Line. They are the world's largest provider of 24-hour over-the-phone interpretation. In addition, we have several local residents who have offered their interpreter services. Either of these services would be available to non-English speaking callers. Additionally, public service announcements are also broadcast in Spanish.
7. **Alert Indian Rivere** Our office maintains an E-mail/text message alert subscriber list for disseminating weather alerts, or other warnings, to all subscribers (including local law enforcement and governmental officials/organizations). We are capable of immediately delivering

neighborhood level content to geographically targeted consumers via cell phone (texting), e-mail and the web.

8. **Social Media** - To increase our public outreach efforts, Indian River County also utilizes social media to post weather alerts, or other warnings. Residents now have the ability to follow us on Twitter and/or find us on Facebook.
9. **Cable TV Interrupt Service** - Indian River County utilizes social network media and users can Cable TV interrupt service allows our office to interrupt currently broadcasting television programs with current weather warnings, or other warnings, pertaining to our immediate area.
10. **Local Government Cable TV Channel** - Once the Emergency Operations Center is activated, the EOC will broadcast protective and recovery action information on the government access channel. This channel can be found on cable channel 27 in all of Indian River County.
11. **Agreement with Local FM Radio Station** - An agreement was entered into with WSCF (91.9 FM) radio which allows emergency management staff access to broadcast equipment for informing Indian River County citizens of storm/disaster information such as what protective actions to take, what the evacuation and re-entry plans are, and recovery information, including restoration of utilities.
12. **Amateur Radio** - Using equipment within the EOC, Amateur radio communications are provided by RACES/ARES volunteers. More specific information related to communications issues can be found in the description for ESF #2 (Communications), located in Annex I - Response Functions.
13. **Emergency Power** - The primary EOC has auxiliary power provisions capable of sustaining operations for five days. The secondary EOC has auxiliary power provisions capable of sustaining operations for three days.
14. **Key Official/Organization Notification** - The Emergency Management Director, and his staff, will notify key officials and emergency related organizations of any significant emergency events that may promulgate the opening of the EOC.
15. **Public Warning System** - The Emergency Management Director, and/or his designee, has the authority to activate the public warning system at any time an emergency event threatens persons or

property.

16. **Bullhorn/Door-to-Door Announcements** - Predetermined evacuation areas include the barrier island, low-lying areas, mobile/manufactured homes, sub-standard housing, RV parks and marinas. Initial notification will be through media resources and may be augmented by the use of bullhorn announcements and door-to-door visits by public safety officers.
17. **State EOC** - The County EOC will communicate with the SEOC on all activations, warnings and SITREPS by means of NAWAS, ESATCOM, commercial telephone or radio frequency links.
18. **Pre-Scripted Public Services Announcements** - The most common topics pertaining to health and safety, and considered to be helpful to the public, have been pre-scripted to form a library of written Public Service Announcements. Messages include topics on preparedness, response, recovery and mitigation. This document is maintained on file in the emergency management office as well as the office of the Public Information Officer (ESF #14).
19. **Emergency Information Center (EIC)** – The EIC is a phone bank designed to respond to public inquiries regarding rumors and information. The EIC will be activated and staffed by volunteers during an EOC activation. Staffing will be in accordance to call volume. Each operator will be provided just-in-time training with the Indian River County Public Information Handbook located in the EIC.
20. **INTEGRATED PUBLIC ALERT AND WARNING SYSTEM (IPAWS)**
During an emergency, alert and warning officials need to provide the public with life-saving information quickly. IPAWS is a modernization and integration of the nation's alert and warning infrastructure that will save time, protecting life and property. IPAWS gives public safety officials an effective way to alert and warn the public about serious emergencies using the Emergency Alert System, the Commercial Mobile Alert System, NOAA Weather Radio and other public alerting systems from a single interface. The Commercial Mobile Alert System (CMAS), also known as Wireless Emergency Alerts (WEA), and Personal Localized Alerting Network (PLAN), is an alerting network designed to disseminate emergency alerts to mobile devices such as cell phones and pagers. The government plans to issue three types of alerts through this system: alerts issued by the President, alerts involving imminent threats to safety of life, and AMBER Alerts. Indian River County Emergency Management was approved on November 20, 2012 by the Federal Emergency Management Agency (FEMA) as a Collaborative Operating Group (COG). Indian River County

Emergency Management will only utilize the IPAWS warning system to save time, protect life and property.

- Criteria for Issuing a Public Warning
 - **Does the hazardous situation require the public to take immediate action?**
 - **Does the hazardous situation pose a serious threat to life or property?**
 - **Is there a high degree of probability the hazard situation will occur?**

Most of the above identified modes of Notification and Warning can be used to provide recovery information to the public following a disaster, including the location of Disaster Recovery Centers, Recovery Information Centers, and Disaster Legal Assistance.

F. Response Actions

1. General

- a. Activation of County Plan If a disaster threatens prior to the Governor's decision to issue an Executive Order or Proclamation of a State of Emergency, the Emergency Management Director, or his designee, may (subject to Board approval) activate this plan; this may be followed by a declaration of a local State of Emergency as outlined in County Ordinance 91-18. In this situation, the DEM will coordinate any emergency response actions that may be necessary for the immediate protection of life and property.

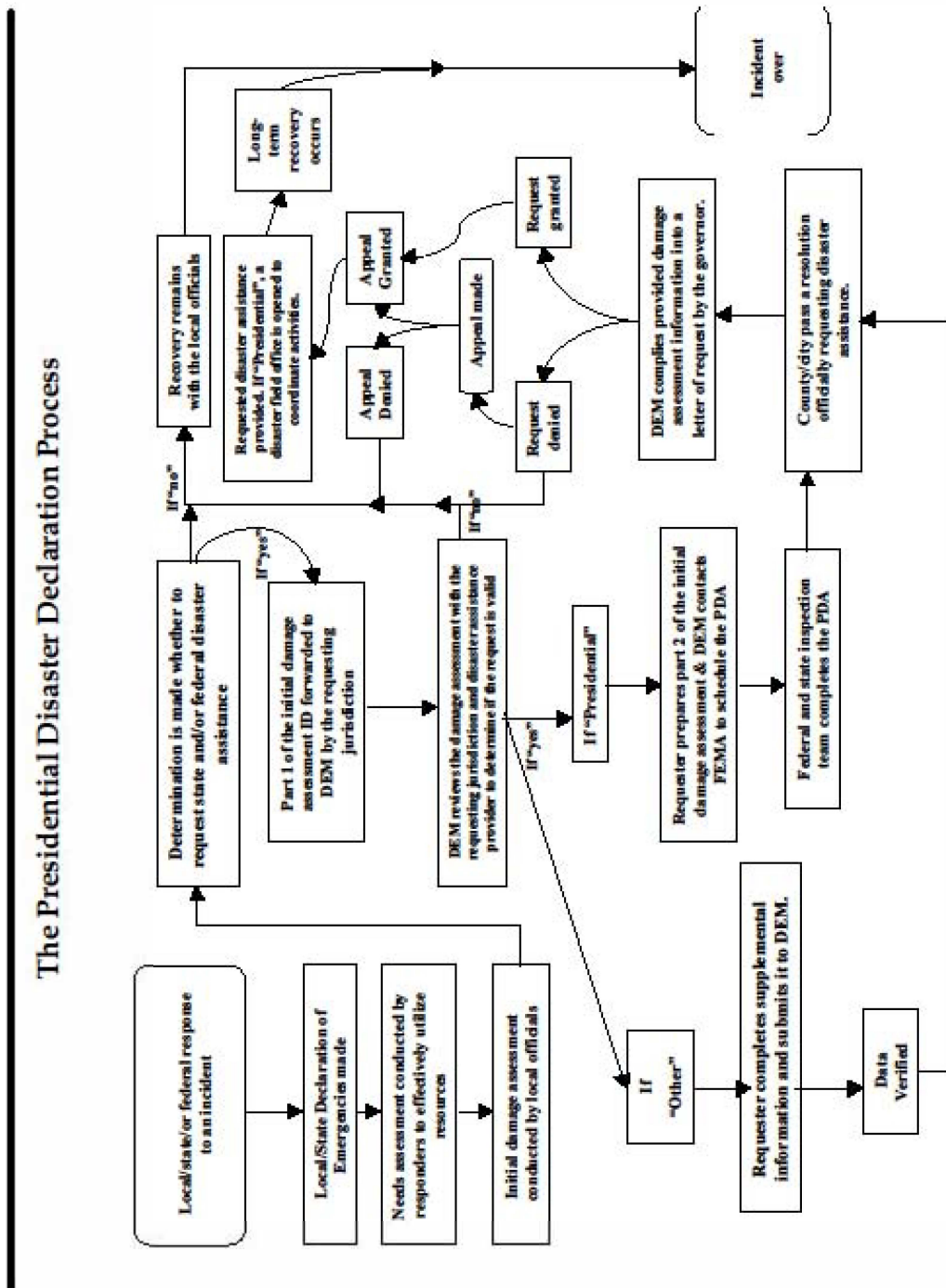
When an emergency or disaster has occurred or is imminent, the Governor may issue an Executive Order or Proclamation of a State of Emergency, activating the emergency response, recovery and mitigation aspects of state, local and inter-jurisdictional disaster plans that apply to the affected area. Such orders or proclamations are needed for the deployment and use of state personnel, supplies, equipment, materials and/or facilities that are available.

- b. Activation of EOC The EOC will be activated by the Emergency Management Director upon determination of a significant and immediate threat to life and property.
- c. School Closing The Emergency Management Director, or his designee, will establish direct communication with the Indian

River County School District Superintendent. Together they will make the decision of when to close and re-open schools. The Superintendent of Schools will make the official announcement.

- d. Request for Federal and State Assistance When disaster effects become such that the resources of Indian River County and/or its municipalities are inadequate to fulfill the needs of the citizens, then aid and assistance may be requested from the State of Florida and the Federal Government. Such requests for State and Federal assistance will be made through the Indian River County Emergency Management Division to the Florida Division of Emergency Management. Assistance required may be in the form of information, technical expertise or substantial financial, material or resource needs. A Declaration of State of Local Emergency is a prerequisite to receive State and Federal disaster assistance. A diagram depicting the declaration process is attached to this document and identified as Figure 8.
- e. When the County is under a warning or threatened by an impending disaster, emergency workers will be relieved in shifts to prepare their families and property. While no special provisions have been made for the safety and welfare of families of emergency workers, they have been encouraged to develop their own family disaster plan.
- f. The Emergency Management Director, or his designee, is responsible for establishing a liaison with the state response and recovery agencies and teams. ESFs will interface with State RIAT and RRTs to assist in the impact assessment and rescue/recovery operations. See Annex II - Recovery and Mitigation Actions, for more information.

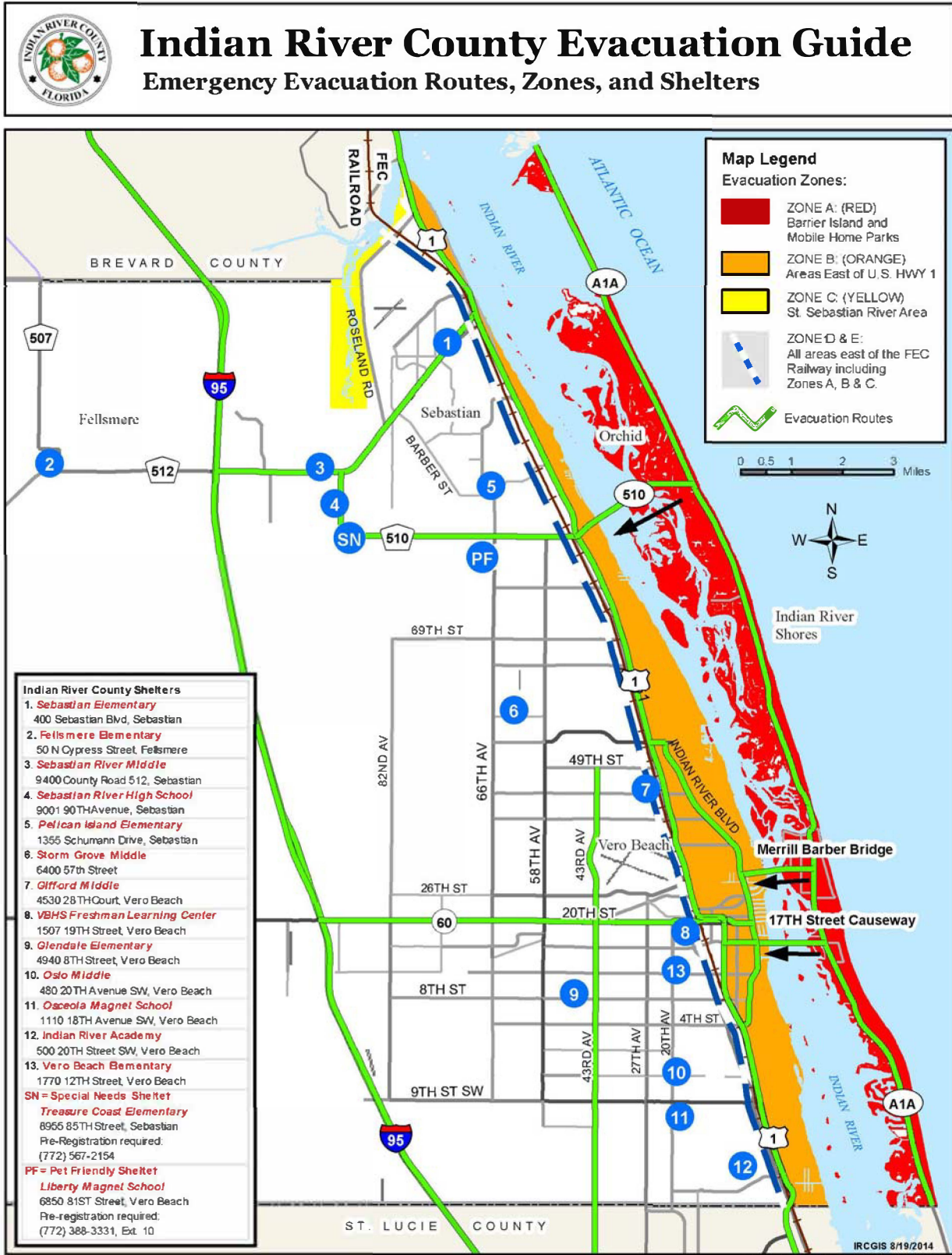
FIGURE 8
Disaster Declaration Process



2. Evacuation

- a. Calculated clearance times are used by county emergency managers as one input to determine when to recommend an evacuation order. Clearance times for Indian River County range from 12.5 to 27 hours (as determined by the Florida Statewide Regional Evacuation Study Program, November 2010).
- b. As part of the public information program, evacuation information and routes can be found in the following locations:
 - Local telephone directory (updated annually)
 - Annual supplement to the local newspapers, the *Press Journal* and the *Florida Today*.
 - The *Indian River County Official Disaster Preparedness Guide* (see Figure 9), which can be found online (<http://www.irces.com/EM/documents/Disaster-Preparedness.pdf>), local government offices, and the public libraries.

Figure 9



- c. In July of 1989, the Indian River County Department of Emergency Services formed a committee to address people within Indian River County with Special Medical Needs. Since then, the goal of the Special Need's Shelter Program is to provide a safe place for persons requiring medical assistance to temporarily shelter during an evacuation from either a man-made or natural disaster, rather than inundating local hospitals with a large number of people that a specially equipped and staffed shelter could adequately handle.

Regular public shelters available under emergency conditions will accept anyone who is self-sufficient, and who needs no outside professional assistance in performing activities of daily living. Individuals not meeting the above criteria will either be referred to the special need's shelter or referred to an appropriate health care facility. The regular public shelters will have nursing personnel and volunteers to assist evacuees from the time of arrival at the shelter. Individuals with decreased mobility without medical problems will be provided for in a regular shelter.

Registration for evacuation assistance will be provided for anyone who requires assistance with evacuation during an emergency to either a regular public shelter or to the Special Need's Shelter. Individuals needing transportation need to register with the special need's program prior to the hurricane season. For more specific information on the registering of individuals with special needs, see the *Standard Operating Procedure for Registration of Transportation and Special Needs Shelter Evacuees* retained on file in the Emergency Management office.

Special Needs registrants have been separated and categorized to the level of assistance required. This includes evacuees requiring space in shelter only, transportation and space in shelter only, space in the special need's shelter only, transportation and space in the special need's shelter only and transportation to a local hospital only (if pre-admitted).

The focus of the Special Need's Shelter is the medical support and care of persons who require special care during an evacuation at a shelter, such as:

- People with minor health/medical conditions that require observation, assessment and maintenance;

- Elderly people dependent on others for daily assistance
- People with chronic conditions who require assistance with activities of daily living
- People with the frequent need for medications and/or vital sign readings that are unable to do so without regular assistance
- Individuals who need a life-support system requiring electricity;
- Individuals with restricted mobility and who are in need of medical assistance.

As with any shelter, individuals who plan on utilizing the Special Need's facility must provide their own bedding, medications and supplies to the best of their ability. Supplies would include oxygen equipment, linens, pillows, blankets, chairs, medical supplies, medications, and any other personal items to make the stay as comfortable as possible. Drinking water and any non-perishable food items are also encouraged. Any special dietary foods required by a special care evacuee will be his/her responsibility. Assistance from the parking area into the Special Need's Shelter will be available.

The Division of Emergency Medical Services will provide items such as emergency oxygen equipment, first aid supplies, and advanced life support medications and equipment.

The location of the Special Need's Shelter in Indian River County is the Treasure Coast Elementary School located at 8955 85th Street, Sebastian. The facility, recently built, is designed for the handicapped, and has an adequate space capacity for the special need's citizens of our county.

Registration is required to allow entrance into the Special Need's Shelter. There are some limitations, specifically, those patients with high-risk pregnancy (within four weeks of delivery), unstable medical conditions, and citizens living in adult living facilities or nursing homes. Adult living facilities and nursing homes are mandated by the state to have alternate emergency evacuation plans in place for their residents.

- d. There are approximately seventy mobile home/recreational vehicle parks located within Indian River County. This figure equates to 7,193 dwellings, or a population of approximately 15,000 (11% of the total population). To ensure the safety and well-being of mobile home residents during hurricane conditions, these communities would be amongst the first to be issued an evacuation order. An inventory indicating the location and number of residents for each mobile home/RV park is maintained on file in the Emergency Management office.
- e. Approximately 10% of the Indian River County population are boat owners. A lack of hurricane experience has created a dilemma for boaters and the marine community. About 25% of hurricane fatalities result from boaters trying to secure vessels in deteriorating storm conditions. There are approximately thirteen commercial marinas within Indian River County with an approximate marine craft capacity of 917. Indian River County and the Florida Inland Navigation District, in cooperation with both public and private marine agencies, have developed a publication entitled *Hurricane Manual for Marine Interests in Indian River County*. This manual was developed to provide boaters and marina operators with updated and reliable information to help guide their actions and is distributed through our public presentations as well as being available at the Emergency Management office. An inventory indicating the location and number of boat slips for each marina is maintained on file in the Emergency Management office.
- f. There are three bridges in Indian River County, identified in Section II-B, that connect the barrier island to the mainland, neither of which are of the draw nor swing variety.
- g. The decision to re-enter evacuation areas will be based on a review of the information collected by the impact assessment teams and other organizations with damage assessment responsibilities to determine that conditions within the affected areas are safe for public access.

The number one response priority for re-entry will be mobilization and dispatch of search and rescue, as well as damage assessment teams into the impacted areas to search for survivors and provide assessments of the damage. These operations will be the first response elements programmed for re-entry and they will consist of representatives from law enforcement, fire-rescue, emergency management, public works, utility providers, property appraisers, building officials, American Red Cross, etc.

Re-entry by the general public will be approved by the Emergency Management Director and will be relayed to the public through ESF #14 (Public Information).

3. Sheltering

In the event of an evacuation, assistance will be coordinated from the EOC. There are twelve designated primary shelters, one Special Needs' shelter and one designated pet-friendly shelter located within Indian River County, none of which are located in designated storm surge areas. A list of the American Red Cross primary shelters is attached to this document and identified as Figure 10.

The "Refuge of Last Resort" concept is currently not an approved or condoned concept within Indian River County. Residents are expected to evacuate from the barrier islands, low-lying areas, sub-standard housing and mobile homes/RVs. However, once winds reach a sustained tropical force wind speed of 40 mph, all residents will be urged to get off of the roads and seek shelter in the nearest substantial building in a room without windows and structural reinforcement. Guidance on selecting safe rooms and taking precautionary measures are provided in public information materials.

The following initial actions will take place relative to sheltering:

- a. Notification to the SWP;
- b. Coordination of sheltering (i.e., communications, nursing, sanitation, food and security);
- c. Coordination of the activation and provision of mutual aid;
- d. Coordination with the SEOC for the opening of host shelters in areas not anticipated being in harm's way; and
- e. Coordination of the provision of additional resources (i.e., communications equipment and operators, nursing staff, administrative shelter and other support staff).

Figure 10



Indian River County 2015 PRIMARY SHELTER LIST



South County:

Indian River Academy
500 20th Street SW
Vero Beach, Florida 32962

Oslo Middle School
480 20th Avenue SW
Vero Beach, Florida 32962

Osceola Magnet School
1110 18th Avenue S.W.
Vero Beach, Florida 32962

Central County:

Gifford Middle School
4530 28th Court
Gifford, Florida 32967

Glendale Elementary School
4940 8th Street
Vero Beach, Florida 32960

V.B.H.S. Freshman Learning Center
1507 19th Street
Vero Beach, Florida 32960

Vero Beach Elementary School
1770 12th Street
Vero Beach, Florida 32960

North County:

Fellsmere Elementary School
50 North Cypress Street
Fellsmere, Florida 32948

Pelican Island Elementary School
1355 Schumann Drive
Sebastian, Florida 32958

Sebastian Elementary School
400 County Road 512
Sebastian, Florida 32958

Sebastian River Middle School
9400 County Road 512
Sebastian, Florida 32958

Sebastian River High School
9001 90th Avenue
Sebastian, Florida 32958

Storm Grove Middle School
6400 57th Street
Vero Beach, Florida 32967

****SPECIAL NEEDS SHELTER****

Treasure Coast Elementary School
8955 85th Street
Sebastian, Florida 32958
Pre-registration required:
Call 772-567-2154 for information.



****PET-FRIENDLY SHELTER**

Liberty Magnet School
6850 81st Street
Vero Beach, Florida 32967
Pre-registration required:
Call 772-388-3331, Ext. 10
for information



G. Recovery Actions

The Recovery Phase will begin during the response phase and may encompass these general areas:

Damage assessment of the residential, government and business sectors for the purpose of administration of programs to restore them to their pre-disaster level of functioning; and

Administration of programs to mitigate the consequences of future disasters.

1. Initial Actions

- a. Monitor the disaster event and analyze available information regarding disaster conditions
- b. Identify locations for the DFO and DRCs
- c. Assemble and brief recovery staff;
- d. Place recovery support personnel on stand-by status, as necessary. Brief personnel on disaster conditions and potential for deployment; and
- e. Establish liaison with recovery staff in municipal EOCs.

2. Continuing Actions

- a. Maintain coordination with the state recovery staff
- b. Establish and support the DFO as necessary;
- c. Maintain liaison with the SEOC and municipal EOCs to monitor disaster conditions; and
- d. Coordinate federal and state disaster assistance programs and make recommendations to the SCO regarding continued staffing.

IV. **RESPONSIBILITIES**

A. General

All County departments, constitutional officers, municipalities, and volunteer agencies are responsible for the following general items:

1. Develop the necessary functional annexes, appendices, standard operating procedures (SOPs) and checklists for the effective, efficient organization and performance of functions required to respond to and recover from an emergency or disaster event.

2. Designate and train essential personnel for specific assignments in the conduct of emergency operations. Provide instructions to personnel regarding agency-staffing policy during an emergency or disaster event.
3. Protect and secure facilities, property and equipment under their control.
4. Maintain accurate records of emergency related expenditures (such as personnel, supplies, and equipment costs).
5. Provide staff, supplies and equipment (as required and available) in support of emergency response and recovery operations. Expedite required activities for return to normal conditions as soon as possible.
6. Preservation of Vital Records/Documents:

The records custodian for Indian River County is the assistant to the county administrator. This position is responsible for enforcing the county's retention schedule and establish standards for controlling, retaining, destroying and/or preserving public records to ensure compliance with the state and federal laws, regulations, and policies. All County departments, constitutional officers, municipalities, and volunteer agencies of Indian River County must insure the preservation of vital records/documents deemed essential for continuing government functions and conducting post-disaster operations. The development of a disaster plan for vital records has strongly been encouraged to each department.

Damage to vital records/data (paper, computer hard drives, microfilm, etc.) is most often caused by fire, water, wind, and power interruption or surges.

Vital records' disaster preparedness plans should include:

- a. Identification and documentation of the location of critical information.
- b. Standard backup procedures (duplicate copies; off-site storage, etc.).
- c. Prearranged resources (personnel) to assist in the resumption of data entry/retrieval.
- d. Prearranged resources to assist in recovery of damaged

data/records.

B. Indian River County

The Emergency Management Director is responsible for:

1. Ensuring that the Division of Emergency Management provides the necessary revisions to this plan and that the plan is prepared, coordinated, published and distributed to the appropriate agencies.
2. Active leadership of an emergency management framework involving all government, private, and volunteer organizations which have a role in the success of comprehensive emergency management within the County.
3. Development and leadership of a broad-based public awareness, education, and information program designed to reach a majority of the citizens of the County, including citizens needing special media formats, such as TDD or non-English languages.
4. Active participation in discussions and negotiations with the state regarding policies and priorities to ensure that the work being done contributes to the improvement of emergency capabilities for the County.
5. Responsible execution of negotiated scopes of work for federal and state emergency management programs.
6. Support of the emergency management needs of all municipalities within borders, and brokering of intra-county mutual aid agreements to render emergency assistance. When local requests for assistance exceed county resources, the County emergency management office will coordinate all efforts with the state and federal government in support of local disaster operations.
7. Establishment and monitoring of County mutual aid agreements within the County, with other counties and with the state.
8. Direction and control of a County response and recovery approach which is based on functional groups, involves broad participation from county organizations, and is compatible with the state and federal response and recovery organization and concept of operations.
9. Leadership and participation in programs or initiatives designed to avoid, reduce, and mitigate the effects of hazards through development and enforcement of policies, standards, and regulations.

10. Compliance of each ESF lead agency to be involved with the planning, response, recovery and mitigation of local emergencies. For specific details of their responsibilities see Annex I - Response Functions.
11. Coordinating how emergency response personnel will be tasked to deal with emergencies or disasters in Indian River County. At any such time that this Plan is activated (local emergency, minor, major or catastrophic disaster), the Emergency Management Director will be responsible for direction and control under the ultimate authority of the Indian River County Board of County Commissioners. For greater detail, see the EOC SOP attached to this document and identified as Appendix D.

C. Special Districts

Special districts are responsible for establishing liaisons with counties and with other state organizations to support emergency management capabilities within Florida. Special districts that involve inter-jurisdictional authority can provide resources and services to support other functionally related systems in time of disaster.

D. State of Florida

The Government of the State of Florida is responsible for:

1. Active leadership of an emergency management framework at the state level involving all government, private and volunteer organizations which have a role in the success of comprehensive emergency management within Florida.
2. Development and leadership of a broad-based public awareness, education and information program designed to reach a majority of the citizens of Florida, including citizens needing special media formats, such as Braille or non-English languages.
3. Active participation in discussions and negotiations with other states and with the federal government regarding policies and priorities to ensure that the work being done contributes to the improvement of emergency capabilities for the nation.
4. Responsible execution of negotiated scopes of work for federal and state emergency management programs.
5. Support of the emergency management needs of all counties within

Florida, and brokering of inter-county and inter-state mutual aid agreements to render emergency assistance. When requests for assistance exceed state resources, the state will contact other states for assistance, as well as FEMA.

6. Establishment and monitoring of state mutual aid agreements within the state, with other states and with FEMA.
7. Direction and control of a state response and recovery approach which is based on functional support groups, involves broad participation from state organizations, and is compatible with the federal response and recovery organization and concept of operations.
8. Leadership and participation in programs or initiatives designed to avoid, reduce and mitigate the effects of hazards through development and enforcement of policies, standards and regulations.

E. Federal Government

The federal government is responsible for:

1. Providing immediate emergency response on federally owned or controlled property, such as military installations and federal prisons, and notification of the Florida DEM.
2. Providing assistance, as requested by the State of Florida, under the lead agency's direction of FEMA, as specified in the Robert T. Stafford Act, Public Law 93-288.
3. Identifying and coordinating assistance under other federal statutory authorities.

V. **FINANCIAL MANAGEMENT POLICY**

It is the intent of this policy to provide guidance for basic financial management to all departments and agencies responding under the provisions of the plan, to ensure that funds are provided expeditiously and that financial operations are conducted in accordance with appropriate policies, regulations and standards.

A. Assumptions

1. Due to the nature of most emergency situations, finance operations will often be carried out within compressed time frames and other pressures, necessitating the use of non-routine procedures; this in no way lessens the requirement for sound financial management and

accountability.

2. A Presidential disaster or emergency declaration will permit funding from the Federal Disaster Relief Fund under the provisions of the Stafford Act in addition to the financial resources initiated at the state and local levels.
3. The Federal Office of Management and Budget (OMB) and Congress will give rapid approval to a FEMA-prepared emergency budget request at a level sufficient to sustain a response operation for at least three weeks, with the opportunity to extend same if the situation warrants.

B. Expenditure of Funds

Timely financial support of any extensive response activity could be crucial to saving lives and property. While innovative and expeditious means of procurement are called for during times of emergencies, it is still mandatory that good accounting principles and practices be employed in order to safeguard the use of public funds from the potential of fraud, waste and/or abuse.

1. A public assistance (P.A.) training meeting will be coordinated with FDEM on a biennial basis by the EOC to familiarize each of the county departments with disaster financial management procedures. Training topics include an introduction to the P.A. program, documentation, reimbursement, eligibility, forms, closeout, etc. The county OMB office has been assigned the financial and administrative management of the unincorporated areas of the county and for providing guidance and training. Their procedures for financial transactions, accurate accounting, grants management, and payroll procedures are in conformance with the Standard Government Accounting Principles, which providing greater accountability and well-informed decision making through excellence in public-sector financial reporting. Each municipality is responsible for designating their own financial management practices.
2. In concert with federal and state guidelines, approval for expenditure of funds for response operations (facilities, equipment, supplies, services and other resources) will be given by officials of the primary and support agencies with concurrence with the Emergency Management Director. Each agency is responsible for establishing

effective administrative controls of funds and segregation of duties for proper internal controls, and to ensure that actions taken and costs incurred are consistent with the missions identified in this plan.

3. Extreme care and attention to detail must be taken throughout the emergency response period to maintain logs, formal records, and file copies of all expenditures (including personnel time sheets) in order to provide clear and reasonable accountability and justification for future reimbursement requests. Reimbursement is NOT an automatic "given," so as much deliberative prudence as time and circumstances allow should be used.

Complete and accurate accounts of all emergency expenditures and obligations, including personnel and equipment costs, must be maintained. Despite the difficulty in maintaining such records in the stress of an emergency, accurate accounts are required to identify and document those funds that might be eligible for federal reimbursement under emergency or major disaster project applications and/or those funds for which no reimbursement will be requested. Each emergency event is unique. Therefore, the Emergency Management Director, and/or his designee will establish deadlines for data submission related to financial reimbursement.

It is the responsibility of the elected Board of County Commissioners to secure the public's safety. The Board of County Commissioners will appropriate all funds considered by the Board as necessary for mitigation, preparedness, response to and recovery from disasters.

4. In support of fiscal procedures, all records relating to the allocation and disbursement of funds pertaining to activities necessary for the implementation of operations during the four phases of emergency management are in compliance with:
 - The Code of Federal Register – 2 CFR Part 200, the Super Circular. This became effective December 26, 2014 and streamlines the language from eight existing Office of Management and Budget (OMB) circulars into one consolidated set of guidance. This reform of OMB guidance improves the integrity of the financial management and operation of Federal programs and strengthens accountability for Federal dollars by improving policies that protect against waste, fraud, and abuse.
 - Chapter 215, Florida Statutes, pertaining to state financial matters and Chapter 252, Florida Statutes, relating specifically to emergency management powers and responsibilities; and
 - The policies and directives detailed in the County CEMP ESF #7 (Resource Support) Guidelines.

5. The Indian River County Office of Management and Budget is authorized to execute the funding agreements with other legal entities on behalf of the county but will make every effort to minimize the expense to the county by exploring all available local and state funding sources available in a post-disaster situation.

VI. TRAINING, EXERCISE AND PUBLIC AWARENESS/EDUCATION

For any Emergency Management program to be successful, training of individuals at all levels of government for their respective roles in the four phases of emergency management must be considered a high priority. This is especially important because of the relatively new concept of operations in the National Response Framework (NRF). The ESF operational concept requires coordination at the federal, state and local levels of government to ensure that everyone involved in emergency activities is aware of their responsibilities when a disaster threatens or occurs. Also, it is important that each agency is knowledgeable of what other agencies can and cannot do under disaster conditions. To accomplish the goal of developing a well-trained cadre of responders around the state, the following strategic planning statements are offered:

A. Training

The Emergency Management Director will assign either the Emergency Management Planner or Radiological Analyst as the individual responsible for establishing and monitoring all Emergency Management training programs and exercises for which the county is responsible. The person assigned this task, in consultation with the Emergency Management Director and/or Emergency Management Coordinator, will establish and maintain an exercise schedule through the Multi-Year Training and Exercise Plan (MYTEP) required annually by the Florida Division of Emergency Management (FDEM).

Emergency Management training will include training required to keep all levels of local government at an acceptable level of readiness to respond to any disaster identified in the hazard vulnerability analysis contained within this Basic Plan. The training program will include appropriate officials of each municipality and all volunteers and volunteer agencies assigned responsibilities in the Comprehensive Emergency Management Plan.

The Emergency Management Coordinator will keep abreast of and request training from the state on all matters that relate to state and federal programs that would enhance the preparedness of Indian River County.

The Emergency Management staff will remain current with the highest training credentials possible. They will cooperate with and assist other county and municipal agencies in the conduct of exercises.

Each agency tasked within this plan will be trained (and maintain training) to compliment/fulfill the requirements of the National Incident Management System (NIMS) commensurate with the role assigned. The NIMS Integration Center establishes the minimum training standards for credentialing personnel and equipment (HSPD-5).

A training program for response, recovery and mitigation is outlined in the Indian River County Training and Exercise plan and will be scheduled by emergency management. Each agency will maintain a roster of trained personnel, including the type of training and date received, for all persons with emergency response capabilities. A Public Assistance workshop will also be offered semi-annually to all possible PA participants. This training will provide an overview of documentation and reimbursement procedures.

The minimum and recommend training requirements for ESFs and other agencies are outlined in Indian River County Training and Exercise Plan.

B. Cost for Training

All State-Delivered (G-series courses, listed on FDEM SERT TRAC) are free of cost. The student, or sponsoring agency, is responsible for all other associated costs. For those attending FEMA-resident courses, the training is free and FEMA will reimburse the student the allowable travel costs and provide free lodging on the campus. Students, or their sponsoring agency, are responsible for all other costs, e.g., meals. All FEMA Independent Study courses, (IS-courses listed on FEMA – Emergency Management Institute website) are free. For other State-delivered training opportunities, US Department of Justice, etc., all associated costs will be contained in the training announcement. All training is available to County and municipal personnel, and their volunteers, on a routine basis.

C. Exercise and Training Schedule

A viable exercise program is an essential component of any effort to fully train emergency personnel for their duties and responsibilities when a disaster occurs. It is crucial that those individuals who are charged with responding to emergencies are required to "experience" a disaster under as realistic conditions as possible before any actual event. The purpose of exercising is to improve the preparedness posture of the organization(s) involved. This will result in the reduction of loss of life and property when a disaster occurs. In addition to county and municipal agencies, other agencies assigned responsibilities for the implementation of the CEMP will be invited and requested to participate in exercises. At the beginning of each year, emergency management staff will evaluate training and exercise opportunities. All ESFs are invited to participate in the stakeholders meetings and provide input for the MYTEP which is a three-year training and exercise plan/schedule kept on file in the office of emergency management and submitted to FDEM annually. At a minimum, Indian River County will

participate in the following annual exercises: Vero Beach Airport exercise, statewide hurricane exercise, radiological exercise, tsunami exercise and the ESF coordination training. Additionally, Indian River County allows the use of our facility, staff and notification resources in support of inter-agency exercises.

At the conclusion of each exercise, the emergency management director, or his designee, will request attendees complete an HSEEP compliant Participant Feedback Form. This feedback will be used to compile an After Action Report to identify any shortcomings and steps to be taken by the emergency management director to correct the deficiencies and further refine the CEMP.

D. Public Awareness and Education

In order to better educate and inform the public of protective actions before a disaster occurs, public information is critical for saving lives and minimizing property damage. Certain responsibilities exist for public information when Emergency Management plans are implemented. Public actions may depend upon public information during the period before a disaster is imminent, in an actual or threatening emergency situation, and in the post-emergency recovery period. For detailed methods of public outreach, see the *Public Outreach, Notification and Crisis Communication Strategy* located in the office Indian River County Emergency Management).

Pre-disaster education programs serve to increase awareness of Emergency Management programs, educate the public on ways to protect life and property, and inform the public on the availability of further assistance and information.

1. Regularly scheduled press conferences will be identified during an event. The County Commission Chambers and the media room of the Emergency Operations Center have been identified as the locations for the mass media to gather.
2. The following radio and television stations have agreed to disseminate emergency information and participate in the local public emergency notification system in accordance with the Region 10 Emergency Alert System (EAS) Plan:
 - a. RADIO STATIONS (Indian River County)
 - (1) WSCF 91.9 FM
 - (2) WQCS 88.9 FM
 - (3) WAVW 94.7 FM
 - (4) WGYL 93.7 FM
 - (5) WOSN 97.1 FM
 - (6) WPAW 99.7 FM
 - (7) WTTB 1490 AM

b. TELEVISION STATIONS

- | | |
|---------------------------|---------------------------|
| (1) WPTV (NBC) Channel 5 | (4) WFLX (FOX) Channel 29 |
| (2) WPEC (CBS) Channel 12 | (5) WTVX (UPN) Channel 34 |
| (3) WPBF (ABC) Channel 25 | (6) WWCI (IND) Channel 10 |

3. A series of Public Safety Announcements have been developed and is available to the PIO. These pre-scripted messages are maintained on file at the Department of Emergency Services.
4. A brochure entitled the *Official Disaster Preparedness Guide for Indian River County* is published each year. This guide identifies information about the hazards and vulnerability of our community, provides maps, evacuation zones, and other types of disaster preparedness information, to include high-risk areas and evacuation routes. The brochures are distributed at public presentations and are available at the office of Emergency Management.
5. During an emergency, our office telephones will be staffed on a 24-hour basis until the emergency has been abated. The advertised telephone number for our office is (772) 567-2154. In addition to this main phone line, additional phone lines will be established with the numbers broadcasted through the local media. During emergency events, our public information line will be activated and citizens may call (772) 567-2129 for pre-recorded emergency information.
6. During any period of disaster in Indian River County, the government access cable channel will be broadcasting live from our Emergency Operations Center. This capability, along with that of local radio station announcements, will extend the Emergency Management's public outreach capabilities both in response to and recovery from a disaster, including the location of Disaster Recovery Centers, Recovery Information Centers, and Disaster Legal Assistance and education on mitigation opportunities. For cable television subscribers, the local government channel can be found on cable Channel 27 throughout Indian River County. Information will be broadcast 24-hours per day.
7. The Indian River County Emergency Management web page (irces.com) has a full complement of disaster preparedness information as well as a comprehensive listing of disaster preparedness information, including links to the National Hurricane Center, Federal, State, and local agencies.
8. To increase our public outreach efforts, Indian River County utilizes social media. Residents now have the ability to follow us on Twitter and/or find us on Facebook.
10. Indian River County currently has 15 public shelters. Since all shelters will not open at the same time, it is crucial for the public to

monitor media reports for an opening in their area. Depending on the storm track and intensity, the number and location of shelter openings will vary. At a minimum, shelters will open in the north, central and south county area. Public shelter openings will be broadcast via local radio stations, television stations and the government access channel listed above.

11. Evacuation information, along with routes, is published annually in the Vero Beach telephone directory, as well as in a hurricane preparedness supplement issued by the *Press Journal* and the *Florida Today* just prior to each hurricane season (an example can be found on Figure 9).
12. While the entire County is subject to a host of hazards (outlined in Section II-A and the Indian River County Local Mitigation Strategy), there are areas which are more vulnerable to particular hazards (i.e., ponding water from heavy rainfall is most likely to effect the low swampy inland areas and areas along streams and canals; storm surge is most likely to affect residents along the coastal areas and the Indian River Lagoon; severe freezes would economically damage the citrus industry). Therefore, the department's goal is to increase awareness of the pre-disaster education programs available to these areas.
13. Each year, the Emergency Management Division hosts a media day. Representatives from a variety of media outlets are invited to learn about emergency management procedures and the methods used to disseminate public information in an emergency. Press packets are distributed and tours are given of the EOC and designated media area. The purpose of this gathering is to strengthen relations with the media prior to an emergency event.

VII. REFERENCES AND AUTHORITIES

This plan replaces the Indian River County Nuclear Civil Protection Plan and the Indian River County Peacetime Emergency Plan. It does not supplant the Hazardous Materials Plan, which is not an operations-oriented document or the Florida Radiological Emergency Management Plan for Nuclear Power Plants, which was developed for response to radiological incidents under separate state and federal statutory authorities. However, this plan will be used to supplement the REP plan, in order to provide a comprehensive response. Copies of the following local references, authorities and mutual aid agreements can be found on file in a binder entitled *Compendium of Authorities and References* located in the Indian River County Emergency Management office:

A. Local

1. Ordinances

a. ORDINANCE 91-17

An ordinance of Indian River County, Florida, designating the Chairman of the Board of County Commissioners, or in his/her absence, Vice-Chairman or Board designee, in this succession, as the official with authority to declare a State of Emergency in the event of natural or man-made disaster or the imminent threat thereof: authorizing such official to take certain emergency measures relating thereto; providing severability; and providing an effective date.

b. ORDINANCE 91-18

An ordinance of Indian River County, Florida, providing for the activation of the disaster emergency plans applicable to Indian River County and enumerating actions that may be taken during said emergency.

c. ORDINANCE 2005-029

An ordinance of Indian River County, Florida, for the entry onto private property during the time of a declared emergency for the purpose of removing debris.

d. ORDINANCE 2009-23

An ordinance of Indian River County, Florida, requiring registered sex offenders to identify themselves as such upon entry into an emergency shelter.

2. Resolutions

a. RESOLUTION NO. 89-150

A resolution of Indian River County, Florida, by and through its Board of County Commissioners, continuing to recognize the Indian River County Emergency Management Services Department to act in accordance with the State Emergency Operations Plan and Program.

b. RESOLUTION NO. 91-55

A resolution of Indian River County, Florida, establishing a disaster emergency employee policy.

c. RESOLUTION NO. 2015-078

A resolution of Indian River County, Florida, adoption approving the revised Unified Local Mitigation Strategy.

d. RESOLUTION NO. 2015-127

A resolution of Indian River County, Florida, delegating to the County Administrator, and the Assistant County Administrator the authority to execute all documents and emergency declarations necessary to the proper functioning of the county during the period that normally scheduled meetings of the Board of County Commissioners are canceled.

e. RESOLUTION NO. 2006-113

A resolution of Indian River County, Florida, adopting the National Incident Management System as the system for preparing for and responding to disaster incidents in Indian River County.

f. RESOLUTION NO. 2015-044

A resolution of Indian River County, Florida, adopting the Indian River County Hazardous Materials Emergency Plan.

g. RESOLUTION NO. 2013-091

A resolution of Indian River County, Florida, adopting a Post Disaster Redevelopment plan for Indian River County.

h. A sample copy of a resolution for declaring a local State of

Emergency can be found attached to this document and identified as Figure 11.

3. Miscellaneous
 - a. Indian River County Emergency Medical Services Trauma Transport Protocol.
 - b. Indian River County Comprehensive Growth Management Plan.
 - c. Treasure Coast Hurricane Evacuation Study.
 - d. Critical Facilities Inventory.
 - e. Mobile Home Park Inventory.
 - f. Marina Inventory.
- B. Specific plans/guides that supplement this CEMP that apply to unique situations are as follows:
 1. *Indian River County Call-Down System User Guide* – An automated telephone message system.
 2. *Indian River County Damage Assessment Team Assignments (Standard Operating Guide)* - A guide to organize damage assessment to reduce redundancy in efforts.
 3. *Indian River County Everbridge User's Guide* – Mass notification system guide.
 4. *United States Coast Guard – Area Contingency Plan*
 5. *Central Florida Intelligence Exchange (Standard Operating Procedures)*
 6. *Indian River County Check-in/Security Procedures for EOC Activation*
 7. *Indian River County Policies and Procedures for Capital Assets*
 8. *Indian River County Logistics and Resource Management Plan*
 9. *Indian River County Equipment Operation Guide*
 10. *Indian River County Tsunami Warning and Evacuation Plan*
 11. *Indian River County Disaster Feeding Plan*

12. *Ebola Virus Guidance for Indian River County Emergency Management/Fire Rescue*
13. *Mass Immigration* - Indian River County Caribbean Refugee Plan
14. *Airports* - Vero Beach Regional Airport Certification Manual: Aircraft and Airport Safety Plan, approved by the Federal Aviation Administration on January 3, 1997.
15. *Nuclear Power Plants* - State of Florida Radiological Emergency Management Plan
16. *Ports/Marinas* - Indian River County Comprehensive Plan
17. *Emergency Notification* - Emergency Alert System Plan (Operation Area 10)
18. *Military Support* - Florida National Guard Operation Plan for Military Support to Civil Authorities
19. *Mitigation* - Indian River County Wildfire Mitigation Plan
20. *Special Needs* - *Special Needs Shelter Plan* (Indian River County)
21. *Special Needs* - *Transportation/Special Needs Shelter Client Registration Process* (Indian River County)

Copies of these plans are maintained on file at the Emergency Management office.

C. State

1. Statutes

- a. Chapter 252 - State Emergency Management Act. Chapter 252.38, Florida Statutes, delineates the emergency management responsibilities of political subdivisions in safeguarding the life and property of citizens and other persons within the political subdivisions. Key points within the statutes include:

- (1) Performing emergency management functions within the territorial limits of Indian River County and conduct those activities pursuant to 252.31--252.90, and in accordance with state and county emergency management plans and mutual aid agreements.

- (2) Appointment of a Director who meets the minimum training and education qualifications established in the job description approved by the Board. The Director will be appointed to serve at the pleasure of the Board, subject to the Board's direction and control, in conformance with applicable resolutions, ordinances and laws. The Director has responsibility for the organizations, administration and operation of Indian River County Emergency Management division, subject only to the direction and control of the Board of County Commissioners and the County Administrator. The Director will coordinate emergency management activities, services and programs within the County and will serve as liaison to the Florida Division of Emergency Management and other local emergency management organizations.
- (3) Establishment, as necessary, a primary and one or more secondary emergency operating centers (EOCs) to provide continuity of government and direction and control of emergency operations.
- (4) Power to appropriate and expend funds; make contracts; obtain and distribute equipment, materials and supplies for emergency management purposes; provide for the health and safety of persons and property, including assistance to victims of any emergency; and direct and coordinate the development of emergency management plans and programs in accordance with the policies and plans set forth by federal and state emergency management agencies.
- (5) Reduction of vulnerability of people and communities of this county to damage, injury, and loss of life and property resulting from natural, technological, or manmade emergencies.
- (6) Preparation for prompt and efficient response and recovery to protect lives and property affected by emergencies.
- (7) Response to emergencies using all systems, plans, and resources necessary to preserve adequately the health, safety, and welfare of persons or property affected by the emergency.

- (8) Recovery from emergencies by providing for the rapid and orderly start of restoration and rehabilitation of persons and property affected by emergencies.
- (9) Authority to request state assistance or invoke emergency related mutual aid assistance by declaring a local state of emergency. The duration of the local state of emergency will be limited to seven days, and it may be extended as necessary in seven-day increments. The County also has the power and authority to waive the procedures and formalities otherwise required of Indian River County by law, pertaining to:
 - a. Performance of public work and taking whatever prudent action is necessary to ensure the health, safety and welfare of the community;
 - b. Entering into contracts and incurring obligations;
 - c. Employment of permanent and temporary workers;
 - d. Utilization of volunteers;
 - e. Rental of equipment;
 - f. Acquisition and distribution, with or without compensation, of supplies, materials and facilities; and
 - g. Appropriation and expenditure of public funds.
- (10) Charge and collect fees for the review of emergency management plans required of external agencies and institutions. The fees will be in accordance with the fee schedules established by the Florida Division of Emergency Management and as approved by the Indian River County Board of County Commissioners.
- (11) Coordination and development of a comprehensive emergency management plan and program that is consistent with the state comprehensive emergency management plan and program.
- (12) Provision of an emergency management system

embodying all aspects of pre-emergency preparedness and post-emergency response, recovery, and mitigation.

- (13) Maintaining a registry of disabled persons in order to meet the special needs of persons who would need assistance during evacuations and sheltering because of physical or mental handicaps. The registry identifies those persons in need of assistance and assists in planning for resource allocation to meet those identified needs. The registry is updated annually.
 - (14) Development and maintenance of a radiological emergency response plan in accordance with requirements of the United States Nuclear Regulatory Commission and the Federal Emergency Management Agency.
 - (15) Development and maintenance of an emergency plan for hazardous materials to safeguard the lives and property of the residents of our County against the threat of a hazardous materials incident.
 - (16) Participation from the Indian River County School District, during a declared local state of emergency and upon the request of the Chairman, Indian River County Board of County Commissioners, by providing facilities and personnel to staff those facilities. Indian River County School District will, when providing transportation assistance, coordinate the use of vehicles and personnel with Emergency Support Function (ESF) #2 (Transportation).
- b. Chapter 14, Florida Statutes, Governor.
 - c. Chapter 22, Florida Statutes, Emergency Continuity of Government.
 - d. Chapter 23, Part 1, Florida Statutes, The Florida Mutual Aid Act.
 - e. Chapter 125, County Government; Chapter 162, County or Municipal Code Enforcement; Chapter 166, Municipalities; and Chapter 553, Building Construction Standards.
 - f. Chapter 154, Florida Statutes, Public Health Facilities.
 - g. Chapter 161, Beach and Shore Preservation; Part III, Coastal Zone Preservation.

- h. Chapter 162, Florida Statutes, County or Municipal Code Enforcement.
- i. Chapter 163, Inter-governmental Programs; Part I, Miscellaneous Programs.
- j. Chapter 166, Florida Statutes, Municipalities.
- k. Chapter 187, State Comprehensive Plan.
- l. Chapter 215, Florida Statutes, Financial Matters.
- m. Chapter 216, Florida Statutes, Planning and Budgeting.
- n. Chapter 235, Florida Statutes, Educational Facilities.
- o. Chapter 245, Florida Statutes, Disposition of Dead Bodies.
- p. Chapter 250, Florida Statutes, Military Affairs.
- q. Chapter 284, Florida Statutes, State Risk Management and Safety Programs.
- r. Chapter 287, Florida Statutes, Procurement of Personal Property and Services.
- s. Chapter 376, Florida Statutes, Pollutant Discharge Prevention and Removal.
- t. Chapter 377, Florida Statutes, Energy Resources.
- u. Chapter 380, Land/Water Management.
- v. Chapter 388, Florida Statutes, Public Health.
- w. Chapter 401, Florida Statutes, Medical Telecommunications and Transportation.
- x. Chapter 403, Florida Statutes, Environmental Control.
- y. Chapter 404, Florida Statutes, Radiation.
- z. Chapter 442, Florida Statutes, Occupational Safety and Health.
- aa. Chapter 553, Florida Statutes, Building Construction Standards.
- bb. Chapter 581, Florida Statutes, Plant Industry.
- cc. Chapter 590, Florida Statutes, Forest Protection.
- dd. Chapter 633, Florida Statutes, Fire Prevention and Control.
- ee. Chapter 870, Florida Statutes, Riots, Affrays, Riots, and Unlawful Assemblies.

2. Administrative Rules

- a. Florida Department of Community Affairs Administrative Rule, Chapters 9G-6.
- b. Florida Department of Community Affairs Administrative Rule, Chapters 9J-2 and 9J-5.

3. Executive Orders

- a. Executive Order 80-29 (Disaster Preparedness) dated April 14, 1980.
- b. Executive Order 87-57 (State Emergency Response Commission) dated April 17, 1987 as updated by executive

Orders 98-153 and 98-155.

4. Miscellaneous

- a. State of Florida Comprehensive Emergency Management Plan.
- b. Florida Airport Directory (published by the Florida Department of Transportation Aviation Office, Summer, 1996).
- c. Local CEMP Compliance Criteria (Crosswalke- 2/2001).
- d. Emergency Management Capabilities Assessment Checklist.

D. Federal

1. Public Laws

- a. Public Law 93-288, as amended, which provides authority for response assistance under the Federal Response Plan, and which empowers the President to direct any federal agency to utilize its authorities and resources in support of state and local assistance efforts.
- b. Public Law 93-234, Flood Disaster Protection Act of 1973, as amended, provides insurance coverage for all types of buildings.
- c. Public Law 99-499, Superfund Amendments and Re-authorization Act of 1986, which governs hazardous materials planning and right-to-know.
- d. Public Law 101-615, Hazardous Materials Transportation Uniform Safety Act (H.M.T.U.S.A.), which provides funding to improve capability to respond to hazardous materials incidents.
- i. Public Law 95-510, Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (C.E.R.C.L.A.) as amended, which requires facilities to notify authorities of accidental releases of hazardous materials.
- f. Public Law 101-549, Clean Air Amendments of 1990, which provides for reductions in hazardous air pollutants and risk

management planning requirements.

- g. Public Law 85-256, Price-Anderson Act, which provides for a system of compensating the public for harm caused by a nuclear accident.
- h. Public Law 84-99 (33 USC 701n), Flood Emergencies, authorizing an emergency fund for flood emergency preparation, flood fighting and rescue operations, or repair and restoration of flood control works threatened or destroyed by flood.
- i. Public Law 91-671, Food Stamps (Issuance) Act of 1964, in conjunction with Section 412 of the Stafford Act, relating to food stamp (issuance) distributions after a major disaster.
- j. Public Law 89-665 (16 USC 470 et seq), National Historic Preservation Act, relating to the preservation of historic resources damaged as a result of disasters.
- k. Stewart B. McKinney Homeless Assistance Act, (42 USC 11331-11352), Federal Emergency Management Flood and Shelter Program.
- l. National Flood Insurance Act of 1968, (42 USC 4001 et seq) as amended by the National Flood Insurance Reform Act of 1994.
- m. Reigel Community Development and Regulatory Improvement Act of 1994.
- n. Public Law 833-703, an amendment to the Atomic Energy Act of 1954.
- o. Homeland Security Presidential Directive (HSPD)-5.
- p. Homeland Security Presidential Directive (HSPD)-8.
- q. National Response Plan.
- r. National Incident Management System (NIMS).
- s. National Incident Management Capability Assessment Tool (NIMCAST).

2. Regulations

- a. 2 C.F.R. Part 200 “The Super Circular” – The language from existing Office of Management and Budget (OMB) circulars into one consolidated set of guidance (A-89, A-102, A-110, A-21, A-87, A-122, A-133).
 - b. 44 CFR Parts 59-76, National Flood Insurance Program and related programs.
 - c. 44 CFR Part 13 (The Common Rule), Uniform Administrative Requirements for Grants and Cooperative Agreements.
 - d. 44 CFR Part 206, Federal Disaster Assistance for Disasters Declared after November 23, 1988.
 - e. 44 CFR Part 10, Environmental Considerations.
 - f. 44 CFR Part 14, Audits of State and Local Governments.
 - g. 44 CFR 350 of the Code of Federal Regulations.
 - h. 50 CFR, Title 10 of the Code of Federal Regulations.
3. Executive Orders
- a. Executive Order 80-29 (Disaster Preparedness) dated April 14, 1980.
 - b. Executive Order 87-57 (State Emergency Response Commission) dated April 17, 1987 as updated by executive Orders 98-153 and 98-155.
 - c. Executive Order 11988, Floodplain Management.
 - d. Executive Order 11990, Protection of Wetlands.
 - e. Executive Order 12657, Federal Emergency Management Assistance in Emergency Planning at Commercial Nuclear Power Plants.
 - f. Executive Order 12656, Assignment of Emergency Preparedness Responsibilities.

- g. Executive Order 12241, transferring review and concurrence responsibility for state plans from the NRC to FEMA.
- h. Presidential Decision Directive - 39, United States Policy on Counter Terrorism.
- i. Presidential Decision Directive - 62, United States Policy on Combating Terrorism.
- j. Presidential Decision Directive - 63, United States Policy on Protecting America's Critical Infrastructures.

4. Miscellaneous

- a. Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended; April 2013.
- b. National Response Framework, updated in 2013, provides context for how the whole community works together and how response efforts relate to other parts of national preparedness.
- c. Nuclear Regulation (NUREG) 0654/FEMA-REP-1, which provides federal guidance for development and review of Radiological Emergency Management Plans for Nuclear Power Plants.
- d. FEMA Map Modernization Program - Indian River County, Florida and Incorporated Areas (FEMA - 2011)

E. Memoranda of Understanding/Agreements

1. Local

- a. The Statewide Mutual Aid Agreement between Indian River County and the State of Florida, Department of Community Affairs (July 31, 2000). The purpose of this Agreement is to provide a mechanism to expedite the assistance of other public agencies in response to catastrophic natural and manmade disasters. This Agreement also expedites the reimbursement process required to receive state and federal financial assistance during the recovery from such an event.
- b. Memorandum of Understanding between Indian River County and the Florida Department of Financial Services, Division of State Fire Marshal for expenditure of local government unit funding for Florida Type II Technical Rescue Resource from 2005 Domestic Preparedness Grant State Homeland Security

Grant Program dated 1/19/06.

- c. Mutual Aid Agreement between the Indian River County Emergency Services District and the Town of Indian River Shores for the purpose of providing mutual aid in time of a fire, medical or emergency management agency dated August 18, 1992.
- d. Mutual Aid Agreement between the Indian River County Emergency Services District and St. Lucie County for the purpose of providing mutual aid in time of a fire, medical or emergency management agency dated August 11, 1992.

2. State

- a. Emergency Management Assistance Compact, 1996.
- b. Florida and Federal Emergency Management Agency Region IV, 1993.
- c. The Statewide Mutual Aid Agreement between Indian River County and the State of Florida, Department of Community Affairs (July 31, 2000).
- d. Florida and the American Red Cross, 1992.
- e. Florida and the Air Force Rescue Coordination Center (Inland Search/Rescue), as amended, 1995.
- f. Florida Division of Emergency Management and the Civil Air Patrol (Search/Rescue, Transport), 1992.
- g. Division of Emergency Management and Florida Power Corporation; Division of Emergency Management and Florida Power & Light Company; and Division of Emergency Management and Southern Nuclear Operating Company (Radiological Emergency Response Planning and Operations), Annual Agreements.
- h. Memorandum of Agreement between the Federal Emergency Management Agency, the State of Florida, and the City of Miami for Urban Search and Rescue, October 5, 1993.
- i. Building Officials Association of Florida and Division of Emergency Management, October 1994.

- j. National Weather Service and Division of Emergency Management, September 1994.
- k. Statement of Understanding between the Administration on Aging and the American National Red Cross (ARC), ARC 5067, June 1995.
- l. Statement of Understanding between the Salvation Army and the American Red Cross, August 1994.
- m. Statement of Understanding between the Volunteer Organizations Active in Disaster Agencies and other volunteer agencies.
- n. Statement of Understanding between the Federal Emergency Management Agency and the American Red Cross, January 1982.
- o. Memorandum of Understanding between the Centers for Disease Control, the United States Public Health Service of the Department of Health and Human Services, and the American Red Cross, December 1988.
- p. State of Florida Agreement between the American Red Cross and the Department of Health for use of the United States Department of Agriculture donated foods, September 1989.
- q. Memorandum of Understanding with the American Veterinary Medical Association Emergency Preparedness and Response Guide.
- r. Memorandum of Understanding with the State of North Carolina for Medivac Assistance for Monroe County.
- s. Southern Mutual Radiological Assistance Plan, Southern States Emergency Response Council.
- t. Memorandum of Understanding between Strategic Metropolitan Assistance and Recovery Teams and the Florida Division of Emergency Management, February 14, 1997.
- u. Interstate Agreement during a Hurricane Threat or Other Events-FDEM and Georgia Emergency Management Agency.

FIGURE 11

SAMPLE

RESOLUTION 201 -
INDIAN RIVER COUNTY RESOLUTION ON DECLARING
STATE OF LOCAL EMERGENCY

WHEREAS, the National Hurricane Center recognizes the danger to coastal residents of Florida from Hurricane ENTER HURRICANE NAME HERE, by posting a hurricane **ENTER WATCH OR WARNING HERE** from **ENTER SOUTHERN BOUNDARY LOCATION to ENTER NORTHERN BOUNDARY LOCATION**; and

WHEREAS, Indian River County has high evacuation times to evacuate residents from the hazards of a hurricane; and

WHEREAS, the current forecast error of the National Hurricane Center does not allow for a confident prediction of the track of Hurricane **ENTER HURRICANE NAME HERE** at that point in time, coinciding with Indian River County's high evacuation times; and

WHEREAS, Hurricane **ENTER HURRICANE NAME HERE** has the potential for causing extensive damage to public utilities, public buildings, public communication systems, public streets and roads, public drainage systems, commercial and residential buildings and areas; and

WHEREAS, Section 252.38(3), Florida Statutes, provides authority for a political subdivision such as Indian River County to declare a State of Local Emergency and to waive the procedures and formalities otherwise required of political subdivisions by law pertaining to:

1. Performance of public work and taking whatever action is necessary to ensure the health, safety, and welfare of the community.
2. Entering into contracts.
3. Incurring obligations.
4. Employment of permanent and temporary workers.
5. Utilization of volunteer workers.
6. Rental of equipment.
7. Acquisition and distribution, with or without compensation of supplies, materials and facilities.
8. Appropriation and expenditure of public funds.

NOW THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Indian River County, Florida, this **ENTER DAY HERE** day of **ENTER MONTH HERE** 2011, that:

1. Hurricane ***ENTER HURRICANE NAME HERE*** poses a serious threat to the lives and property of residents of Indian River County and that a State of Local Emergency shall be declared, effective immediately, for all of Indian River County, including, all unincorporated and incorporated areas.
2. The Board of County Commissioners hereby exercises its authority and waives the procedures and formalities required by law of a political subdivision, as provided in Chapter 252.38(6)(e), Florida Statutes.

The resolution was moved for adoption by Commissioner ***ENTER COMMISSIONER NAME HERE*** and the motion was seconded by Commissioner ***ENTER COMMISSIONER NAME HERE***, and, upon being put to a vote, the vote was as follows:

Chairman	Bob Solari
Vice-Chairman	Gary C. Wheeler
Commissioner	Wesley S. Davis
Commissioner	Joseph E. Flescher
Commissioner	Peter D. O'Bryan

The Chairman thereupon declared the resolution duly passed and adopted this **ENTER DAY HERE** day of **ENTER MONTH HERE**, 2011.

**BOARD OF COUNTY COMMISSIONERS
INDIAN RIVER COUNTY, FLORIDA**

BY

Bob Solari, Chairman

Attest

Jeffrey K. Barton, Clerk