

**HURRICANE MITIGATION AND POST-DISASTER REDEVELOPMENT:  
PRINCIPLES AND PRACTICES**

Volume I

Report to the Flagler County Planning Department

Florida Coastal Management Program

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## **FOREWORD**

This report, "Hurricane Mitigation and Post-Disaster Redevelopment: Principles and Practices," represents the first project deliverable under subcontract to the Flagler County Planning Department, Florida Coastal Management Program Subgrant 96-CZ-15-04-28-01-036, "Hazard Mitigation/Redevelopment Plan and Ordinance."

The report, in two volumes, is a compilation, summary and analysis of coastal management principles, plans and ordinances representing progressive approaches to the problems inherent in local government efforts to prevent harm to coastal populations, coastal properties and resources from hurricane impacts.

Volume I of the report sets forth general principles and strategies of effective hurricane mitigation programs, explains the relevant requirements of Florida's Local Government Comprehensive Planning and Land Development Regulation Act, presents model approaches developed by the Tampa Bay Regional Planning Council, and summarizes effective programs adopted by coastal local governments in Florida and North Carolina.

Volume II of the report (Appendix C) includes full copies of the adopted plans, policies and ordinances summarized in Volume I.

## TABLE OF CONTENTS

### **Section One: PRINCIPLES OF COASTAL HAZARD MITIGATION**

I.	Introduction . . . . .	5
II.	General Principles . . . . .	5
III.	Hazard Mitigation Strategies . . . . .	7
IV.	Summary of Available Tools . . . . .	8

### **Section Two: FLORIDA LOCAL GOVERNMENT COMPREHENSIVE PLANNING AND LAND DEVELOPMENT REGULATION ACT**

I.	Introduction . . . . .	10
II.	Coastal Management Element Requirements; Florida Statutes, Section 163.3177 . . . . .	10
III.	Coastal Management; Florida Statutes, Section 163.3178 . . . . .	11
IV.	Coastal Management; Florida Administrative Code, Rule 9J-5.012 . . . . .	12
V.	Summary of Requirements for Comprehensive Plans . . . . .	17

### **Section Three: TAMPA BAY REGIONAL PLANNING COUNCIL MODEL PLAN AND ORDINANCES**

I.	Introduction . . . . .	21
II.	Relevant Provisions of TBRPC's Model Coastal Management Element . . . . .	21
III.	Model Flood Plain Management Ordinance . . . . .	25
IV.	Model Land Development/Subdivision Regulations . . . . .	33
V.	Model Post-Disaster Redevelopment Ordinance . . . . .	36

### **Section Four: SUMMARY ANALYSIS OF ADOPTED PLANS AND ORDINANCES**

I.	Introduction . . . . .	41
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II.	Brevard County, Florida	
A.	Introduction . . . . .	41
B.	Comprehensive Plan: Coastal Management Element . . . . .	42
C.	Setback Ordinance . . . . .	51
III.	Indian River County, Florida	
A.	Introduction . . . . .	56
B.	Comprehensive Plan: Coastal Management Element . . . . .	57
IV.	Lee County, Florida	
A.	Introduction . . . . .	61
B.	Comprehensive Plan: Coastal Management and Conservation Elements . . . . .	61
C.	Post-Disaster Redevelopment Ordinance . . . . .	68
D.	Nonconforming Use Ordinance . . . . .	71
V.	Town of Nags Head, North Carolina: Hurricane and Storm Mitigation and Reconstruction Plan . . . . .	77
VI.	Sarasota County, Florida: Setback Ordinance . . . . .	81
VII.	St. John's County, Florida: Comprehensive Plan, Coastal Management Element . . . . .	84
VIII.	St. Lucie County, Florida	
A.	Introduction . . . . .	87
B.	Comprehensive Plan: Coastal Management Element . . . . .	88
C.	Hutchinson Island Residential District . . . . .	91
D.	Beach and Dune Protection Ordinance . . . . .	95
IX.	Volusia County, Florida: Comprehensive Plan, Coastal Management Element . . . . .	96
APPENDIX A:	Sources of Information . . . . .	106
APPENDIX B:	References . . . . .	107
APPENDIX C:	Plan Elements and Ordinances Reviewed . . . . .	Volume II

## **Section One: PRINCIPLES OF COASTAL HAZARD MITIGATION**

### **I. INTRODUCTION**

Issues involving post-disaster redevelopment and mitigation represent a significant concern for coastal managers. The need for effective planning is closely related to increasing population and development in the coastal zone, and the increasing threat posed by natural disasters. To guide coastal management, local governments should focus on three broad goals. The first is to lower the risk of the loss of life; the second is to lower the risk of property damage; and the third is to effectuate quick, and safer, reconstruction. These goals can be achieved through managing development and planning for evacuation (McElyea, Brower, and Godschalk, 1984). It is important, however, to devote community resources to the most effective and feasible approaches.

The majority of planning for coastal storms centers on evacuation and sheltering. This response, however, is inadequate given the unpredictable nature of hurricanes and the difficulties in trying to maintain evacuation routes in the face of increasing coastal population densities (Deyle and Smith, 1995). Additionally, evacuation policies alone do not address issues of property damage from storm events. For these reasons, a broad approach to mitigation and redevelopment regulation has become increasingly important as a means of avoiding or reducing the hazards of coastal storms.

### **II. GENERAL PRINCIPLES**

Researchers and practitioners have identified several principles which should be incorporated into an effective disaster mitigation strategy. These principles can be categorized according to the approach they advocate. The first group includes principles designed to avoid the impacts of a hurricane by advocating measures that restrict or limit development in potentially dangerous areas. The second group includes principles designed to maintain the natural defenses of the coastal area by controlling the impacts of development on coastal resources and processes. The third group includes principles designed to improve the capacity of development to withstand hurricane impacts by advocating measures that closely dictate construction standards in the coastal area. Closely related, the fourth and final group includes principles designed to improve redevelopment practices by advocating measures that control response efforts once a hurricane has struck.

#### **A. Avoid Hurricane Impacts**

The most basic method of reducing a hurricane's potential effects is to reduce exposure to its impacts. Thus, a first principle is to mitigate hurricane impacts to local populations and development by attempting to avoid the harm.

Many coastal communities have employed the concept of Coastal High Hazard Areas

(CHHAs). Often defined as the area situated within the FEMA designated V-Zone, or the area located seaward of the Coastal Construction Control Line (CCCL), the CHHA includes coastal areas determined to be susceptible to damage due to storm surge and other hurricane impacts. Population density in the CHHA should be limited, reducing exposure to hurricane forces and reducing the risk of loss of life (Godschalk, 1985). Similarly, public expenditures for infrastructure and facilities in the CHHA should be limited, to further control development. Zoning and planning should be designed to guide development out of the CHHA, and incentives should be structured to encourage property owners to develop in areas outside of the CHHA (Godschalk, 1985).

#### **B. Maintain the Natural Defenses of the Coastal Area**

Local governments should take efforts to preserve and maintain the natural defenses against hurricane impacts provided by coastal beach/dune/marsh systems. Local governments should prevent accelerated beach erosion, protect natural protective barriers such as dunes, protect natural sources of sand supply which nourish beaches and prevent beach erosion, and prevent modifications to natural wave and current patterns which will increase damage by erosion, waves or flooding (McElyea, Brower, and Godschalk, 1984). Also important are efforts to closely monitor and regulate the effects of any removal of sand, and to prevent any development that adversely impacts shoreline vegetation. In addition to encouraging natural systems conservation, the county should encourage public open space acquisition (Godschalk, 1985).

#### **C. Improve Construction Standards**

The survivability of permitted construction in the coastal zone should be improved by developing and enforcing improved construction standards affecting the location, type, elevation, and design of structures in the coastal zone. The destructive forces of wind, flooding, waves, and erosion should be mitigated by allocating lands to their most appropriate uses, incorporating setback lines into the development review process, reducing the damage resulting from inadequately designed construction, minimizing the public expense required for erosion control devices, and providing warning for purchasers of flood-prone lots or structures (McElyea, Brower, and Godschalk, 1984).

#### **D. Improve Redevelopment Practices**

Establish a framework of procedures and policies to guide redevelopment practices in the post-disaster environment. Examples include build-back policies that are aimed at avoiding future losses, rather than reconstructing to a structure's vulnerable, pre-storm status.

A Recovery Task Force serves an integral role in monitoring and directing post-disaster redevelopment efforts. The Task Force should be created to implement policies

including building moratoria during emergency response periods; to recommend sites for relocation out of the CHHA where significant or repeated damage has occurred; and to carry out the emergency permitting procedures to maintain control over post-disaster repair efforts. Focusing on redevelopment practices also provides local governments with valuable feedback that can help prevent future damages.

### **III. HAZARD MITIGATION STRATEGIES**

Coastal management efforts seeking to adopt these general principles should incorporate the following mitigation strategies:

#### **A. Vulnerability Analysis**

Analyses should be performed by the County, Regional Planning Council and National Hurricane Center resulting in the identification of the County's coastal area, hurricane vulnerability zones and hurricane evacuation map.

#### **B. Post-Disaster Redevelopment/Hazard Mitigation Program**

Public and private infrastructure located in the CHHA should be inventoried and identified in a GIS-based map atlas. A risk analysis should be conducted to determine the approximate dollar value of infrastructure located in the CHHA. Eventually, this inventory and risk analysis should be performed for all hurricane vulnerability zones. Policies, plans and ordinances should be developed which control the location, siting and construction of coastal development in order to mitigate existing problems and to control redevelopment within sensitive or hazardous coastal zones in the post-disaster environment.

#### **C. Public Facilities Siting**

Growth should be directed away from CHHAs and other areas vulnerable to hurricane impacts by restricting development of new public facilities and infrastructure in those areas and by restricting the increase of capacity of existing public facilities presently serving vulnerable areas.

#### **D. Land Development Regulations**

Relevant provisions of the County comprehensive plan and land development code which relate to hurricane mitigation and redevelopment should be integrated with the County building code and floodplain management ordinance.

#### **E. Provisions to Upgrade Building Standards**

The County's building code, coastal construction code, and floodplain management

ordinance should comply with, and where necessary, exceed minimum State and Federal standards relative to construction.

**F. Planning and Project Review**

Evaluations should be conducted to determine and insure consistency with State and Federal hazard mitigation and resource management policies.

**G. Land Acquisition**

County land acquisition policies should include careful consideration of environmentally sensitive and hazardous coastal sites, including wetlands and coastal lagoons. These properties should be acquired primarily for open space and recreation use, and should be coordinated with appropriate controls on the location, siting and construction of adjacent infrastructure and development.

**H. Coastal Property Management Program**

The County should manage waterfront parks and facilities along its shorelines to provide public access, and maintain the natural integrity of the County publicly-owned coastal areas.

**I. Information Programs**

The County should update and distribute an "Official Hurricane Survival Guide" to residents and businesses, as well as preparedness/awareness information and programs to the local media, the Red Cross and the general public.

**IV. SUMMARY OF AVAILABLE TOOLS**

Several types of tools and mechanisms are available to local governments, to implement plans for mitigating the effects of natural disasters on coastal communities. Examples include:

**A. Land-Use Plan**

Urban Services Area	Evacuation Plan
Hazard Zone Identification	Reconstruction Guides

**B. Zoning Regulations**

Hazard Overlay Districts	Floating Zones
Mitigation Performance Standards	Nonconforming Uses

Hazard Mitigation Bonus  
Alternative Use Designation  
Down-zoning/Density Reduction/  
Population Caps  
Minimum Lot Sizes

Coastal Setback  
Special Use Permits  
Bonus/Incentive Zoning  
Performance Zoning

**C. Subdivision Regulations**

Hazard Disclosure  
Clustering

Hazard Area Dedicated  
TDRs

**D. Building Code Provisions**

Elevation Requirements  
Wind Resistance Requirements  
Build-Back Standards

Flood Proofing Requirements  
Design Standards

**E. Public Health Regulations**

Hazard Overlay Districts

Construction Standards

**F. Public Facility Programs**

Siting Requirements

Capital Improvement Programs

**G. Land Acquisition**

Hazardous Areas/Open Space/Parks

**H. Incentives/Penalties**

Preferential Hazard Tax Assessment Exactions  
Development Conditions Impact Fees

**I. Public Awareness Programs**

Public Relations  
Public Hearings  
Public Education

Public Information  
Surveys and Polls

**Section Two: FLORIDA LOCAL GOVERNMENT COMPREHENSIVE PLANNING AND  
LAND DEVELOPMENT REGULATION ACT**

**I. INTRODUCTION**

Community efforts to manage and regulate the coastal area through comprehensive planning are affected by several legislative and administrative enactments. In Florida, the most obvious is the Local Government Comprehensive Planning and Land Development Regulation Act (FLA. STAT. §§ 163.3167-163.3243). Section 163.3177, F.S. sets forth the general requirements for the Coastal Management Element of the Comprehensive Plan. Section 163.3178 gives more specific requirements, including an expansion of key portions contained in section 163.3177. Finally, Rule 9J-5.012, Florida Administrative Code sets forth minimum requirements relating specifically to the goals, objectives, and policies that must be contained in the comprehensive plan. Relevant portions of these coastal management requirements are summarized below.

Additional related requirements are contained in comprehensive plan elements for: capital improvements; future land use; traffic circulation; sanitary sewer, solid waste, drainage, potable water and natural groundwater aquifer recharge; conservation, use and protection of natural resources, including estuarine marshes, beaches, shores, floodplains, bays and marine habitat; recreation and open space; housing; and intergovernmental coordination.

## **II. COASTAL MANAGEMENT ELEMENT REQUIREMENTS; SECTION 163.3177, FLA. STAT. reads, in part:**

- (6)(g) The coastal management element shall set forth the policies that shall guide the local government's decisions and program implementation with respect to the following objectives:
1. Maintenance, restoration, and enhancement of the overall quality of the coastal zone environment, including, but not limited to, its amenities and aesthetic values.
  2. Continued existence of viable populations of all species of wildlife and marine life.
  3. The orderly and balanced utilization and preservation, consistent with sound conservation principles, of all living and nonliving coastal zone resources.
  4. Avoidance of irreversible and irretrievable loss of coastal zone resources.
  5. Ecological planning principles and assumptions to be used in the determination of suitability and extent of permitted development.
  6. Proposed management and regulatory techniques.
  7. Limitation of public expenditures that subsidize development in high-hazard coastal areas.

8. Protection of human life against the effects of natural disasters.
- (7)(k) May include additional elements as may be peculiar to, and necessary for, the area concerned and as are added to the comprehensive plan by the governing body upon the recommendation of the local planning agency.

**III. COASTAL MANAGEMENT; SECTION 163.3178, FLA. STAT. reads, in part:**

- (1) Expresses intent of the Legislature that local government comprehensive plans restrict development activities where such activities would damage or destroy coastal resources, and that such plans protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.
- (2) Each coastal management element shall contain:
  - (a) A land use and inventory map of existing coastal uses, wildlife habitat, wetland and other vegetative communities, undeveloped areas, areas subject to coastal flooding, public access routes to beach and shore resources, historic preservation areas, and other areas of special concern to local government.
  - (b) An analysis of the environmental, socioeconomic, and fiscal impact of development and redevelopment proposed in the future land use plan, with required infrastructure to support this development or redevelopment, on the natural and historical resources of the coast and the plans and principles to be used to control development and redevelopment to eliminate or mitigate the adverse impacts on coastal wetlands; living marine resources; barrier islands, including beach and dune systems; unique wildlife habitat; historical and archaeological sites; and other fragile coastal resources.
  - (d) A component which outlines principles for hazard mitigation and protection of human life against the effects of natural disaster, including population evacuation, which take into consideration the capability to safely evacuate the density of coastal population proposed in the future land use plan element in the event of an impending natural disaster.
  - (e) A component which outlines principles for protecting existing beach and dune systems from man-induced erosion and for restoring altered beach and dune systems.
  - (f) A redevelopment component which outlines the principles which shall be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise.
  - (h) Designation of high-hazard coastal areas, which for uniformity and planning

purposes herein, are defined as category 1 evacuation zones. However, application of mitigation and redevelopment policies, pursuant to s. 380.27(2), and any rules adopted thereunder, shall be at the discretion of local government.

- (j) An identification of regulatory and management techniques that the local government plans to adopt or has adopted in order to mitigate the threat to human life and to control proposed development and redevelopment in order to protect the coastal environment and give consideration to cumulative impacts.
- (8) Each county shall establish a county-based process for identifying and prioritizing coastal properties so they may be acquired as part of the state's land acquisition programs. This process must include the establishment of criteria for prioritizing coastal acquisitions which, in addition to recognizing pristine coastal properties and coastal properties of significant or important environmental sensitivity, recognize hazard mitigation, beach access, beach management, urban recreation, and other policies necessary for effective coastal management.

**IV. COASTAL MANAGEMENT; RULE 9J-5.012, FLA. ADMIN. CODE reads, in part:**

Purpose of the coastal management element is to plan for and where appropriate restrict development activities where such activities would damage or destroy coastal resources, and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.

- (2) Coastal Management Data And Analysis Requirements.
  - (a) Existing land uses in the coastal planning area shall be inventoried, and a map or map series developed which show existing land uses and which existing water-dependent and water-related uses.
  - (b) Inventories and analyses of the effect of the future land uses as required to be shown on the future land use map or map series on the natural resources in the coastal planning area shall be prepared including: vegetative cover, including wetlands; areas subject to coastal flooding; wildlife habitats; and living marine resources. Maps shall be prepared of vegetative cover, wildlife habitat, areas subject to coastal flooding, and other areas of special concern to local government.
  - (e) The following natural disaster planning concerns shall be inventoried or analyzed:
    - 1. Hurricane evacuation plans, considering the number of persons

requiring evacuation, requiring public hurricane shelter, number of shelter spaces, evacuation routes, transportation and hazard constraints on the evacuation routes, and evacuation times. Must also estimate the projected impact of population densities proposed in the future land use element, and must consider measures that could be adopted to maintain or reduce hurricane evacuation times.

2. Post-disaster redevelopment including: existing and proposed land use in coastal high-hazard areas; structures with a history of repeated damage in coastal storms; coastal or shore protection structures; infrastructure in coastal high-hazard areas; and beach and dune conditions. Measures which could be used to reduce exposure to hazards shall be analyzed, including relocation, structural modification, and public acquisition.
  3. Coastal high-hazard areas shall be identified and the infrastructure within the coastal high-hazard area shall be inventoried. The potential for relocating threatened infrastructure shall be analyzed.
- (f) Beach and dune systems shall be inventoried and analyzed, including past trends in erosion and accretion, the effects upon the beaches or dunes of coastal or shore protection structures, and identification of existing and potential beach renourishment areas. The analysis shall also identify measures which could be used to protect or restore beaches or dunes.
  - (h) Existing infrastructure in the coastal planning area shall be inventoried, including: roadways, bridges or causeways, sanitary sewer facilities, potable water facilities, man-made drainage facilities, public coastal or shore protection structures, and beach renourishment projects. The demand upon, capacity of, and area served by the existing infrastructure shall be analyzed. Analyses shall be prepared which estimate future needs for those facilities listed above, and which shall address the fiscal impact in terms of estimated costs, funding sources and phasing of any needed improvements.
- (3) Requirements for Coastal Management Goals, Objectives, and Policies.
    - (a) The coastal management element shall contain one or more goal statements which establish the long term end toward which regulatory and management efforts are directed. These shall reflect the stated intent of the Legislature in enacting Section 163.3178, Florida Statutes, which is that local governments in their comprehensive plans restrict development activities that would damage or destroy coastal resources, and protect human life and limit public

expenditures in areas subject to destruction by natural disasters.

- (b) The element shall contain one or more specific objectives for each goal statement which address the requirements of Paragraph 163.3177(6)(g) and Section 163.3178, Florida Statutes, and which:
1. Protect, conserve, or enhance remaining coastal wetlands, living marine resources, coastal barriers, and wildlife habitat;
  2. Maintain or improve estuarine environmental quality;
  3. Provide criteria or standards for prioritizing shoreline uses, giving priority to water-dependent uses;
  4. Protect beaches or dunes, establish construction standards which minimize the impacts of man-made structures on beach or dune systems, and restore altered beaches or dunes;
  5. Limit public expenditures that subsidize development permitted in coastal high-hazard areas subsequent to the element's adoption except for restoration or enhancement of natural resources;
  6. Direct population concentrations away from known or predicted coastal high-hazard areas;
  8. Prepare post-disaster redevelopment plans which will reduce or eliminate the exposure of human life and public and private property to natural hazards;
  11. Establish level of service standards, areas of service and phasing of infrastructure in the coastal planning area.
- (c) The element shall contain one or more policies for each objective and shall identify regulatory or management techniques for:
1. Limiting the specific impacts and cumulative impacts of development or redevelopment upon wetlands, water quality, water quantity, wildlife habitat, living marine resources, and beach and dune systems;
  2. Restoration or enhancement of disturbed or degraded natural resources including beaches and dunes, estuaries, wetlands, and drainage systems; and programs to mitigate future disruptions or degradations;

3. General hazard mitigation including regulation of building practices, floodplains, beach and dune alteration, stormwater management, sanitary sewer and septic tanks, and land use to reduce the exposure of human life and public and private property to natural hazards; and incorporating the recommendations of the hazard mitigation annex of the local peacetime emergency plan and applicable existing interagency hazard mitigation reports. Incorporating recommendations from interagency hazard mitigation reports shall be at the discretion of the local government;
5. Post-disaster redevelopment including policies to: distinguish between immediate repair and cleanup actions needed to protect public health and safety and long-term repair and redevelopment activities; address the removal, relocation, or structural modification of damaged infrastructure as determined appropriate by the local government but consistent with federal funding provisions and unsafe structures; limiting redevelopment in areas of repeated damage; and, policies for incorporating the recommendations of interagency hazard mitigation reports, as deemed appropriate by the local government, into the local government's comprehensive plan when the plan is revised during the evaluation and appraisal process;
6. Identifying areas needing redevelopment, including eliminating unsafe conditions and inappropriate uses as opportunities arise;
7. Designating coastal high-hazard areas and limiting development in these areas;
8. The relocation, mitigation or replacement, as deemed appropriate by the local government, of infrastructure presently within the coastal high-hazard area when state funding is anticipated to be needed.
9. Establishing priorities for shoreline land uses, providing for siting water-dependent and water-related uses, establishing performance standards for shoreline development, and establishing criteria for marina siting, including criteria consistent with the countywide marina siting plan if adopted by the local government, which address: land use compatibility, availability of upland support services, existing protective status or ownership, hurricane contingency planning, protection of water quality, water depth, environmental disruptions and mitigation actions, availability for public use, and economic need and feasibility.
10. Providing adequate physical public access to beaches and shorelines,

enforcing public access to beaches renourished at public expense, providing transportation or parking facilities for beach and shoreline access.

13. Ensuring that required infrastructure is available to serve the development or redevelopment in the coastal planning area at the densities proposed by the future land use plan, consistent with coastal resource protection and safe evacuation, by assuring that funding for infrastructure will be phased to coincide with the demands generated by development or redevelopment.
14. Protecting estuaries within the jurisdiction of more than one local government, coordinating with other local governments to ensure adequate sites for water-dependent uses, prevent estuarine pollution, control surface water runoff, protect living marine resources, reduce exposure to natural hazards, and ensure public access.

**V. SUMMARY OF REQUIREMENTS FOR COMPREHENSIVE PLANS (adapted from Deyle and Smith)**

**Table 1. Inventory and Analysis Mandates.**

Rule 9J-5.012(2), F.A.C. mandates the inventory and analysis of the following listed areas concerned with mitigating coastal storm hazards.

<p>EXISTING LAND USES WITHIN THE COASTAL AREA</p> <p>9J-5.012 (2)(a), FAC</p>	<ol style="list-style-type: none"> <li>1. existing land uses</li> <li>2. conflicts among shoreline uses</li> <li>3. need for water dependent sites</li> <li>4. areas in need of redevelopment</li> <li>5. economic base in relation to future land use element</li> <li>6. prepare maps showing existing land use and water dependent uses</li> </ol>
<p>HURRICANE EVACUATION PLANNING</p> <p>9J-5.012 (2)(e)(1), FAC</p>	<ol style="list-style-type: none"> <li>1. hurricane vulnerability zone</li> <li>2. number of persons requiring evacuation</li> <li>3. number of persons requiring public shelter</li> <li>4. number of shelter spaces available</li> <li>5. evacuation routes</li> <li>6. transportation and hazard constraints on evacuation routes</li> <li>7. evacuation times</li> <li>8. impact of anticipated population density on evacuation</li> </ol>
<p>HAZARD MITIGATION AND POST-DISASTER REDEVELOPMENT</p> <p>9J-5.012 (2)(e)(2) and (3), FAC</p>	<ol style="list-style-type: none"> <li>1. identify CHHA</li> <li>2. existing and proposed land use in CHHA</li> <li>3. structures with history of repeated damage</li> <li>4. coastal shore protection structures</li> <li>5. measures to reduce exposure through relocation</li> <li>6. measures to reduce exposure through structural modification</li> <li>7. measures to reduce exposure through public acquisition</li> </ol>
<p>BEACH AND DUNE SYSTEM</p> <p>9J-5.012 (2)(e)(2) and (f), FAC</p>	<ol style="list-style-type: none"> <li>1. beach and dune conditions</li> <li>2. past trends in erosion and accretion</li> <li>3. effects of shore protection structures</li> <li>4. existing potential beach renourishment areas</li> <li>5. measures which could protect/restore dunes</li> </ol>
<p>COASTAL INFRASTRUCTURE</p> <p>9J-5.012 (2)(e)(2), (3),</p>	<ol style="list-style-type: none"> <li>1. infrastructure in CHHA</li> <li>2. potential for relocating threatened infrastructure</li> <li>3. demand, capacity, and area served</li> <li>4. future needs for facilities</li> </ol>

and (h), FAC	5. funding sources/phasing in of needed improvements
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**Table 2. Goals, Objectives, and Policies Mandates.**

Rule 9J-5.012(3), F.A.C. sets forth the listed requirements for inclusion in the coastal management Goals, Objectives, and Policies.

<p><b>GOALS</b></p> <p>9J-5.012 (3)(a), FAC</p>	<ol style="list-style-type: none"> <li>1. restricting development activities that damage/destroy coastal resources</li> <li>2. protecting human life</li> <li>3. limiting public expenditures in areas subject to destruction</li> </ol>
<p><b>OBJECTIVES</b></p> <p>9J-5.012 (3)(b), FAC</p>	<ol style="list-style-type: none"> <li>1. protection/restoration of beaches and dunes</li> <li>2. limiting public expenditures that subsidize development in CHHA, except for restorational enhancement of natural resources</li> <li>3. directing population concentrations away from CHHAs</li> <li>4. maintaining or reducing hurricane evacuation times</li> <li>5. preparing post-disaster redevelopment plans to reduce exposure to hazards</li> </ol>
<p><b>POLICIES</b></p> <p>9J-5.012 (3)(c), FAC</p>	<ol style="list-style-type: none"> <li>1. restoration/enhancement of beach and dune systems</li> <li>2. hazard mitigation, including regulation of: <ol style="list-style-type: none"> <li>a. building practices</li> <li>b. floodplains</li> <li>c. beach and dune alteration</li> <li>d. stormwater management</li> <li>e. sanitary sewer and septic tanks</li> <li>f. land uses</li> </ol> </li> <li>3. reduce or maintain hurricane evacuation times</li> <li>4. post-disaster redevelopment policies <ol style="list-style-type: none"> <li>a. distinguish between immediate repair/cleanup and long term redevelopment</li> <li>b. removal/relocation/modification of damaged infrastructure and unsafe structures</li> <li>c. limiting redevelopment in areas of repeated damage</li> <li>d. policies for incorporating recommendations of interagency hazard mitigation report into local comprehensive plan</li> </ol> </li> <li>5. identifying areas needing redevelopment as opportunities arise</li> <li>6. CHHA <ol style="list-style-type: none"> <li>a. designation</li> <li>b. limiting development</li> <li>c. relocating/replacing infrastructure away from CHHA</li> </ol> </li> <li>7. shoreline land uses <ol style="list-style-type: none"> <li>a. establishing priorities</li> </ol> </li> </ol>

	<ul style="list-style-type: none"> <li>b. establishing performance standards</li> <li>8. ensure availability of required infrastructure</li> </ul>
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**Table 3. Mandates Affecting Beach and Dune Systems**

The following mandates affecting beach and dune systems are required by Rule 9J-5.012, F.A.C.

INVENTORY AND ANALYSIS MANDATES	<ul style="list-style-type: none"> <li>1. beach and dune conditions</li> <li>2. past trends in erosion and accretion</li> <li>3. effects of shore protection structures</li> <li>4. existing/potential beach renourishment areas</li> <li>5. measures which could protect/restore dunes</li> </ul>
GOAL MANDATES	<ul style="list-style-type: none"> <li>1. restricting development activities that damage/destroy coastal resources</li> </ul>
OBJECTIVE MANDATES	<ul style="list-style-type: none"> <li>1. protection/restoration of beaches and dunes</li> </ul>

**Table 4. Mandates Affecting Hazard Mitigation**

The following mandates affecting hazard mitigation issues are required by Rule 9J-5.012, F.A.C.

INVENTORY AND ANALYSIS	<ul style="list-style-type: none"> <li>1. identify CHHA</li> <li>2. existing and proposed land use in CHHA</li> <li>3. coastal/shore protection structures</li> </ul>
GOAL MANDATES	<ul style="list-style-type: none"> <li>1. protection of human life</li> </ul>
OBJECTIVE MANDATES	<ul style="list-style-type: none"> <li>1. directing population concentrations away from CHHAs</li> </ul>
POLICY MANDATES	<ul style="list-style-type: none"> <li>1. hazard mitigation including regulation of <ul style="list-style-type: none"> <li>a. building practices</li> <li>b. floodplains</li> <li>c. stormwater management</li> <li>d. sanitary sewer and septic tanks</li> <li>e. land uses</li> </ul> </li> <li>2. policies for incorporating recommendations of interagency hazard mitigation report into local comprehensive plan</li> <li>3. designating CHHA</li> <li>4. limiting development within CHHA</li> <li>5. establishing priorities for shoreline land uses</li> </ul>

	6. establishing performance standards for shoreline uses
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**Table 5. Mandates Affecting Coastal Infrastructure**

The following mandates affecting coastal infrastructure are required by Rule 9J-5.012, F.A.C.

INVENTORY AND ANALYSIS MANDATES	<ol style="list-style-type: none"> <li>1. infrastructure in CHHA</li> <li>2. potential for relocating threatened infrastructure</li> <li>3. demand, capacity, and area served</li> <li>4. future needs for facilities</li> <li>5. funding sources/phasing in of needed improvements</li> </ol>
GOAL MANDATES	<ol style="list-style-type: none"> <li>1. limit public expenditures in areas subject to destruction</li> </ol>

**Table 6. Mandates Affecting Post-Storm Development**

The following mandates affecting post-storm development issues are required by Rule 9J-5.012, F.A.C.

INVENTORY AND ANALYSIS MANDATES	<ol style="list-style-type: none"> <li>1. structures with history of repeated damage</li> <li>2. measures to reduce exposure through relocation</li> <li>3. measures to reduce exposure through structural modification</li> <li>4. measures to reduce exposure through public acquisition</li> </ol>
GOAL MANDATES	<ol style="list-style-type: none"> <li>1. protection of human life</li> </ol>
OBJECTIVE MANDATES	<ol style="list-style-type: none"> <li>1. preparing post-disaster redevelopment plans to reduce exposure to hazards to</li> </ol>
POLICY MANDATES	<ol style="list-style-type: none"> <li>1. distinguish between immediate repair/cleanup and long term redevelopment</li> <li>2. limiting redevelopment in areas of reported damage</li> <li>3. identifying areas needing redevelopment as opportunities arise</li> </ol>

**Section Three: TAMPA BAY REGIONAL PLANNING COUNCIL MODEL PLAN AND ORDINANCES**

**I. INTRODUCTION**

The Tampa Bay Regional Planning Council (TBRPC) and Hillsborough County Department of Planning and Development Management recently prepared a report to assist local governments with their natural disaster mitigation and redevelopment efforts. The report, prepared for the Department of Community Affairs in September, 1995, sets forth a model, integrated planning strategy that embodies most of the principles and tools necessary for effective coastal management. (Model Local Government Disaster Mitigation and Redevelopment Plan and Model Local Redevelopment Regulations).

Based in part on plan elements adopted by certain local governments within Florida, the report presents the planning efforts of a fictitious county, called "Watercrest County." Listed below are the most relevant hazard mitigation objectives, policies, and plans as set forth in the fictitious county's comprehensive plan. Also presented, in summary fashion, are several ordinances and land development regulations with potential use in implementing the comprehensive plan's post-disaster strategies. The report labels each of these as model components of the County's management efforts.

**II. RELEVANT PROVISIONS OF TBRPC'S MODEL COASTAL MANAGEMENT PLAN ELEMENT**

The efforts of "Watercrest County" begin with the Comprehensive Plan. In accordance with Chapter 163, Florida Statutes, and Ch. 9J-5.012, F.A.C., the County adopted a Coastal Management Element that contains goals, objectives, and policies to guide efforts to develop a post-disaster redevelopment plan. Many redevelopment issues are addressed, such as the restriction of residential centers and the limitation of public expenditures for infrastructure in the coastal high hazard area (CHHA).

**A. Objective 6:** Restrict development of residential population centers in the CHHA through Land Use Plan Categories and densities, and require all development to meet standards established for the coastal area

1. Policy 6.2: Requires the submission of adequate data by the property owner to assess the impacts of the proposed development upon existing infrastructure within the CHHA, in addition to continuing the requirement of compliance with the applicable site plan review process.
2. Policy 6.3: Requires approval through a planned unit development rezoning process for the following:

- a. Commercial or industrial development on more than five acres of land; and
  - b. Residential subdivision development requiring platting.
3. Policy 6.6: Prohibits the use of septic tanks for new development in the CHHA, while providing for possible exceptions due to undue hardship.
  4. Policy 8.1: Retains ownership rights to any property providing or having the potential to provide public access to coastal areas (for example, dead end streets and undeveloped dedicated rights-of-way).
  5. Policy 8.2: Any public access way established through private lands seaward of the mean high tide or water line by prescription, prescriptive easement, or any other legal means shall not be diminished or rendered unusable. If a developer or property owner improves, consolidates, relocates such public accessways, then the accessways shall meet the following conditions:
    - a. The accessways shall be of substantially similar quality and convenience to the public;
    - b. Accessways shall be approved by the County; and
    - c. Accessways shall be consistent with this element.
  6. Policy 8.4: The County shall consider, during the development review process, requiring the dedication of public access easements for multi-family and non-residential private development in shoreline areas.

**B. Objective 10:** Limit public expenditures for infrastructure and facilities in the CHHA.

1. Policy 10.1: Public infrastructure expenditures in the CHHA is limited to:
  - a. Restoration or enhancement of natural resources or public access;
  - b. Flood-proofing existing potable water and sanitary sewage facilities;
  - c. The development or improvement of public roads and bridges that are on the Metropolitan Planning Organization's Year 2010 Long Range Transportation Plan or that serve a crucial need by ameliorating the evacuation time of residents of the county;
  - d. Reconstruction of seawalls that are essential to the protection of existing public facilities or infrastructure;

- e. A public facility of overriding public concern as determined by the Board;
  - f. The retrofitting of stormwater management facilities for water quality enhancement of stormwater runoff; or
  - g. Port and port-related facilities.
2. Policy 10.2: Wastewater treatment facilities shall not be constructed within the CHHA unless the expenditure meets the criteria of Policy 10.1.
  3. Policy 11.3: The County shall maintain capacity on all identified major evacuation routes maintained by the County so that the clearance times in the most up-to-date, Regional Planning Council Hurricane Study can be maintained.
  4. Policy 11.4: The development review process shall include the review of the development's effect on evacuation clearance times and the number of persons requiring public shelter. Developments shall be reviewed and impacts assessed based on the most recently available data. This requirement shall apply to those developments located in the vulnerability zone and those located along and impacting evacuation routes.

**C. Objective 12:** The County shall continue to implement a post-disaster redevelopment ordinance and shall amend procedures as necessary for its implementation.

1. Policy 12.1: The County's Peacetime Emergency Plan (PEP) shall be referred to concerning post-disaster activities within the CHHA. The PEP specifies the actions necessary for immediate repair and clearance of debris in order to protect the public health and safety.
2. Policy 12.2: The County shall continue to implement, review and amend as needed its Post-Disaster Redevelopment Ordinance addressing long-term development, repair, and redevelopment activities, and including measures to restrict and eliminate inappropriate and unsafe development in the CHHA through Plan designated uses, zoning, and density and intensity limitations.
3. Policy 12.3: The County shall maintain an inventory and assessment of the value of all public facilities within the CHHA.
4. Policy 12.4: Any structure or infrastructure damaged in a storm may only be rebuilt in conformance with all current requirements, including those enacted since the construction of the structure or infrastructure.

5. Policy 12.5: If any public structure or infrastructure within the coastal area is damaged in excess of 50 percent of its most recent assessed value, and if the Post-Disaster Redevelopment Ordinance permits development, then the structure or infrastructure must be rebuilt to meet or exceed all current standards and requirements, including those enacted since the construction of the structure or infrastructure.

**D. Objective 13:** The level of service standards, phasing of infrastructure, and areas of service within the coastal area shall be as established in the public facilities elements, Transportation Element, Recreation and Open Space element, and Capital Improvement Plan; and the County shall limit its public infrastructure expenditures in the CHHA.

1. Policy 13.1: Interim wastewater treatment plants shall not be permitted in the CHHA except when County service will be available within five years.
2. Policy 13.2: The County shall not accept responsibility for maintaining new roadways nor take over the maintenance for existing private roadways in the CHHA unless said roadway is designated on the future Traffic Circulation Map.
3. Policy 13.3: The County shall complete and maintain an inventory of existing infrastructure within the CHHA and develop a program to relocate or retrofit such facilities where feasible and as replacement becomes necessary.
4. Policy 13.4: The County shall ensure that future development and redevelopment within the CHHA is consistent with coastal resource protection and will not increase clearance times along evacuation routes.
5. Policy 13.5: Evacuation routes which are located in the CHHA and are subject to flooding shall be improved to the extent feasible to expedite the safe passage of evacuees in the event of mandatory evacuation.
6. Policy 13.6: No new solid waste or hazardous waste management sites shall be approved for location in the CHHA.

### **III. MODEL FLOOD PLAIN MANAGEMENT ORDINANCE**

#### **A. Introduction**

This model ordinance was prepared by the Southwest Florida Water Management District and the Center for Governmental Responsibility, University of Florida, College of Law (November 1982), and included in the TBRPC model integrated approach. Two potential flood hazard situations are discussed. The first is when construction occurs in low-

lying areas that appear safe, due to periods of prolonged dry weather. The second is when fill is added, or adequate drainage facilities are not provided for a construction project, resulting in flooding to neighboring lands that were previously considered safe.

Reference is made to the National Flood Insurance Program (NFIP), and the requirement that a community establish appropriate standards and land use controls before its residents may participate in the federally subsidized flood insurance program. The Model Flood Plain Management Ordinance establishes a flood development review system with construction criteria and standards in areas sensitive to flooding. The review system's restrictions and requirements are designed, in part, to assist the community in qualifying for participation in the NFIP.

**B. Section One. Findings of Fact and Objectives.**

1. Findings of Fact

Uncontrolled development of flood prone lands inconsistent with their natural functions and improper management of flood waters have the following significant adverse impacts on the health, safety and welfare of the community:

- a. The owners of homes and business structures located in frequently flooded areas and their customers, guests, employees, children and future generations are subjected to unreasonable risk of personal injury and property damage.
- b. Expensive and dangerous search and rescue and disaster relief operations must be conducted when developed properties are flooded.
- c. Roads and utilities associated with development are subject to damage from flooding at great expense to taxpayers and rate payers.
- d. Flooding of developed properties leads to demands for government to construct expensive and environmentally damaging projects to control flood waters.
- e. Loss of natural water storage capacity leads to reduction in available water supply.
- f. The level, velocity, frequency and duration of flooding on other lands are often increased when flood waters are obstructed, diverted, displaced or channelized.
- g. Water quality is degraded, freshwater inflows to estuaries are disrupted and habitat is lost.

- h. Property values are lowered and economic activity is disrupted by damaging floods.

2. Objectives

- a. To minimize the potential for property damage and personal injury from flooding;
- b. To restrict adverse interference with the normal movement of surface waters;
- c. To maintain the optimum storage capacity of watersheds;
- d. To maintain desirable groundwater levels;
- e. To maintain the natural hydrological and ecological functions of wetlands and other flood prone lands;
- f. To prevent increased erosion and sedimentation;
- g. To maintain water quality;
- h. To protect the public from the economic and social disruption of flood damage;
- i. To protect the public from the costs of flood relief;
- j. To avoid the need to construct costly and environmentally disruptive flood management structures;
- k. To assist the community in qualifying for participation in the NFIP.

3. The objectives are to be achieved by implementing a flood development review system that:

- a. Restricts the construction of buildings in the most frequently flooded areas;
- b. Requires the elevation or flood proofing of building in less frequently flooded areas;
- c. Restricts interference with the normal movement of flood waters;

- d. Restricts increases in the rate or volume of surface water discharge;
- e. This ordinance is not intended to waive more stringent local regulations or the permitting requirements of any other governmental agency.

**C. Section Three. Requirements for Flood Management Review.**

- 1. Must review the following types of development before construction to determine if they meet the standards:
  - a. Subdivision of land;
  - b. Construction of any building, impervious surface, dam, levee, fill, excavation or water management facility.

**D. Section Four. Identification of Flood Protection Elevations, Flood Hazard Zones and Critical Flood Zones.**

- 1. How to identify (criteria and methods) the following flood protection elevations:
  - a. Flood Hazard Zone: all lands subject to inundation by the regulatory flood (the 100-year flood, or that which has a one percent probability of being equalled or exceeded in any given year), including lands in a Critical Flood Zone or Coastal High Hazard Zone.
  - b. A Critical Flood Zone shall encompass:
    - (1) Lands subject to inundation by a ten-year flood (ten percent probability of being equalled or exceeded in any given year);
    - (2) Wetlands, watercourses and water bodies;
    - (3) Floodways; and
    - (4) Isolated topographic depressions with a history of flooding or a high potential for flooding.
  - c. A Coastal High Hazard Zone shall encompass areas subject to high velocity waters caused by, but not limited to, hurricane wave wash.
  - d. A Floodway shall include the normal channel of a watercourse and

adjacent lands that must remain unobstructed to convey the regulatory flood discharge without causing flood elevations to rise along any stretch of the watercourse above a specified permissible increase known as the floodway surcharge. The floodway surcharge shall be established, considering both existing and potential development, at a level that avoids an increase in potential flood damage. The floodway surcharge may be increased, however, if a developer who wishes to construct some additional obstruction obtains flowage easements from the owners of all land that would be affected by increased levels. In no case, however, may a floodway surcharge exceed one foot. The floodway shall normally be calculated assuming equal encroachment on the floodplain from both sides of the watercourse, unless legally enforceable deed restrictions limiting development rights are recorded for the lands needed for the floodway.

- e. The Flood Protection elevation shall be set at the elevation of the regulatory flood plus one foot. In Coastal High Hazard Zones, the Flood Protection elevation shall be established with consideration given to wind-driven wave action.

**E. Section Five. Standards for Review of Development.**

- 1. Sets forth the primary standards for review and calls for a consideration of the cumulative effects of a development in combination with other existing or potential development. The standards include:
  - a. An equal volume of storage capacity must be created for any volume of the regulatory flood that would be displaced by fill or structures.
  - b. All structures (including buried storage tanks) must be anchored to resist flotation, lateral forces and the impact of floating debris.
  - c. The lowest floor of residential buildings must be elevated to the Flood Protection Elevation for that site;
  - d. The lowest floor of industrial, commercial or other non-residential buildings must be elevated to the Flood Protection Elevation, or to be flood-proofed as follows:
    - (1) Receive certification from a registered professional engineer or architect that the structure and attendant utility facilities are watertight and capable of resisting the effects of the regulatory flood.

- (2) Flood proofing measures must be operable without human intervention and without an outside source of electricity;
  - e. Construction of accessory buildings below the Flood Protection Elevation may be allowed if there is minimal potential for significant damage by flooding.
  - f. Approximately the same rate of flow, volume, timing and quality of runoff from the site is required after development, as runoff that would have occurred following the same rainfall under predevelopment conditions.
  - g. The use of retention and detention systems is required for the increased and accelerated runoff which the development generates.
  - h. Adversely altering the velocity of the regulatory flood on any watercourse is prohibited.
  - i. Any development that poses a significant threat of releasing harmful quantities of pollutants to surface waters during flooding is prohibited.
  - j. Runoff may be discharged into off-site drainage facilities, when it is not technically and economically feasible to manage runoff as prescribed in this section, if all of the following are met:
    - (1) The off-site drainage facilities and channels leading to them are designed, constructed and maintained in accordance with the requirements of this ordinance;
    - (2) If off-site drainage facilities have been constructed by the local government, adequate provision must have been made for sharing construction, maintenance and operating costs. The developer may be required to pay a portion of the cost of constructing the facilities.
2. To develop areas in the Critical Flood Zone, it must be demonstrated that:
- a. The elevation or velocity of the regulatory flood will not be increased as a result of any obstruction or displacement of flood waters.
  - b. There is no significant threat of releasing harmful quantities of pollutants to surface or groundwater during the regulatory flood.

- c. The capacity of the Critical Flood Zone to store, convey or purify surface waters, recharge groundwaters or perform other significant water management functions will not be impaired.
3. Sets forth the standards applicable for the approval of a plat if any lot in a residential subdivision lies within the Flood Hazard Zone:
  - a. Each lot must include a site suitable for constructing a residential building in conformity with the standards of this ordinance.
  - b. One or more benchmarks must be established and indicated on the plat.
  - c. Requires a flood hazard warning to be prominently displayed on all agreements for deed, purchase agreements, leases, or other contracts for sale or exchange of lots within the Flood Hazard Zone and all instruments conveying title to such lots. The warning must read: "This property may be subject to flooding. You should contact local building and zoning officials and obtain the latest information regarding flood elevations and restrictions on development before making plans for the use of this property."
4. To develop areas in the Coastal High Hazard Zone, it must be demonstrated that:
  - a. All buildings or structures are setback from the reach of mean high water (distance to be determined by local authority).
  - b. All buildings or structures will be elevated so that the lowest supporting member is located no lower than the Flood Protection Elevation, with all space below the lowest supporting member open so as not to impede the flow of water.
  - c. Pilings or columns used as structural support are designed and anchored to withstand all applied loads of the regulatory flood including velocity flow and hurricane wave wash. Fill must not be used as structural support. Compliance must be certified by a professional engineer or architect.
  - d. Sand dunes or mangrove stands are not altered so as to increase potential flood damage.

**F. Section Six. Guidelines for the Design of Development.**

1. Presents advisory guidelines that will be used in the review of developments, including:
  - a. Upland sites should be chosen for the location of residential, commercial and industrial buildings.
  - b. Due to the normally tendency of isolated wetlands to fill and then overflow during floods, flowage areas should be protected from incompatible development.
  - c. Rather than allow runoff to be discharged directly into open waters, systems for the detention, retention, treatment and percolation of runoff should be used to increase time of concentration, decrease velocity, increase infiltration, allow suspended solids to settle, and remove pollutants.
  - d. Natural watercourses should not be altered in any manner.
  - e. Intermittent watercourses should be vegetated.
  - f. Vegetated buffer strips should be created or, where feasible, retained in their natural state along the banks of all watercourses, water bodies, or wetlands.
  - g. Detention and retention areas should be designed so shorelines are sinuous rather than straight, to maximize the length of shoreline, thereby offering more space for the growth of littoral vegetation.
  - h. Banks of detention and retention areas should slope gently into the water to safeguard against personal injury, to encourage the growth of littoral vegetation, and to allow the alternate flooding and exposure of areas along the shore.
  - i. The use of drainage facilities and vegetated buffer zones as open space, recreation and conservation areas should be encouraged.
  - j. Care should be taken to avoid overloading the capacity of wetlands, which harms the wetland and transitional vegetation.
  - k. Erosion should be minimized and sediment should be retained on the site of development.

- l. The area of land disturbed by development should be the minimum feasible, including establishment of an adequate barrier from construction activity for those areas not to be disturbed. Whenever possible, retain and protect natural vegetation.
- m. Land which has been cleared for development and upon which construction has not commenced should be protected from erosion by appropriate techniques designed to stabilize soil and revegetate the area.
- n. Wetlands and other natural water bodies should not be used as sediment traps during development.
- o. Erosion and sedimentation facilities should receive regular maintenance to ensure they continue to function properly.
- p. Artificial watercourses should be designed, considering the soil type, so the velocity of flow is low enough to prevent erosion.

**G. Section Seven. Administration.**

1. A variance may be granted if:
  - a. the applicant demonstrates good and sufficient cause;
  - b. failure to grant a variance would result in unnecessary and special hardship because of conditions beyond the control of the applicant
  - c. granting a variance will not result in an increase in the elevation of the Regulatory Flood, additional threats to public safety, extraordinary public expense, the creation of nuisances, fraud or victimization of the public, or the creation of conflicts with other local ordinances.
2. Only the minimum variance necessary to afford relief or effectuate the purpose of this ordinance will be granted.

**IV. MODEL LAND DEVELOPMENT/SUBDIVISION REGULATIONS**

This section analyzes excerpts from regulations incorporated into the TBRPC fictitious "Watercrest County" Land Development Code. Overall the regulations comply with state policies and the NFIP. It is important to remember that state policies recommend only minimum standards. Reliance on NFIP criteria to establish a Build-Back policy (see Section 5.0, below) may not be advisable in areas prone to damage, or for particularly sensitive areas.

However, the establishment of a Coastal Protection Zone that reflects minimum setback lines and Wetland Buffer Zones mitigates this potential weakness. This demonstrates the interplay between pre-planning and post-disaster response strategies. An ideal regime should incorporate both strategies, reflecting strict standards for regulation before and after a storm event.

**A. Section 1.0: Purpose**

To implement the Model Local Government Disaster Mitigation and Redevelopment Plan. Implementation of this Plan promotes the public health, safety and general welfare, and minimizes public and private losses due to flood and wind conditions in specific areas by provisions designed to:

1. Protect human life and health;
2. Minimize expenditure of public money for costly flood control projects;
3. Minimize the need for rescue and relief efforts associated with disasters (flooding, etc.) and generally undertaken at the expense of the general public;
4. Minimize prolonged business interruptions;
5. Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets and bridges located in areas of special flood hazard;
6. Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blight areas;
7. Ensure that potential buyers are notified that property is in an area of special flood hazard;
8. Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions; and
9. Protect the limited amount of marine wetlands remaining in the community and those lands designated as conservation and preservation on the land use map.

**B. Section 2.0: Coastal Setbacks**

1. Section 2.1: Establishes minimum setback lines within the Coastal Protection

Zone (the lines must conform to both the CCCL, where designated by DEP, and the wetland buffer established in Section 2.2).

2. Section 2.2: Establishes a Wetland Buffer Zone of 50 feet from the post-development jurisdictional wetlands on the development sites within the Coastal Protection Zone which are adjacent to any Special Waters (as designated in Section 17-302.700 F.A.C.). Establishes the Wetland Buffer zone for other waters at 30 feet.
3. Section 2.3: Gives minimum requirements for side yard setbacks.
4. Section 2.4: Gives minimum requirements for front and rear yard setbacks.

**C. Section 3.0: Seawall Replacement**

1. Section 3.1: Repairs to existing seawalls may not protrude further seaward (except for a buttress of up to six inches).
2. Section 3.2: Replacement seawalls are permitted so long as it does not protrude further seaward than the structure being replaced.

**D. Section 4.0: Minimum Requirements of the NFIP (Including 50% Rule)**

1. Sets forth the requirements for a community to participate in the NFIP, based upon community status as defined by FEMA and designated in Sections 60.3(a), (b), (c), (d), and (e).
2. Extensive requirements exist for each designation, including requirements for obtaining permits, imposition of additional permits, application review criteria, and subdivision proposal review criteria.

**E. Section 5.0: Mandated Improvements to Structures**

1. Sets forth build-back standards for structures damaged. For example, structures damaged such that the cost of reconstruction or repair is greater than 50% of the replacement cost, may be reconstructed at (but not exceeding) the legally documented actual use, density, and intensity existing at the time of destruction. Such structures must be rebuilt or replaced in compliance with current regulations.
2. Section 5.1: Allows rebuilding of structures damaged up to and including 50% of their replacement cost at the time of the disaster, and requires repair work to conform to current building and life safety codes.

3. Section 5.2: Requires structures damaged by flood waters in a disaster by more than 20% of their replacement cost, which have recorded one or more National Flood Insurance Program losses of \$1,000 or more since 1978, to be brought into compliance with current regulatory standards for new construction.
4. Section 5.3: Allows rebuilding structures, damaged more than 50% of their replacement cost at the time of disaster, to their original square footage and density, if criteria are met (list given).
5. Section 5.4: Sets the minimum requirement for sustainable wind speed at 110 mph.
6. Section 5.5: Addresses when storm shutters are required, and gives compliance requirements for them.
7. Section 5.6: Sets forth conditions under which development regulations may be modified (list given).

**F. Section 7.0: CHHA Overlay District**

1. Provides an additional level of review before new development may proceed in the more vulnerable coastal areas.
2. Section 7.2: Sets forth the standards and procedures to regulate properties or portions thereof located within the Coastal High Hazard overlay District.
3. Section 7.3: Prohibits listed uses regardless of the underlying zoning district.
4. Section 7.4: Limits uses that are otherwise permitted in accordance with the underlying district.
5. Section 7.5: Requires land developments within the CHHA to preserve representative tracts of native upland vegetative communities.
6. Section 7.6: Imposes additional requirements for submission with an application for planned development and floodplain management approval.
7. Section 7.7: Lists the standards of review for development of projects within the CHHA Overlay District.
  - a. Section 7.7.1: Requires relocation outside the Coastal High Hazard Overlay District for any habitable structure that sustains substantial damage due to a natural disaster (provided sufficient land is available)

on the subject parcel).

- b. Section 7.7.3: Requires consideration of cumulative impacts for review of applications within 500 feet of natural resource reservation areas.
- c. Section 7.7.4: Imposes additional requirements for proposed development within 500 feet of an Aquatic Preserve boundary.

**G. Section 8.0: Opportunities for Acquisition and Relocation**

Sets forth requirements for acquiring damaged property, when it is determined to be in the best interest of the public.

**V. MODEL POST-DISASTER REDEVELOPMENT ORDINANCE**

**A. Introduction**

The following model ordinance, part of the integrated strategy recommended by the TBRPC, is based on and improves an existing ordinance adopted by Hillsborough County. It seeks to consolidate redevelopment procedures based upon the policies adopted in the local government comprehensive plan, to take advantage of the opportunities and programs available after the disaster, and to reduce potential conflict and miscommunication with the public.

The ordinance responds to OBJECTIVE 12, of the TBRPC model Coastal Management Element for "Watercrest County," requiring the creation of a post-disaster redevelopment plan for the CHHA and adoption of regulations necessary for its implementation.

It is difficult for public officials to critically address reconstruction standards and criteria on a case-by-case basis in the post-disaster environment. One goal of regulations affecting this issue should be to reduce the overall number of variances granted. Ad hoc decision making is ill advised, and can be avoided with proper planning efforts. Crucial to these efforts is avoiding the rush to return to "normal" conditions as they existed before the storm event, without careful consideration of redevelopment issues (Salmon and Henningsen, 1987).

Control of post-disaster recovery efforts is crucial to mitigate the potential threat of future storm events. This Ordinance establishes a Redevelopment Task Force to impose county policies, and control recovery efforts. The success of this program hinges on the strengths of other programs adopted in the jurisdiction. The Build-Back policy and Building Moratoria reflect the type of control local government should exert in the recovery setting. The relationship between policies such as these, and the activity of a Redevelopment Task

Force is extremely important in developing and implementing an effective post-disaster redevelopment program.

**B. Section One. Purpose and Intent of Ordinance.**

1. To establish a redevelopment task force to oversee the reconstruction process and serve as advisory committee to the Board of County Commissioners on recovery and redevelopment issues.
2. To control the issuance of building permits in order to manage the location, timing, and sequence of reconstruction and repair, as well as ensuring that mitigation occurs.

**C. Section Four. Redevelopment Task Force.**

1. Sets forth the planning role of the Redevelopment Task Force. The Task Force is to meet and discuss such issues as a redevelopment plan, relocation, reconstruction and redevelopment priorities and procedures, and recommending changes to this Ordinance and the comprehensive plan.
2. Sets forth the responsibilities of the Task Force. This includes damage assessment, rezoning changes, priority areas for recovery, and the evaluation of hazards and the effectiveness of mitigation policies.
3. Grants authority to the Task Force to recommend changes to the comprehensive plan, Land Development Code, building codes, and any other ordinances it deems necessary or advisable to prevent the recurrence of damages.
4. Grants authority to the Task Force to recommend to the Board such opportunities as the enhancement of local recreational and open spaces and the enhancement and restoration of local natural ecosystems.
5. Sets forth the recommended composition of the Task Force, to reflect a broad-based sampling of community interests.

**D. Section Five. Determination of Damage, Build-Back Policy, Moratoria, and Emergency Repairs.**

1. EMERGENCY REPAIRS: Sets forth conditions under which a permit is not necessary during times of a building moratorium.
2. DETERMINATION OF DAMAGE: Establishes classifications for structures which have:

- a. been destroyed (defined as a structure that is a total loss or damaged to such an extent that repairs are not technically or economically feasible - the cost of repairing the structure exceeds fifty percent of the replacement cost at the time of damage or destruction);
  - b. received major damage (defined as a structure that can be made habitable with extensive repairs - the cost to repair is greater than twenty percent and up to and including fifty percent of the replacement cost at the time of damage); and
  - c. received minor damage (defined as a structure that can be made habitable in a short period of time with minimal repairs - cost to repair is less than or equal to twenty percent of the replacement cost at the time of damage).
3. COUNTY BUILD-BACK POLICY: Sets forth requirements and allowances for structures damaged by a storm event.
- a. Structures damaged to the extent that the cost of their reconstruction or repair exceeds fifty percent of the replacement cost may be reconstructed at (but not to exceed) the legally documented actual use, density, and intensity existing at the time of destruction, thereby allowing such structures to be rebuilt or replaced to the size, style, and type of their original construction, provided that applicable federal and state regulations, local building and life safety codes, and other local regulations do not preclude reconstruction otherwise intended by this policy.
  - b. Structures damaged less than fifty percent of their replacement cost at the time of damage can be rebuilt to their original conditions, subject only to current building and life safety codes.
  - c. Structures damaged more than fifty percent of their replacement cost at the time of damage can be rebuilt to their original square footage and use density or intensity, provided they comply with:
    - (1) federal requirements for elevation above the 100-year flood level;
    - (2) building code requirements for flood-proofing;
    - (3) current building and life safety codes;

- (4) state CCCL; and
  - (5) any required land development regulations (other than density or intensity), unless compliance with such regulations would preclude reconstruction otherwise intended by the build-back policy.
4. **BUILDING MORATORIA:** Sets forth the conditions under which the following moratoria will be declared:
- a. Initial building moratorium may be in effect for up to 72 hours, and prohibits issuance of any building permits. It shall be declared if one or more of the following actions or findings are determined:
    - (1) County is declared a disaster area either by the Governor of the State of Florida or the President of the United States.
    - (2) Upon a finding by the Board of the existence of a state of local emergency in accordance with Chapter 252, Florida Statutes.
    - (3) The inability of the county to maintain acceptable levels of public service as determined by the County Administrator or the Board.
  - b. Destroyed structure moratorium prohibits issuance of any building permit within thirty days following the declaration of the initial building moratorium for the replacement of any structure which has been destroyed.
  - c. Major damaged structure moratorium prohibits issuance of any building permit for at least ten days following the declaration of the initial building moratorium.
  - d. Minor damaged structure moratorium prohibits issuance of building permits for at least four days following the declaration of the initial building moratorium.
  - e. New development moratorium prohibits issuance of any building permit for at least thirty days following the declaration of the initial building moratorium.
  - f. Outstanding building moratorium allows for the suspension of permits issued prior to the storm event or emergency. This moratorium lasts for a minimum period of thirty days, unless the Building Department

Directory determines that sufficient inspection staff is available to adequately inspect the structures should construction begin or resume.

It also reserves the right to reinspect any and all building permit work in place prior to the storm event or emergency to verify that the work in place was not damaged.

- g. Outstanding development order moratorium applies a similar suspension period of thirty days for development orders, such that no work is authorized and that no development order inspections by the authorities will be performed during the moratorium. It also reserves the right to reinspect.
- h. Site plan review moratorium suspends for a period of thirty days following the declaration of the initial building moratorium, all site plans which have been submitted to the County prior to the storm event or emergency. For new site plans, zoning requests or subdivision plats may not be accepted by the County for a period of thirty days following the declaration of the initial building moratorium.

## **Section Four: SUMMARY ANALYSIS OF ADOPTED PLANS AND ORDINANCES**

### **I. INTRODUCTION**

This section of the report presents and summarizes effective coastal management programs, plan elements and ordinances which have been adopted by local governments in Florida and North Carolina. The process involved contacting a list of local governments identified by academic experts, and regulatory and planning agency personnel, and reviewing the relevant plans, programs and ordinances adopted by those jurisdictions. A list of experts consulted for this report is attached as Appendix A. Many counties were noted as having particularly effective mechanisms in place, while others were noted for their overall programmatic efforts. A complete list of the jurisdictions examined can be found in the references cited for this report, attached as Appendix B. Full copies of the programs, plan elements and ordinances actually summarized in this report are collected in Appendix C (Volume II).

Based on discussions with and recommendations from experts, the following jurisdictions were identified as having particularly effective provisions or programs:

Brevard County, Florida	Indian River County, Florida
Lee County, Florida	Town of Nags Head, North Carolina
Sarasota County, Florida	St. John's County, Florida
St. Lucie County, Florida	Volusia County, Florida

The following sections analyze the efforts taken by these local governments to adopt and implement effective plans and strategies for coastal redevelopment management. The information presented below represents the strength of each jurisdiction's management efforts.

It should be noted that references to specific comprehensive plan elements and ordinances have been edited for content.

### **II. BREVARD COUNTY, FLORIDA**

#### **A. Introduction**

Brevard County's Coastal Management Element contains extensive information pursuant to the Inventory and Analysis requirements of Rule 9J-5.012, F.A.C. Fair treatment is given to all interests in the presentation of very difficult and sensitive material. Recognition is given to recent topics relating to the nature of beaches and coastal systems. The information is clearly presented, providing good justification for potentially controversial policy decisions. Strong policies are easier to defend in light of convincing, and in some cases, overwhelming scientific data. The interaction of the Inventory and Analysis sections with the Goals, Objectives, and Policies does much to take an affirmative stance to carry out the requirements of Rule 9J-5.012.

The potential impact of the Comprehensive Plan is further strengthened by the Setback Ordinance. The Ordinance addresses many issues in the coastal area, including erosion control devices, buffer zones, and special construction standards in areas seaward of the setback line. The setback line is a line of prohibition, restricting development in vulnerable coastal areas. Employment of such techniques augments the protection afforded by existing standards associated with the CCCL.

**B. Brevard County Comprehensive Plan: Coastal Management Element**

1. Purpose

- a. To plan for appropriate development activities within the coastal zone, especially those which would damage or destroy coastal resources.
- b. To protect human life and limit public expenditures in areas that are subject to destruction by natural disasters, specifically the CHHA.

2. Goal

Establish growth management strategies to allow growth to continue within the coastal zone which does not damage or destroy the function of coastal resources, protects human life and limits public expenditures in areas subject to destruction by natural disasters.

3. Beaches and Dunes

- a. Objective 4: Develop comprehensive beach-dune system (BDS) management program to protect, enhance and restore naturally functioning BDS.
  - (1) Policy 4.1: Land Development Regulations shall govern location, construction and maintenance of development; lists minimum conditions for development seaward of County Coastal Construction Control Line (CCCL). The minimum criteria include:
    - (a) At least 50 percent of the existing vegetation shall be preserved.
    - (b) No new shore hardening structures shall be permitted.
    - (c) Setbacks or other non-structural methods of shoreline protection shall be given the highest priority.

- (d) All structures constructed seaward of the CCCL shall be constructed to withstand the wind and water forces from a 100-year storm event.
- (2) Policy 4.2: Keep County Coastal Setback Line and County CCCL (as established by Ordinance 85-17) and re-evaluate their effectiveness at five year intervals.
- (3) Policy 4.3: Adopt standards for maintenance or reestablishment of dune areas. Minimum standards include:
  - (a) Requires approval by both Brevard County and the DEP to remove or alter native dune vegetation.
  - (b) Requires private property owners to re-establish dune vegetation which has been destroyed by undesignated access activities.
- (4) Policy 4.5: BDS restoration program shall include analysis of environmental, financial and social criteria, including:
  - (a) Protection of life and property receives the first priority for beach renourishment.
  - (b) Environmental considerations also receive priority.
  - (c) Areas heavily utilized for recreation (such as surfing, fishing or swimming) shall be considered for renourishment or restoration.
  - (d) Requires an economic impact analysis for long-term costs and benefits of any renourishment project, to include present and future benefits for property protection, recreation and tourism over the life of the project.
- (5) Policy 4.7: Establish ongoing program to locally monitor data collection projects related to beach dynamics, sand transport and coastal processes.
- (6) Policy 4.9: Prohibit motorized vehicles on the BDS (exception for government and rescue vehicles).

b. Basis for Objective and Policies

- (1) Limiting infrastructure seaward of the CCCL can be used as a tool to minimize impacts to the dune system.
- (2) Strict setback and construction standards for anticipated development on the beachfront are used as tools to minimize the impact on the BDS and the amount of vegetation removed on-site.
- (3) Vegetated primary dunes are the major defense against storm events.
- (4) Alternatives for protection include:
  - (a) shore hardening structures (seawalls and groins), which protect the land behind them, but disrupt the BDS on either side of them;
  - (b) "soft" structures (geotextile bags), which are not a permanent solution, but do not disrupt BDS; and
  - (c) retreat from the beach (via the County Coastal Setback Line), which where implementable, is the best alternative because it protects the BDS and the beachfront structures.
- (5) Development shall not be located or constructed in a manner which precludes primary dune development or maintenance or interrupts littoral drift. The natural processes shall be preserved (uninterrupted by human activities).
- (6) Preservation and management of BDS shall be given highest priority in location, construction, and maintenance or development within the coastal zone.
- (7) Vegetated dune areas shall be maintained or reestablished, as appropriate. The County shall provide technical advice to individuals who are revegetating.
- (8) Non-structural methods of beach erosion control are encouraged, and single family housing is preferred over multi-family housing seaward of CCCL.
- (9) Beach and riverfront acquisition should be considered to capture areas anticipated to be most environmentally

significant.

4. Coastal High Hazard

- a. Objective 6: Limit future public expenditures for infrastructure and service facilities which subsidize growth within the coastal high hazard and high risk vulnerability zones, except, for public land acquisition or enhancement of natural resources.
  - (1) Policy 6.1: Designate CHHA as those within FEMA V-zones and areas seaward of CCCL.
  - (2) Policy 6.2: County will not finance new local transportation corridors in the zone or Environmental Areas.
  - (3) Policy 6.6: No public facilities (except recreational).
  - (4) Policy 6.8: No increase in residential densities due to addition of infrastructure.
- b. Objective 7: Limit densities within the zone and direct development outside of this area.
  - (1) Policy 7.2: Continue use of Transfer of Development Rights (TDR) program.
  - (2) Policy 7.3: Continue land acquisition program.
  - (3) Policy 7.5: Develop post-disaster redevelopment plan which limits redevelopment densities within the coastal high hazard zones.
- c. Basis for Objectives and Policies
  - (1) Public expenditure on infrastructure systems, in areas where residents are more vulnerable to storm events, encourages growth (which in turn may increase immediate disaster relief and long-term redevelopment costs).
  - (2) Growth in CHHA is directly linked to placing lives at risk due to high evacuation times. Growth should be limited in areas designated as undeveloped barrier island according to the policies of the federal Coastal Barrier Resources Act (CBRA).

- (3) If required to meet existing deficiencies, public facilities should be located within less vulnerable areas.
- (4) Infrastructure in existence is not adequate rationale to increase zoning density. This is quite strictly expressed, unlike other locations which allow infrastructure in the CHHA if it will be "safely accommodated."
- (5) Public acquisition of lands is encouraged for recreation or conservation, because this does not subsidize growth.

5. Post-Disaster Redevelopment

- a. Objective 10: Expedite post-disaster recovery and reduce or eliminate the future risk to human life, and public and private property from natural hazards via recovery and re-development strategies.
  - (1) Policy 10.1: Designates Recovery Task Force.
  - (2) Policy 10.3: Develop post-disaster permitting procedure.
  - (3) Policy 10.4: Review all non-emergency and long-term redevelopment proposals using the following criteria:
    - (a) Requires reconstruction to coastal zone construction requirements for any structure that is seaward of the CCCL and damaged greater than 50 percent of the assessed value or fair market value.
    - (b) Requires reconstruction to coastal zone construction requirements for any water-dependent commercial use seaward of the CCCL that is damaged by more than 50 percent of its assessed value or fair market value.
    - (c) Requires relocation landward of the CCCL for all water-related commercial uses seaward of the CCCL that are damaged by more than 50 percent of their assessed value or fair market value (unless a project has no feasible alternative and the project is found to be in the public interest).
    - (d) Requires relocation landward of the CCCL for all water-enhanced commercial uses seaward of the CCCL that are damaged by more than 50 percent of

their assessed value or fair market value.

- (4) Policy 10.5: Replacement of infrastructure shall be constructed in conjunction with existing development
- (5) Policy 10.6: Analyze public structures most likely to be damaged or destroyed during a hurricane. The minimum criteria to be considered include:
  - (a) The cost effectiveness of relocation versus repair.
  - (b) Alternatives, in light of mitigative impacts, growth management consistency, impacts to the public, timeliness, legal issues, environmental impacts and costs.
  - (c) Requires the following alternatives, at a minimum:
    - i. Repair of the structure to pre-disaster conditions.
    - ii. Repair of the structure to pre-disaster conditions with physical protective structures, such as seawalls.
    - iii. Vertical relocation (such as elevating roadways with bridges).
    - iv. Relocation further inland.
  - (d) The impact of sea level rise and the projected 30-year erosion line.
- (6) Policy 10.8: Building Division shall provide copies of building permits issued for storm damage repair to the Recovery Task Force for their evaluation for identification of areas susceptible to repeated damage by hurricane erosion and flooding.

b. Basis for Objective and Policies

- (1) Land uses within the CHHA include multi-family residential, single family residential and tourist commercial (hotels and motels).

- (2) Defines entire barrier island to be within the Coastal Building Zone (construction within this area must meet elevation and wind load requirements, consistent with Chapter 161, Florida Statutes).
- (3) Construction within the coastal zone is regulated by Ordinance 85-17, requirements consistent with Ch. 161, F.S., and the flood insurance requirements (as contained within the Code of Brevard County).
- (4) Structures built between the Coastal Setback Line and the CCCL, if damaged by more than 50% of their assessed value, may be rebuilt consistent with the coastal zone construction requirements to withstand the wind and water forces of a 100-yr storm. If the foundation is damaged, must get a permit from DEP.
- (5) Gives possible relocation sites (identified by East Central Florida Regional planning Council). Adopts directives to limit residential densities within the CHHA (designed to minimize impact on the dune system and allow the structure to withstand the forces of 100-yr storm)
- (6) Brevard County considers the following structures to be at risk (in order of decreasing risk):
  - (a) Structures which are not constructed to CCCL standards and are located seaward of the 1975 CCCL;
  - (b) Structures which are not constructed to CCCL standards and are located seaward of the Brevard County Coastal Setback Line;
  - (c) Structures which are not constructed to CCCL standards and are located seaward of the 1985 CCCL.
- (7) Only reconstruct public infrastructure if the development it serves is also reconstructed. Potential relocation or location sites for public facilities shall be landward of the CCCL.

6. Wildlife Habitat

- a. Objective 14: Protect endangered and threatened wildlife in the

coastal zone from adverse impacts due to loss of critical habitat.

- (1) Policy 14.1: Utilize information from East Central Florida Regional Planning Council and other agencies to inventory and identify critical wildlife habitat for endangered or threatened wildlife species within the coastal zone, and to determine loss rates and rarity of such habitat.
- (2) Policy 14.2: Develop ordinance to require critical habitat review at the pre-application stage of all projects requiring site-plan or subdivision approval. The criteria include:
  - (a) Development of resource maps showing potential areas for critical wildlife habitat for threatened and endangered wildlife species.
  - (b) Development of use standards for the use of critical habitat.
  - (c) Required for projects greater than 5 acres in size.
  - (d) Requires a site visit by the Office of Natural Resources Management if potential habitat is shown.
  - (e) Requires a management plan (developed by the project owner) if the endangered or threatened species is found on-site or there is evidence that the species is on-site. The plan must be approved by the Office of Natural Resources Management as part of site-plan or subdivision approval.
- (3) Policy 14.4: Develop program for county-wide acquisition of critical habitat for endangered or threatened species which have been identified for protection. (Voluntary program, rather than exercising eminent domain)
- (4) Policy 14.5: Require environmental assessment to analyze the impact of the proposed development on the natural resources and wildlife habitat of development in County owned conservation areas within the coastal zone.
- (5) Policy 14.11: Office of Natural Resources Management shall develop a county-wide scrub jay management plan. Management plans shall be developed for other species, as

deemed necessary.

- (6) Policy 14.12: Office of Natural Resources Management shall develop model management plans for endangered and threatened species (other than the Florida Scrub Jay) to be determined dependent upon availability of habitat and growth pressures.
- (7) Policy 14.14: County shall develop, with assistance of DNR, GFC, and USFWS, an education program to promote the preservation of endangered or threatened species and species of special concern.

b. Basis for Objective and Policies

- (1) Zoning as Environmental Areas (conservation areas) provides wetlands protection zoning on the barrier island. This allows only one dwelling unit per ten acres, with a maximum structure size of 600 square feet. In addition, stringent enforcement of stormwater, land clearing and wetland (mangrove) protection regulations is required.
- (2) Increased development threatens some beach and upland species (sea turtles, scrub jays, pelicans, roseate terns, gopher tortoises, and others).
- (3) Infill development has the potential to disturb or destroy the habitat for these species, as well. Thus, wildlife policies require management plans for developments of five acres or more which contain critical habitat for threatened and endangered species.
- (4) Upland species can also be disturbed by the location of public infrastructure. Alternatives to habitat disruption include relocation of the infrastructure or the species themselves.

**C. Brevard County Setback Ordinance, 85-17**

1. General Considerations

- a. Coastal barrier serves as a natural, protective buffer against the attack of storms, waves and currents. The environment of the barrier demands comprehensive protection.

- b. The coastal beach-dune system (BDS) is highly vulnerable to the gradual deterioration of erosion and rising relative sea level, which causes the coastline to constantly move landward.
- c. The County is annually threatened with storm surges and hurricanes which can devastate the coastline.
- d. Flooding results in loss of life and property, health and safety hazards, disruption of commerce and governmental services, great public expenditures for beach and flood protection and relief, impairment of the tax base, and the risk of liability from storm related lawsuits.
- e. Erosion can be resisted by stabilized, well developed BDS, which can significantly moderate the coastal barrier's dynamics of change.
- f. The most effective method known for dissipating wave energy, and thereby resisting the devastation caused by storm surges and hurricanes is the natural profile of a gently sloping beach of adequate width and height.
- g. Rigid coastal and shore protection structures do not protect the beach, and, in fact, usually cause long-term, severe adverse effects on the beach and property in their immediate vicinity.
- h. The Department of Natural Resources (DNR) established CCCL to define that portion of the BDS which is subject to severe fluctuations, and to call attention to the special hazards and impact associated with the use of such property. This serves, therefore, as a means of controlling beach erosion through protection of the BDS.
- i. DNR's 1984 Status Overview rendered the CCCL in Brevard County totally inadequate to define the storm impact zone as intended, due to long-term shoreline changes, major storm events, frequent winter storm surges, and subtropical storm.
- j. Source of authority: Section 161.053, Florida Statutes, authorizes counties to establish stricter coastal setback lines than those previously set by the State.
- k. Board of County Commissioners (Board) of Brevard County has determined that a new, stricter coastal setback line, and special building regulations for construction of structures in the coastal barrier area, must be established to assure the continued protection of BDS, while providing for development of the coastal barrier area and

permitting sustainable use.

2. Section One. Policy Statement.

- a. Integrity of the BDS is dependent upon its ability to fluctuate in response to the natural forces of the ocean, such as tides, waves, winds, and storm floods.
- b. The BDS constitutes a first line of defense against the attack of storms, waves, and currents.
- c. Failure of the defense capacity of the BDS during a severe storm event or hurricane could result in substantial loss of property and life, with Brevard County's limited number of evacuation routes from the coastal barrier, congested roadway network, and the resulting impediment to the evacuation of the coastal barrier inhabitants during an emergency.
- d. It is in the public interest to preserve and protect Brevard County's coastal barrier BDS from imprudent construction, which would jeopardize the stability of the BDS, accelerate erosion, provide inadequate protection to upland structures, and endanger adjacent properties.
- e. Public health, safety, and welfare of the inhabitants of Brevard County require the establishment of special construction regulations to allow the BDS to maintain its equilibrium, to buffer persons and property from devastation by ocean forces, and the establishment of additional setback requirements to provide that structures located on oceanfront property be set back sufficiently, and constructed in a manner to provide a useful life thereof, considering the perils of storm and sea.

3. Section Two. Intent.

- a. To establish a coastal setback line to buffer major structures from ocean forces, and to prohibit the construction of major structures within the area seaward of said coastal setback line.
- b. To discourage the further construction of rigid coastal and shore protection structures, while allowing the DNR to maintain jurisdiction and control over regulation of such structures.
- c. To establish a coastal construction control line, to define that portion

of the BDS which is subject to severe fluctuations based on conditions associated with a one hundred-year storm event, and to employ special construction standards for structures to be located seaward of said coastal construction control line, so as to protect said structures from the perils of storm and sea.

4. Section Three. Definitions.

- a. "Structure" - shall mean anything which is constructed or erected, the use of which requires rigid location on the ground or attachment to something having a permanent location on the ground.
- b. "Major structure" - shall include the following structures: houses, or single-family residential buildings; mobile homes; modular homes; trailers; multiple-family residential buildings; condominiums; motels; hotels; apartments; restaurants; shops; towers; other similar residential, commercial, industrial, recreational, or public buildings; swimming pools; bathhouses; detached garages; utility buildings; septic tanks and associated drain fields; package sewer and water plants; parking areas; impervious paved areas; sewer, water, electric, telephone, television cable and other utility lines; storm drains; water retention areas, drainage structures; private roads or streets, and underground storage tanks.
- c. "Habitable major structure" - shall include the following structures: houses or single-family residential buildings; mobile homes; modular homes; trailers; multiple-family residential buildings; condominiums; motels; hotels; apartments; restaurants; and other types of residential, commercial, or public buildings.
- d. "Minor structure" - shall include dune and beach walkover structures; beach access ramps and walkways, stairways; viewing platforms; gazebos; boardwalks; lifeguard support stands; cantilevered decks or porches; sand fences; privacy fences; fishing or ocean piers; pipelines; and ocean outfalls.

5. Section Five. Structures Prohibited. (Setback Line)

- a. No major structures shall be constructed seaward of the Coastal Setback Line.
- b. No minor structures which are not pile-supported and elevated to a height sufficient to permit maintenance of dune stabilizing vegetation growing beneath said minor structure shall be constructed seaward of

the Coastal Setback Line.

- c. All excavations, including the removal or alteration of soil, sand, or vegetation by digging, dredging, filling, drilling, cutting, scooping, or hollowing out shall be prohibited seaward of the Coastal Setback Line.

6. Section Six. Structures Permitted.

- a. Minor structures which are pile-supported and elevated to a height sufficient to permit maintenance of dune stabilizing vegetation beneath said minor structure may be constructed seaward of the Coastal Setback Line; provided, however, that all applicable federal, state, including DNR, and Brevard County zoning, building, and construction codes and regulations are satisfied.

7. Section Seven. Exemption: Coastal Setback Line.  
(Grandfathering provision)

8. Section Eight. Variances.

- a. The Board may grant the requested variance, after public hearing, in those cases where the facts presented at the public hearing evidence the following:

- (1) That the subject property experienced less than twenty-five feet of beach-dune erosion since September, 1972. Said erosion shall be measured by determining the extent of horizontal recession from the toe of the dune as it exists at the time of application, to the point on the dune as it existed in September, 1972, which corresponds to the same elevation as the toe of the dune as it exists at the time of application.

- (2) That the granting of the variance shall not be injurious to adjacent properties, nor contrary to the public interest.

- b. The Board may attach such reasonable conditions as the Board deems necessary to maintain the purpose and intent of this Ordinance.

- c. The maximum extent of any variance granted shall be the difference between twenty-five feet and the actual erosion experienced on the subject property, as determined by the Board after said public hearing.

- d. All other applicable federal, state and Brevard County zoning,

building, and construction codes, rules and regulations shall be satisfied.

9. Section Ten. Construction Requirements. (CCCL)

a. Prior to site plan approval, or final development plan approval, or the issuance of any building permit (where a site plan or final development plan is not required) by the Brevard County Building Official, for construction of any structure seaward of the CCCL, the following conditions shall be specifically met:

(1) All structures shall be designed to minimize any expected adverse impact on the BDS for adjacent properties.

(2) Any major structures which extend wholly or partially seaward of the CCCL shall be designed to resist the predicted forces associated with a 100 year storm event.

(3) Major structures shall conform to the following requirements:

(a) Designed in accordance with Chapter 6, Code of Brevard County, and the Standard Building Code. If a conflict arises between this Ordinance and the SBC, or other federal, state, or Brevard County laws, the requirement resulting in the more restrictive design for wind, wave, hydrostatic and hydrodynamic loads and erosion conditions shall apply.

(b) All habitable major structures shall be elevated on, and securely anchored to, an adequate pile foundation in such a manner as to locate the building support structure above the design breaking wave crests or wave upwash as superimposed on the storm surge with dynamic wave setup of a one hundred-year storm. The storm surge with dynamic wave setup of a 100 year storm shall be the elevation determined by DNR.

(4) Minor structures need not meet specific structural requirements for wind and wave forces, but they shall be designed to produce the minimum adverse impact on the BDS and adjacent properties and to reduce the potential for generating aerodynamically or hydro-dynamically propelled missiles.

### **III. INDIAN RIVER COUNTY, FLORIDA**

#### **A. Introduction**

The coastal management element of Indian River County presents a large amount of information on coastal processes and storm threats and uses it to justify simple, yet effective policies. This element represents a good source for language that calls for ordinances and regulations to be adopted later, and provides clear guidelines for their adoption.

The County has a strong setback policy, with the Dune Stabilization Setback Line representing a line of prohibition. Consistent with this policy, efforts are called for to protect the BDS and manage natural resources. Relocation as a means of addressing severely or repeatedly damaged structures is stressed in nearly every objective. The element provides a great source for a basic, yet complete, treatment of the major issues involved.

#### **B. Indian River County Comprehensive Plan: Coastal Management Element**

1. Goal: To protect, maintain and enhance coastal resources and provide for the enjoyment of the social, economic and natural benefits of these resources, while reducing the potential loss of life, and public and private expenditures in the coastal zone.
2. Natural Resource Protection.
  - a. Objective 1: The County recognizes the existing natural resources and habitats of the coastal area, and will have a comprehensive management program to protect, conserve and/or enhance coastal wetland, living marine resources, wildlife habitat and undeveloped coastal barriers.
    - (1) Policy 1.1: Calls for adoption of ordinances limiting the development of environmentally sensitive and environmentally important areas, with incentives to encourage preservation or environmentally compatible development therein.
    - (2) Policy 1.2: Considers "sensitive" all wetlands, and as "important" all significant tracts of xeric scrub and coastal/tropical hammocks.
    - (3) Policy 1.3: Classification as "important" or "sensitive" does not preclude development, but requires particular specific considerations (as per ordinances to be adopted).

- (4) Policy 1.10: Requires measures to protect significant upland vegetative communities, wildlife, and marine habitats in the coastal zone and overall county.

3. Beaches and Dunes.

- a. Objective 4: The County will have an established comprehensive beach and dune management regulatory program, which protects, maintains, and enhances a naturally functioning beach and dune system, while ensuring that no unnatural disturbances of the primary dune system occur.

- (1) Policy 4.1: Designates the 1981 DNR CCCL as the "County Dune Stabilization Setback Line (DSSL)" and prohibits construction and related activities eastward of the line, except for the following:

- (a) federal, state and locally permitted erosion control/dune stabilization projects, dune walkovers, lifeguard towers or boardwalks or temporary dune irrigation projects;
- (b) public navigational projects, markers or other control structures and the maintenance of these structures;
- (c) maintenance and/or restoration of existing structures not requiring greater than 50 percent reconstruction which are located seaward of the DSSL, subsequent to obtaining all relevant permits and approvals; and
- (d) emergency vehicles and/or activities to protect life and/or loss of upland property.

- (2) Policy 4.5: Calls for adoption and implementation of a dune preservation ordinance, and lists minimum issues to be addressed:

- (a) requires all beach and dune restoration projects to use native and adaptive species;
- (b) prohibits disturbance or removal of dune vegetation, except when associated with permitted dune projects;

- (c) prohibits activities which would adversely impact the nearshore reef community;
    - (d) requires compliance with all federal, state, and local regulations concerning beach management.
  - (3) Policy 4.7: Calls for the continuance of fines or other penalties and/or mitigation or restoration for violation of beach and dune regulations.
- 4. Limiting Public Expenditure in the Coastal High Hazard Zone.
  - a. Objective 5: The County will eliminate public expenditure and subsidy in the Coastal High-Hazard Zone, with the exception of natural resource management.
    - (1) Policy 5.1: Defines the "Coastal High-Hazard Zone" (CHHZ), as that area located east of the DEP CCCL, or designated FEMA V-Zones, whichever is further west.
    - (2) Policy 5.2: Prohibits subsidizing of public facilities which are not directly related to public access or resource management.
    - (3) Policy 5.4: County shall pursue actions and policies necessary to ensure its continued participation in the National Flood Insurance Program.
    - (4) Policy 5.5: County will continue to review and adopt revisions of the Standard Building Code concerning the construction of buildings in the coastal zone.
- 5. Post-Disaster Redevelopment.
  - a. Objective 7: The County will have a post-disaster recovery and redevelopment plan which minimizes or eliminates the future risk to human life and public and private property from natural disasters.
    - (1) Policy 7.2: Calls for establishment of a Recovery Task Force to develop a recovery and redevelopment outline and identify the data and personnel needed to reduce post-disaster recovery time and future risk. Sets forth the criteria the Task Force should address.

- (2) Policy 7.4: Requires the relocation upland, and when possible westward of the DSSL for structures and uses eastward of the DSSL which sustain greater than 50% assessed current market value damage.
- (3) Policy 7.6: Sets forth exemplary provisions for local ordinances to reduce the exposure of human life and property to natural hazards:
  - (a) Regulation of coastal development in accordance with the coastal building code;
  - (b) Preservation of flood storage capacity in the 100-year flood plain;
  - (c) Protection of beaches and dunes from disturbance;
  - (d) Management of stormwater runoff and the regulation of sewerage systems and septic tanks;
  - (e) The provision of the Future Land Use Element and the Coastal Management Element pertaining to coastal land use designations.

6. Infrastructure in the Coastal Zone.

- a. Objective 10: Infrastructure in the coastal zone shall be adequate to provide the designated levels of service indicated in the respective comprehensive plan elements.
  - (1) Policy 10.2: Infrastructure located in the CHHZ and exhibiting severe or repeated storm damage, is required to undergo evaluation for abandonment or relocation upland.

7. Limit Densities in the CHHZ.

- a. Objective 11: The County shall limit residential densities in the CHHZ of the unincorporated barrier island to less than 3 units per acre, and direct development and population concentrations away from known or predicted coastal high-hazard areas.
  - (1) Policy 11.2: Calls for support of a land acquisition program in the Hurricane Vulnerability Zone. The land may be used for either natural resource preservation, recreation, or both.

- (2) Policy 11.3: Calls for continued support of programs such as TDRs to reduce densities in coastal high-hazard areas.
- (3) Policy 11.4: Densities in the CHHZ shall not exceed RS-3 (Single-Family Residential District, up to 3 units/acre).

#### **IV. LEE COUNTY, FLORIDA**

##### **A. Introduction**

The Lee County comprehensive plan elements and ordinances presented here closely parallel the TBRPC Model. The overall approach taken by the County is a balance of appropriate mitigation and preservation policies, with recognition of the economic need for development. This sustainable development approach results in a slightly weaker stance on certain issues, in the face of development concerns.

The County has very detailed objectives and policies addressing natural resource protection and enforcement of setback lines, as well as extensive treatment of building moratoria in the post-disaster redevelopment ordinance. However, improving its ability to withstand the effects of future major or catastrophic disasters is placed last on the County's list of priorities to govern rebuilding and redevelopment efforts (See SECTION FIVE, below, of the Post-Disaster Redevelopment Ordinance). This apparent inconsistency reflects the tension between development and resource protection that runs throughout the County's coastal management efforts.

##### **B. Lee County Comprehensive Plan: Coastal Management and Conservation Elements**

###### **1. Natural Resource Protection.**

###### **a. Goal 74: Estuarine Resource Protection.**

To protect the natural resources of the coastal area from damage caused by inappropriate development.

- (1) Objective 74.1: ENVIRONMENTALLY CRITICAL AREAS. By 1999, land within coastal area environmentally critical areas, including present Resource Protection Areas and Transition Zones and Rare and Unique upland habitats, shall be regulated and managed so as to conserve and enhance the natural functions of these critical areas.

- (a) Policy 74.1.1: Maintain undeveloped barrier islands in their natural state, and limit public expenditures for infrastructure to parks and recreation in such areas.
- (b) Policy 74.1.2: Expand critical environmental areas on developed coastal barriers, coastal sound islands, and mainland shoreline areas to include natural resource systems necessary to the healthy functioning of estuarine areas.
- (c) Policy 74.1.3: Develop a proposal for a county-run land acquisition program, to be presented for public discussion and official action.

2. Beaches and Dunes.

a. Goal 83: Coastal Areas.

To conserve, maintain, and enhance the natural balance of ecological functions in the coastal area, with particular emphasis on the protection of beach and dune systems so as to retain their contribution to storm protection, natural resources, and economic development.

(1) Objective 83.1: COASTAL AREA IN GENERAL. Lee County shall manage the coastal area to provide a balance among conservation of resources, public safety capabilities, and development.

- (a) Policy 83.1.1: Protect coastal areas with significant public value for water retention and purification, wildlife habitat, and primary productivity, through the development permitting process and enforcement of appropriate codes/regulations.
- (b) Policy 83.1.2: All development within the coastal area shall be compatible with protecting natural systems.
- (c) Policy 83.1.4: Protect and conserve the following environmentally sensitive coastal areas: wetlands, estuaries, mangrove stands, undeveloped barrier islands, beach and dune systems, aquatic preserves and wildlife refuges, undeveloped tidal creeks and inlets, critical wildlife habitats, benthic communities, and marine grass beds.
- (d) Policy 83.1.5: Gather and utilize available technical

criteria and supporting information necessary to guide the formulation of plans, ordinances, and regulations to insure Policy 83.1.2.

(2) Objective 83.2: SHORELINE STABILIZING SYSTEMS. Lee County shall continue to encourage the construction of environmentally compatible shoreline stabilizing systems where stabilizing systems are needed.

(a) Policy 83.2.5: Build-back of vertical seawalls will not be permitted along natural waterbodies if one or more of the following conditions exist:

- i. Would cause excessive shoreline erosion or endanger shorelines of surrounding properties.
- ii. Would threaten wetland resources.
- iii. Would be a threat to public safety or block access to state owned submerged lands.
- iv. Would be waterward of the existing seawall alignment on adjacent shorelines.

(3) Objective 83.3: BEACH AND DUNE SYSTEMS. By 1991, Lee County shall establish a beach and dune management program which may include beach renourishment, sand budget analysis, storm surge modeling, tide and wave measurement, and appropriate development regulations.

(a) Policy 83.3.1: Responsibilities of the beach and dune Conservation Agency:

- i. Recommend regulations and policies to restrict hardened coastal engineering structures such as groin fields and seawalls, protect eroding coastal areas and sand dunes, and discourage development of undeveloped coastal barriers.
- ii. Maintain a central clearinghouse for information on beach and dune studies and recommendations by both public and private organizations.

iii. Educate citizens and developers about the cost and benefits of alternative beach and dune conservation approaches.

iv. Prepare a sand preservation plan that emphasizes the importance of maintaining beach quality sand within the littoral system and discourages ocean dumping of usable sand from channel dredging.

(b) Policy 83.3.2: Except where beach renourishment provides a significant benefit to the general public, renourishment costs shall be borne by the primary beneficiaries.

3. Coastal High Hazard.

a. Goal 75: Protection of Life and Property.

To protect human life and developed property from natural disasters.

(1) Objective 75.1: DEVELOPMENT IN HAZARD AREAS. Development seaward of the 1991 CCCL shall require applicable State of Florida approval; new development on barrier islands shall be limited to densities that meet required evacuation standards; new development requiring seawalls for protection from coastal erosion shall not be permitted; and allowable densities for undeveloped areas within FEMA A-Zone areas will be considered for reduction.

(a) Policy 75.1.2: No rezonings to allow higher densities on barrier and coastal islands if the capacity of critical evacuation routes would be exceeded.

(b) Policy 75.1.3: Protect shoreline development in FEMA V-Zones from coastal erosion, wave action, and storms by vegetation, setbacks, and/or beach renourishment, rather than by seawalls or other hardened structures which tend to hasten beach erosion. Repairs of lawfully constructed, functional, hardened structures as defined in Chapter 161, F.S. may be allowed subject to applicable state and local

review and approval.

- (c) Policy 75.1.4: Consider land use designations of undeveloped areas within the FEMA A-Zone for reduced density categories (or assignment of minimum allowable densities where density ranges are permitted) to limit the future population exposed to coastal flooding and hurricane damage.

4. Post-Disaster Redevelopment.

a. Goal 80: Hazard Mitigation.

To provide through county plans, programs, and regulations means to minimize future property losses from tropical storms and hurricanes.

- (1) Objective 80.1: DEVELOPMENT REGULATIONS. By 1990, all development regulations shall be reviewed and revised to require that the vulnerability of future development in the A-Zone (as defined by the Federal Emergency Management Agency) be reduced.

- (a) Policy 80.1.1: Regulations and incentives will be examined for additional setbacks in critical erosion areas, conservation and enhancement of dunes and vegetation, floodproofing of utilities, and appropriate requirements for structural wind resistance and floodplain management.

- (b) Policy 80.1.2: No new or expanded mobile home or recreational vehicle development on barrier islands or in CHHA (which include V-Zones as defined by the Federal Emergency Management Agency).

- (c) Policy 80.1.6: Any building that is improved, modified, added on to, or reconstructed by more than 20% of its replacement value and which has recorded one or more NFIP flood losses of \$1000 or more since 1978 must be brought into compliance with current regulatory standards for new construction.

b. Goal 81: Post-Disaster Redevelopment.

To provide for planning and decision-making to guide redevelopment

during the response and recovery period following major emergencies, such as tropical storms and hurricanes.

- (1) Objective 81.1: POST-DISASTER STRATEGIC PLAN. By 1990, the county shall formally establish post-disaster institutions and procedures to guide county actions following a natural or technological disaster.
  - (a) Policy 81.1.1: Recovery Task Force, to work with state and federal emergency officials, to assess damage, review emergency actions, prepare a redevelopment plan, and recommend needed changes to the Strategic Plan and to this comprehensive plan.
  - (b) Policy 81.1.2: Establish guidelines for determining priorities for the acquisition of storm-damaged property in hazard-prone areas.
  - (c) Policy 81.1.3: Establish principles for repairing, replacing, modifying, or relocating public facilities in hazard-prone areas.
  
- (2) Objective 81.2: POST-DISASTER ORDINANCE. By 1990, the county shall adopt an ordinance to implement (where necessary) the Post-Disaster Strategic Plan, and to provide regulations that may be needed following a natural or technological disaster.
  - (a) Policy 81.2.1: Enactment of a temporary moratorium on rebuilding not immediately needed for the public health safety, and welfare (e.g., to allow repairs to water, power, fire, police, and medical facilities; debris removal; stabilization or removal of structures in danger of collapsing; and minimal repairs to make dwellings habitable).
  - (b) Policy 81.2.2: Incorporate a redevelopment plan for hazard-prone areas where such a plan would minimize repeated exposures to life threatening situations.
  - (c) Policy 81.2.3: Implement the county buildback policy:

Structures which have been damaged by fire or other natural forces to the extent that the cost of their reconstruction or repair exceeds 50% of the

replacement cost of the structure may be reconstructed at (but not to exceed) the legally documented actual use, density, and intensity existing at the time of destruction, thereby allowing such structures to be rebuilt or replaced to the size, style, and type of their original construction, including their original square footage; provided, however, that the affected structure, as rebuilt or replaced, complies with all applicable federal and state regulations, local building and life safety regulations, and other local regulations which do not preclude reconstruction otherwise intended by this policy.

In accordance with this policy, the ordinance shall provide that:

- i. Structures damaged less than 50% of their replacement cost at the time of damage can be rebuilt to their original condition, subject only to current building and life safety codes.
- ii. Structures damaged more than 50% of their replacement cost at the time of damage can be rebuilt to their original square footage and density, provided that they comply with:
  - (i) federal requirements for elevation above the 100-year flood level;
  - (ii) building code requirements for floodproofing;
  - (iii) current building and life
  - (iv) state CCCL; and
  - (v) any required zoning or other development regulations (other than density or intensity), unless compliance with such regulations would preclude reconstruction otherwise intended by the buildback policy.
- iii. The ordinance may establish blanket reductions in non-vital development regulations (e.g.

buffering, open space, side setbacks, etc.) to minimize the need for individual variances or compliance determinations prior to reconstruction.

- iv. The ordinance may establish procedures to document actual uses, densities, and intensities, and compliance with regulations in effect at the time of construction, through such means as photographs, diagrams, plans, affidavits, permits, appraisals, tax records, etc.
- v. No provision is made to redevelop property containing damaged structures for a more intense use or at a density higher than the original lawful density except where such higher density is permitted under current regulations.

## **C. Lee County Post-Disaster Redevelopment Ordinance**

- 1. General Considerations
  - a. Southwest Florida and the Lee County area are vulnerable to a variety of hazards which may result in major or catastrophic disasters causing substantial injury or harm to the population and substantial damage to or loss of property.
  - b. Source of Authority: Section 163.3178(2)(h), Florida Statutes, affords discretion to the Board to apply mitigation and redevelopment policies to designated high-hazard coastal areas.
  - c. Refers specifically to Plan Goal 81; Objective 81.1; Policy 81.1.1; Objective 81.2; Policy 81.2.1; and Policy 81.2.3.
  - d. Reflects changes proposed to Ordinance 90-61, as per Chapter 3 of the Post-Disaster Redevelopment Plan.
  - e. Source of Authority: Section 125.01(1), Florida Statutes, provides the authority for the Board to adopt ordinances necessary for the exercise of its powers and prescribe fines and penalties.
- 2. Section Four. Disaster Advisory Council, Recovery Task Force, and

Emergency Review Board.

a. Disaster Advisory Council

Responsibilities include establishing policies, procedures, and criteria; and evaluating current redevelopment plans and ordinances necessary or advisable to prevent a recurrence of damage in all areas relating to the recovery and reconstruction process.

b. Recovery Task Force

Responsibilities include:

- (1) Receive and review damage reports for comparison with mitigation opportunities identified prior to the disaster to identify areas for change.
- (2) Identify and evaluate alternate program objectives for repairs and reconstruction, and formulate recommendations to guide community recovery, and assist local municipalities with their programs.
- (3) Recommend zoning changes, when deemed appropriate.
- (4) Evaluate hazards and the effectiveness of mitigation policies, and recommend appropriate amendments, if considered advisable.
- (5) If necessary, recommend changes in approved land uses for areas of repeated damage.
- (6) Recommend areas for acquisition.
- (7) May recommend consideration of enhancing local recreational and open space opportunity.
- (8) May recommend consideration of enhancing and restoring local natural ecosystems.

3. Section Five. Post-Disaster Redevelopment Priorities.

The following priority sequence will govern rebuilding and redevelopment efforts:

a. Reestablishing services that meet the physical and safety needs of the

community.

- b. Reestablishing infrastructure necessary for community reconstruction.
  - c. Restoring the community's economic base, as defined by the Lee Plan, or accepted econometric principles and practices.
  - d. Improving the community's ability to withstand the effects of future major or catastrophic disasters.
4. Section Eight. Determination of Damage, Build-Back Policy, Moratoria, Emergency Repairs, and Emergency Permitting System.
- a. Implements Buildback Policy, as set forth in the comprehensive plan.
  - b. Sets forth moratoria-prioritization scheme:
    - (1) Initial building moratorium.
    - (2) Destroyed structure moratorium.
    - (3) Major damaged structure moratorium.
    - (4) Minor damaged structure moratorium.
    - (5) New development moratorium.
    - (6) Outstanding building permit inspection moratorium.
    - (7) Outstanding development order moratorium.
    - (8) Moratorium on review of site plans, zoning requests, and subdivision plats.
    - (9) Duration of moratoria.

**D. Lee County Nonconforming Use Ordinance**

1. 600: Purpose

These regulations have caused or will cause some lots, structures, buildings, or uses of lots, structures, or buildings to be nonconforming. It is the purpose of this section to set forth the rules and regulations regarding those nonconforming lots, structures, or buildings, and uses which were created by

the adoption of this Ordinance. Nothing contained herein is intended to preclude the enforcement of federal, state and other local regulations that may be applicable.

2. 601: Nonconforming Uses

"Nonconforming Use" means a use or activity which was lawful prior to the adoption, revision, or amendment of this ordinance but which fails, by reason of such adoption, revision, or amendment to conform to the use requirements of the zoning district in which located.

3. 601.01: Nonconforming Use of Land

A Nonconforming Use of land may be continued subject to the following provisions.

a. No such Nonconforming Use shall be extended, or enlarged, or replaced by another use not specifically permitted in the zoning district concerned.

b. Discontinuance of Nonconforming uses

(1) No land used in whole or in part for such Nonconforming Use, which hereafter becomes and remains vacant or unoccupied for a continuous period of six (6) calendar months shall again be used except in conformity with the regulations then in effect.

(2) Neither the intention of the owner nor that of anyone else to use a lot for any Nonconforming Use, nor the fact that a makeshift or non bona fide Nonconforming Use has been made of said lot shall be taken into consideration in interpreting the word "vacant" as used in this Section.

c. No additional structure which does not conform to the requirements of this ordinance shall be erected in connection with such Nonconforming Use of land.

4. 601.02: Nonconforming Uses of Buildings

A Nonconforming Use of a building or building and land in combination, may be continued subject to the following provisions:

a. No such Nonconforming Use of a building or building and land in

combination shall be extended or enlarged, or replaced by another building or use not specifically permitted in the use regulations for the zoning district in which the building is located.

b. Discontinuance

When a Nonconforming Use of a building, land, or building and land in combination, is discontinued or abandoned for six (6) consecutive months or for any eighteen (18) months during any three year period (except when government action impedes access to the land), the building or building and land in combination, shall not thereafter be used except in conformance with the regulations of the district in which it is located.

c. Repair and Maintenance

(1) Only ordinary repairs and maintenance, including repair or replacement of roof covering, walls, fixtures, wiring, or plumbing shall be permitted on any building or structure devoted to a Nonconforming Use. In no case shall such repairs include structural alterations.

(2) If a nonconforming structure or portion of a structure containing a Nonconforming Use becomes physically unsafe or unlawful due to lack of repairs and maintenance, and is declared by any duly authorized official to be unsafe or unlawful by reason of physical condition, it shall not thereafter be restored, repaired, or rebuilt except in conformity with the regulations for the district in which located.

5. 602: Nonconforming (Substandard) Lots

Nonconforming or substandard lot means a lot of which the area, dimension or location was lawful prior to the adoption, revision or amendment of this Ordinance and which fails by reason of such adoption, revision, or amendment to conform to the requirements for the zoning district in which the lot is located.

6. 602.01: Lot of Record

a. For the purposes of this section only, a lot of record is a lot which conformed to the minimum lot size for the use permitted for that lot in its zoning district at such time that the lot was created, but which lot fails to conform to the minimum lot size requirements which are

established by this Zoning Ordinance.

- b. For the purpose of this section a lot is created on such date that one of the following conditions occur (lists dates for various situations).
- c. Lots of record may be developed subject to all of the following provisions:
  - (1) All other regulations of this Ordinance are met;
  - (2) No division of any parcel may be permitted which creates a lot with width, depth, or area below the minimum requirements in this Ordinance.
  - (3) Contiguous lots of records may be combined and redivided to create larger dimension lots of record as long as such recombination includes all parts of all lots and existing allowable density is not increased.
  - (4) For mobile home or recreational vehicle lots of record, the following shall also apply:
    - (a) Shall be placed at least 5 feet from any body of water or waterway.
    - (b) Shall have minimum separation of 10 feet between units and appurtenances thereto. Each unit shall be permitted to have eaves which encroach not more than one foot into the 10 foot separation.
    - (c) Sites or lots within a park shall not be reconfigured or reduced in dimension so as to increase the density for which the park was originally created.
- d. The burden of proof that the lot is legally nonconforming and lawfully existed at the specified date, shall be with the owner.

7. 602.02: Single Family Residence Zoned Lot

May be constructed on a lot of record as long as the lot was lawfully created prior to June, 1962, and the following conditions are met:

- a. Lots in the AG-2 or AG-3 Zoning District require a minimum width of 75 feet, a minimum depth of 100 feet and a lot area not less than 7,500 square feet.

- b. Lots in any other zoning district which permits the construction of a single family residence require a minimum of 40 feet in width, 75 feet in depth, and a lot area not less than 4,000 square feet.
- c. Prohibited Uses - The use of any single lot of record for any residential use other than a single family residential use is prohibited where the area of the lot is less than 6,000 square feet. Neither a guest house nor servants quarters shall be permitted on a single lot of record having less than 7,500 square feet, or which is occupied by any dwelling unit or units other than one single family residence.

8. 602.04: Commercial or Industrially Zoned Lots

Such use of land may be commenced on a single nonconforming lot of record lawfully existing on the effective date of this Ordinance, subject to the specific limitations and regulations set forth below; provided, however, that said lot is zoned for such use. However, the lot must be appropriately located and adequate in size and dimension to accommodate the use contemplated and all spatial requirements.

- a. Lots lawfully created prior to June 1962 must be at least 4,000 square feet in area and have a minimum width of 40 feet and a minimum depth of 75 feet. Minimum setbacks for structures are:
  - (1) Street - as set forth in the regulations for the applicable zoning district;
  - (2) Side - 20% of lot width or 15 feet, whichever is less; and
  - (3) Rear - 50% of the lot depth less the street setback or 5 feet, whichever is greater, but not more than 25 feet.
- b. Lots created between June 1962 and January 5, 1978 and lawfully existing on February 4, 1978 must be at least 7,500 square feet in area and have a minimum width of 75 feet and a minimum depth of 100 feet. Minimum setbacks for structures are:
  - (1) Street - as set forth in the regulations for the applicable zoning district;
  - (2) Side - 15 feet; and
  - (3) Rear - 50% of lot depth less the street setback or 5 feet,

whichever is greater, but not more than 25 feet.

- c. Nothing herein shall be construed to prohibit the rezoning of nonconforming lots of record into commercial or industrial districts where the public interest is served by such rezoning.

9. 603: Nonconforming Buildings and Structures

- a. "Nonconforming building or structure" means a building or structure the size, dimension, or location of which was lawful prior to the adoption, revision or amendment of this Ordinance, but which fails by reason of such adoption, revision, or amendment, to conform to the property development requirements of the zoning district in which the building or structure is located.

- b. A nonconforming building or structure may be continued so long as it remains otherwise lawful, subject to the following provisions:

- (1) Except as provided in Subsection 604, no such structure may be enlarged or altered in a way which, in the opinion of the Department Director, increases its nonconformity, but and structure or portion thereof may be altered to decrease its nonconformity;

- (2) Except as provided herein, any nonconforming structure damaged by fire or other natural forces, may be reconstructed at, but not to exceed, the lawful density and/or intensity existing at the time of destruction; provided, however, that the reconstruction of said structure is consistent with federal, state and local regulations and all other provisions of this ordinance; and

- (3) Except further that a lawfully existing single family residence or mobile home may be repaired or replaced provided the new unit is no larger in area, width, and depth, than the size unit being replaced.

10. 604: Regulations Pertaining to Enlargement or Expansion of a Nonconforming Structure

- a. Nonconforming Due to Setbacks

A structure which is lawful in all respects with the exception of a setback requirement(s) may be enlarged provided that:

- (1) The addition is otherwise permitted; and
- (2) The addition itself, including any addition which increases the height of the structure, complies with all the setback requirements.

b. Nonconforming Due to Area

A structure which is lawful in all respects with the exception of lot area requirements may be enlarged provided that:

- (1) Said enlargement is otherwise permitted; and
- (2) All other property development requirements such as setbacks, height, bulk, lot coverage, parking, and open space are met; and
- (3) The enlargement does not increase the density or intensity of use.

c. Nonconforming Due to Height

A structure which is lawful in all respects with the exception of lot area requirements may be enlarged provided that:

- (1) Said addition or enlargement is otherwise permitted; and
- (2) Said addition or enlargement complies with height and setback requirements.

d. Nonconforming Due to Bulk or Lot Coverage

A structure which is lawful in all respects with the exception of bulk or lot coverage shall not be enlarged.

11. 606: Special Exceptions and Permits

Uses approved by Special Exception, or other permits which were issued or granted by the Board of County Commissioners before the effective date of this Ordinance, and which are no longer permitted in the zoning district where located, shall be considered to be nonconforming uses and subject to the provision of Section 600.

## **V. TOWN OF NAGS HEAD, NORTH CAROLINA: HURRICANE AND STORM MITIGATION AND RECONSTRUCTION PLAN**

### **A. Introduction**

This plan represents a summary of numerous ordinances, codes, and policies enacted by the Town of Nags Head, North Carolina. Section numbers below do not refer to specific section numbers.

The priorities for the Town are to mitigate the potential loss of life and property, as well as to rebuild in a safe manner. The Town received the 1989 North Carolina American Planning Association Small Community Outstanding Planning Award and the 1990 Legislative Award from the National Hurricane Conference for this plan.

The plan confronts coastal management issues on a neutral ground, simply requiring compliance with the overall priorities and goals. However, because of the clarity and strength of the plan, this approach results in good development management. For example, the plan requires exploration and investigation of alternatives for potentially harmful redevelopment efforts, such as the expenditure of public funds on the repair of damaged Town streets. Rather than prohibit or condition the efforts, the plan provides guidelines to ensure they are carried out in a manner consistent with the desired goals.

### **B. Section Two. Storm Reconstruction.**

1. Sec. 2-1. Intent.
  - a. To assign responsibility to a pre-established reconstruction task force to oversee the issuance of building permits to manage the location, timing, and sequence of reconstruction and repair.
  - b. To require the task force to seek opportunities to mitigate future storm damages through effective management of reconstruction.
2. Sec. 2-3. Hurricane and Storm Reconstruction.
  - a. The local damage assessment team will recommend to the building inspector those structures which have:
    - (1) Been destroyed;
    - (2) Received major damage (cost of repair is between 10% and 50% of the replacement cost at the time of damage); or

- (3) Received minor damage (cost of repair is 10% or less of the replacement cost at the time of damage).
- b. Sets forth findings necessary to declare an initial post-storm reconstruction moratorium. One or more of the following must occur:
  - (1) Town is struck by a hurricane of force equal to or greater than four on the Saffir-Simpson scale, as determined by the National Weather Service;
  - (2) Town is declared a disaster area by either the governor of the state or the President of the United States;
  - (3) One hundred or more structures have received major damage or have been destroyed, as determined by the building inspector;
  - (4) The mayor may declare the moratorium where the mayor finds it is necessary for the protection of lives, safety and property, or due to the inability of the town to maintain acceptable levels of public order and services.
- c. Lists the types of moratoria and sets forth the permit issuance criteria for each. The list is comprised of:
  - (1) Initial building moratorium
  - (2) Destroyed structure moratorium
  - (3) Major damaged structure moratorium
  - (4) Minor damaged structure moratorium
  - (5) Incipient moratorium
  - (6) Outstanding building permits moratorium
  - (7) Site plan review
  - (8) Time limit of acceptance of plans
- d. Allows emergency repairs necessary:
  - (1) to prevent injury or loss of life;

- (2) to prevent imminent collapse; or
- (3) to prevent other substantial additional damage to the structure.

3. Sec. 2.4. Reconstruction Task Force.

- a. Explains conditions for activating and mobilizing the task force.
- b. Primary function is to receive and review damage reports, and to compare other post-disaster circumstances with opportunities for change and innovation.
- c. Lists the responsibilities of the task force, which include recommendations for nonmitigative objectives and opportunities.

**C. Section Three. General Use Standards for Ocean Hazard Areas.**

1. Sec. 3-2. Hurricane and Storm Reconstruction and Redevelopment

a. Intent

Reaffirms the Town's authority to control the issuance of building permits, and assigns primary consideration to those structures which have received minor and major damage.

b. Conditions for Issuance of Building Permit

Imposes additional restrictions on the issuance of a building permit, once any moratoria have been lifted, based on the type of damage to the structure at issue (destroyed, major, or minor).

2. Sec. 3-3. General Use Standards for Ocean Hazard Areas

- a. If strict application of this plan would preclude placement of permanent substantial structures on lots existing as of June 1, 1979, permitting of single family residential structures seaward of the applicable setback line may be permitted, provided each of several listed conditions are met.

- (1) The listed conditions include addressing such factors as the existence of a primary dune, the size of the structure, and the treatment of common-law and statutory public rights of access to public trust lands.

- b. No development is allowed that involves the removal or relocation of primary or frontal dune sand or vegetation thereon.
- 3. Sec. 3-4. Exceptions to General Use Standards for Ocean Hazard Areas
  - a. If strict application of this section would preclude placement of permanent substantial structures on lots existing as of June 1, 1979, permitting of single family residential structures seaward of the applicable setback line may be permitted, provided each of several listed conditions are met.
    - (1) The listed conditions include such factors as the location of the development, the size of the lot, and the design standards incorporated in the development.
  - b. Imposes minimum oceanfront setback of 150 feet within which no structure can exceed 25 feet in width.

**D. Section Six. Hurricane and Storm Reconstruction Policies.**

- 1. Policy 1: Imposes a requirement on the Town to conduct adequate studies and to explore alternative solutions before considering expenditure of public funds for the repair of damaged Town streets.
- 2. Policy 2: Requires the Town to establish, prepare, and identify in advance of a storm event where priority areas are located, and develop in advance decision making and funding mechanisms to ensure rapid acquisition of lands following a storm event.
- 3. Policy 3: Requires the Town to retain an Assistance Facilitator-Consultant, responsible for:
  - a. Determining types of assistance (federal and state) available to the Town, and the type most needed.
  - b. Assisting in the coordination of federal disaster recovery effort.
  - c. Coordinating federal and state programs of assistance.
  - d. Informing the community of types of programs available.
  - e. Recommending to the Recovery Task Force and Board of

Commissioners programs available, and to act as facilitator in securing them.

4. Policy 4: The Town may not expend public funds for the repair or reconstruction of any private road damaged due to a storm event, except in conjunction with the repair and maintenance of the Town's water system.

## **VI. SARASOTA COUNTY, FLORIDA: SETBACK ORDINANCE**

### **A. Introduction**

This ordinance imposes a line of prohibition for construction or excavation seaward of the Gulf Beach Setback Line (congruent with the CCCL). The process for obtaining a variance to this prohibition is described as being more restrictive for development in this coastal zone. The burden falls on the owner to show that a variance is warranted, and that conditions stipulated in the variance provision are met.

### **B. Section One. Findings of Fact and Purpose of Ordinance.**

1. Sec. 1.1 Findings of Fact
  - a. Coastal areas directly exposed to the Gulf of Mexico and those along the barrier island passes are subject to shoreline instability and flooding, resulting in loss to coastal property and producing hazards which adversely affect the public health, safety and welfare.
  - b. Natural features (beaches, dunes, bluffs and vegetation) are essential to promote shoreline stability and protect upland properties from erosion and flooding.
  - c. Construction and excavation on coastal property partly cause losses associated with shoreline instability.
  - d. Development on unstable shorelines may necessitate erosion control devices which, in turn, may impede and impair public access and use of public beaches.
  - e. Notes authority vested in the Board by the Florida Constitution and the Legislature of the State of Florida to adopt and enforce regulations to prevent and control beach erosion and flooding of coastal property.
  - f. Stresses the protection and promotion of the public health, safety, and welfare afforded by this Ordinance.

2. Sec. 1.2 Objectives of the Ordinance
  - a. Protect public health, safety, and welfare;
  - b. Minimize future public expenditure for flood and erosion control measures;
  - c. Minimize future public expenditure for projects following natural disasters or gradual erosion;
  - d. Insure public access;
  - e. Minimize erosion damage to adjacent property from man-made structures;
  - f. Protect beaches, dunes, bluffs, and vegetation necessary for maintaining shoreline stability;
  - g. Insure that coastal property and coastal waters retain their economic, recreational, and aesthetic value.

**C. Section Three. Gulf Beach Setback and Barrier Island Pass 20-Year Hazard Requirements.**

1. Sec. 3.1 Prohibition

No construction or excavation is allowed seaward of the Gulf Beach Setback Line (a line congruent with the CCCL) or waterward of the Barrier Island Pass 20-Year Hazard Line.
2. Sec. 3.4 Exceptions
  - a. Does not apply to those efforts undertaken within the limits of the existing foundation.
  - b. Allows catwalks, stairs, footbridges, decks and other similar structures seaward of the lines.
  - c. Does not apply to footpaths (provided they are of minimal size necessary for access to the beach).

**D. Section Four. Variances.**

1. Sec. 4.1 The Board may grant a variance if it determines that the strict enforcement would impose an unreasonable hardship, and such variance will not adversely affect vegetation, sand dunes or other beach stabilizing features, nor be in substantial conflict with achieving the purpose of this Ordinance.
  - a. Only the minimum variance necessary to permit reasonable use of the property will be granted.
2. Sec. 4.2 The Board may impose reasonable conditions upon a variance and may require that development:
  - a. take place in accordance with a site plan;
  - b. be designed to minimize damage to beach stabilizing features and minimize the need for subsequent variances of the construction of seawalls or similar protective structures;
  - c. be reviewed by DEP and Division of Beaches and Shores; and
  - d. that construction requirements established by DEP be implemented.
3. Sec. 4.3 Requires notice of a public hearing on the proposed variance before the Board may consider it.
4. Sec. 4.4 The Board may grant emergency variances (conditions listed). Restrictions do apply, however, to the location of efforts taken pursuant to any emergency variance granted.

**VII. ST. JOHN'S COUNTY, FLORIDA: COMPREHENSIVE PLAN - COASTAL MANAGEMENT ELEMENT**

**A. Introduction**

The St. John's County comprehensive plan sets forth aggressive policies demonstrating a commitment to appropriately manage its coast. The plan sets forth clear guidelines, incorporating language throughout the coastal management element which emphasizes the goal of reducing risks to human life, and to public and private property. The guidelines in the plan establish minimum criteria to be followed in subsequent plans and regulations.

The element adopts several of the general principles discussed in Section One of this

report, including steering development away from the coastal area, preserving coastal resources, and controlling recovery efforts. In addition, consideration of TDRs and restricting infrastructure in the CHHA are also addressed.

**B. Goal**

The County shall manage, use, conserve, protect, and enhance coastal resources, along with protecting human life from natural disasters.

**C. Beaches and Dunes**

1. Objective G.1.2: Dune Preservation

a. The County shall assure the protection, conservation and enhancement of the County's coastal barrier areas, dunes, and beaches through:

- (1) coordination of County permitting activities with the activities of other regulating state and federal agencies;
- (2) establishment or continued enforcement of construction standards for the coastal building zones; and
- (3) the establishment of procedures and land development regulations to protect the County's dune systems.

b. Policy G.1.2.2: Calls for the adoption of procedures and standards (through adoption of land development regulations) to ensure the protection, enhancement or restoration of the County's dune systems. Minimum provisions shall be for:

- (1) Coordination with DEP for applications to develop seaward of the CCCL, to disfavor variances to County setback requirements and avoid or minimize development seaward of the CCCL;
- (2) Use of beach ramp fees/tolls for dune restoration and enhancement programs, and to control beach access to prevent dune damage;
- (3) Standards and enforcement mechanisms to prevent destruction of dune vegetation.

c. Policy G.1.2.3: Seawalls and other shoreline modifications shall be set

at, or landward of, the mean high water line.

- d. Policy G.1.2.4: Prohibits motorized vehicles (except emergency vehicles) on dune systems.

2. Objective G.1.3: Post Disaster Planning, Coastal Area Redevelopment, and Hurricane Preparedness

The County shall prepare post-disaster redevelopment plans which will reduce or eliminate the exposure of human life and public/private property to natural hazards.

- a. Policy G.1.3.7: Calls for adoption of the following hazard mitigation measures to reduce risks to human life, and to public and private property:

- (1) Prioritize immediate repair and cleanup actions and permitting activities.

- (a) Utilize county damage assessment team to collect initial data and present to the Board.

- (b) Lists priority activities.

- (c) Calls for postponement of long term repairs and redevelopment activities.

- (2) Adopt land development regulations to address, at a minimum, the following issues relating to long-term redevelopment activities:

- (a) Formal decision making process to evaluate damaged public facilities.

- (b) Consider the need to amend comprehensive plan.

- (c) Relocate habitable structures which have been damaged by greater than 75% of their assessed value to areas out of the CHHA, if sufficient land is available on the subject parcel.

- (d) Use improved construction practices during redevelopment to reduce the risk of recurrent damage.

- (e) Minimize disturbance to shoreline resources that: 1) provide shoreline stabilization; and 2) protect landward areas from the effects of storm events.
  - (f) Require that all project approvals within the CHHA meet criteria, performance standards, and procedures, as adopted in the land development regulations. List is given of the minimum acceptable criteria, standards, and procedures.
- b. Policy G.1.3.9: Calls for the investigation of transferable development rights (TDRs) as an incentive to reduce rebuilding damaged structure in the CHHA.
- c. Policy G.1.3.10: Population concentrations shall be directed away from the CHHA by limiting residential densities.

3. Objective G.1.5: Coastal Protection

The County shall cooperate with, and provide technical support and assistance to, the appropriate state and federal regulatory agencies, and shall implement the requirements of Policy of G.1.5.3 (and other applicable Policies in other Plan Elements), in order to protect, enhance, and restore the environmental quality of the County's Coastal Area and waterways.

- a. Policy G.1.5.3: Calls for the protection or enhancement of Coastal Area water quality, for wildlife propagation, fishing, shellfishing, recreation, navigation and other related activities by encouraging clustering of new development within Coastal Areas
- b. Policy G.1.5.5: Requires development orders to be designed to protect the type, nature, and function of floodplains, wetlands, waterways, inlets, estuaries and lakes by limiting encroachment, removal of native vegetation, pollution discharge, dredge and fill, drainage, or other impacts associated with development.

4. Objective G.1.7: Infrastructure

Routing of new infrastructure and public services within the Coastal Area shall be designed to direct growth away from environmentally sensitive areas and the CHHA, and to limit public expenditures within the CHHA.

- a. Policy G.1.7.1: Requires new public infrastructure to be planned and designed consistent with adjacent land uses, and to avoid promoting development in environmentally sensitive areas.

## **VIII. ST. LUCIE COUNTY, FLORIDA**

### **A. Introduction**

St. Lucie County's extensive treatment of coastal management issues is exemplified in the coastal management element and the ordinances analyzed below. Incorporating several of the general principles noted in Section One of this report, the County conditions all aspects of coastal development, in an effort to protect natural resources. Erosion control measures, sea turtle nesting, and general beach/dune system (BDS) issues are well covered. The element requires relocation and compliance with current construction standards in certain situations. It also demonstrates a strong interest in protecting the BDS, and responsibly managing infrastructure in the CHHA.

### **B. St. Lucie County Comprehensive Plan: Coastal Management Element**

- 1. General Considerations
  - a. Recognizes that the typical response of rebuilding to prestorm conditions may be inappropriate and result in repeated damage to the same structures.
  - b. Recognizes the potential of a damage threshold, above which reconstruction in the same location would not be permitted (such as the 50% standard in the NFIP).
- 2. Goal 7.1: Balancing Growth and Coastal Resources.

All development proposed in the Future Land use Element in the coastal area shall occur in a manner which protects, conserves, or enhances the natural resources of the coastal area and the environmental, social, and economic benefits attributed to them.

- a. Objective 7.1.1: Continue to protect the natural resources of the coastal area from adverse impacts caused by future development by strengthening and/or adopting environmentally related laws.
  - (1) Policy 7.1.1.1: Development is limited to land uses which are resource dependent or compatible with the physical and environmental characteristics of the coastal area, or to those

uses which can occur without degradation of important environmental values or interference with legally used public access to coastal area shorelines.

- (2) Policy 7.1.1.3: Limits erosion control measures to those that do not interfere with the natural resources and processes of the coastal area based on locally determined criteria that is consistent with federal and state regulations.

b. Objective 7.1.2: The County shall support the protection, conservation, or enhancement of coastal uplands and wetlands. There shall be no net loss of existing wetlands which are regulated by federal and state agencies for development proposals in wetland areas. Land development regulations shall include open space requirements and clustering of units as means to protect existing wetlands.

- (1) Policy 7.1.2.3: Calls for the adoption of land development regulations that require a minimum 50 foot buffer zone of native upland and transitional vegetation along rivers, creek, and estuaries.

- (2) Policy 7.1.2.4: Requires a buffer zone of native upland edge vegetation around isolated wetlands and deepwater habitats on new development sites. Sets forth further requirements for the type, location, and size of the buffer zone.

- (3) Policy 7.1.2.7: Calls for land development regulations with criteria for:

- (a) Evaluation of proposed wetland alteration for reasonable use of property; and

- (b) Mitigation of wetlands alteration.

- (4) Policy 7.1.3.2: Specific and cumulative impacts of development or redevelopment upon wetlands shall be limited by implementation of the policies under Objective 7.1.2.

c. Objective 7.1.5: The County shall provide for the protection and restoration of beaches and dunes.

- (1) Policy 7.1.5.1: Calls for land development regulations which prohibit construction seaward of the CCCL including

construction of coastal or shore protection structures, except where DEP has issued the applicable permit.

- (2) Policy 7.1.5.5: The County shall request that DEP re-establish the CCCL every five years.

3. Goal 7.2: Reducing Vulnerability to Hurricanes.

The County shall strive to protect the people and property from the effects of hurricane storm damage.

- a. Objective 7.2.1: Calls for the enactment of land development regulations which:

- (1) Minimize the danger to life and property from hurricanes and floods; and
- (2) Restrict building and population growth in CHHAs.
- (3) Policy 7.2.1.1: The CHHA is defined as all of those properties located within V zones as designated by FEMA and those properties lying seaward of DEP's CCCL.
- (4) Policy 7.2.1.3: Prohibits the construction of County-funded public facilities in the CHHA, unless necessary for public access, natural resource restoration or enhancement, or to provide recreational facilities and other appropriate water dependent facilities.
- (5) Policy 7.2.1.7: Calls for regulations that prohibit the use of public funds for infrastructure expansion or improvements in CHHA, unless the funds are necessary to:
  - (a) Provide services to existing development (structures approved for development prior to the adoption of this comprehensive plan);
  - (b) Provide adequate evacuation in the event of emergency;
  - (c) Provide for recreational needs and other appropriate water dependent uses (including the restoration or enhancement of natural resources within the coastal

area).

- b. Objective 7.2.4: The County shall provide immediate response to post-hurricane situations through the implementation of post-disaster response and redevelopment plans.
- (1) Policy 7.2.4.2: Calls for appointment of a Recovery Task Force and consideration of a temporary moratorium on building activities not necessary for the public health, safety, and general welfare, after a hurricane but prior to the re-entry of the population into evacuated areas.
  - (2) Policy 7.2.4.4: Sets forth the responsibilities of the Recovery Task Force: review and issuance of emergency building permits; coordination with state and federal officials to prepare disaster assistance applications; analysis and recommendation of hazard mitigation options to the County Commission, including reconstruction or relocation of damaged public facilities; development of a redevelopment plan; and recommendation of amendments to the Comprehensive Plan, Local Peacetime Emergency Plan, and other appropriate policies and procedures.
  - (3) Policy 7.2.4.5: Sets forth post-emergency activities to be pursued: immediate repairs to potable water, wastewater, and power facilities; removal of debris; stabilization or removal of structures about to collapse; and minimal repairs to make dwellings habitable. These activities shall receive first priority in the permitting decisions. Long-term redevelopment activities shall be postponed until the Recovery Task Force has completed its tasks.
  - (4) Policy 7.2.4.6: Structures damaged greater than 50% of their appraised value, and deemed appropriate for rebuilding, must comply with current requirements.
  - (5) Policy 7.2.4.7: Structures suffering repeated damage to pilings, foundations, or loadbearing walls, if proposed for rebuilding, must rebuild landward of their current location or alter the structure to delete the areas most prone to damage.
  - (6) Policy 7.2.4.9: Calls for assessment of the value of all structures in the CHHA, and evaluation for potential acquisition, relocation, or other appropriate measures in line

with fiscal constraints when post-disaster opportunities arise.

### **C. Hutchinson Island Residential District**

1. Purpose.
  - a. To provide a residential environment that is respectful of the natural resources and value of the barrier islands and can be supported by available public and private services.
  - b. To ensure the intensity, location, and timing of new residential growth and development is of a character that can be served by adequate public and private facilities, and that protects, preserves and enhances the public health, safety, and welfare.
  - c. To facilitate growth and development of the barrier islands while conserving the natural and human values the island represents.
2. Intent of Application.
  - a. Applies to all multi-family residential property.
3. Environmental Zones.
  - a. Classifies all land into one of the following environmental zones based on geologic, hydrologic, topographic, and biologic characteristics: (descriptions given)
    - (1) Dune Preservation Zone: includes those lands lying between the mean high water line to the east and the western edge of the primary dune system, as defined by vegetation, and elevation.
    - (2) Uplands: includes those lands lying west of the western edge of the primary dune system and which are not classified as wetlands, as defined below.
    - (3) Wetlands: includes those lands lying west of the western edge of the primary dune system that are above the elevation of mean high water and are included in the landward extent of waters of the state as defined in Rule 17-4.02(17), FAC, on the date of adoption of this Code.
4. Permitted Uses.

Sets forth the permissible uses, based on the three environmental zone classifications.

a. Dune Preservation Zone:

- (1) Residential densities that can be clustered to Uplands located on the parcel proposed for development.
- (2) Elevated walkways.
- (3) Recreational uses not involving structures other than elevated walkways.

b. Uplands:

- (1) Detached single family dwelling units.
- (2) Two and three family dwelling units.
- (3) Multiple family dwelling units.
- (4) Parks.
- (5) Accessory uses.

c. Wetlands:

- (1) Residential densities that can be clustered to Uplands located on the parcel proposed for development.
- (2) Elevated walkways.
- (3) Bridges and bridge approaches.
- (4) For that portion filled in accord with permits received from federal and state agencies exercising jurisdiction over such are, any permitted Uplands use.

5. Conditional Uses.

Sets forth the conditional uses, based on the three environmental zone classifications.

a. Dune Preservation Zone:

- (1) None.
  - b. Uplands:
    - (1) Hotel, motel, resort, rooming and boarding houses, tourist court, and time-share or transient lodging facilities with rooms or dwelling units used for occupancies of less than four weeks, provided that the number of rooms does not exceed the applicable residential densities.
    - (2) Athletic and entertainment clubs or facilities, provided that the proposed use will not general traffic in excess of that projected for the parcel if developed at the maximum permitted residential density.
    - (3) "Bed and breakfast" residences.
    - (4) Structures with building heights between 35 and 125 feet.
  - c. Wetlands:
    - (1) Marinas and boat launching facilities, provided that the are of wetland altered does not exceed 5 percent of the wetlands located on the parcel proposed for development.
    - (2) Utility transmission facilities;
    - (3) For that portion filled in accord with permits received from federal and state agencies exercising jurisdiction over such are, any conditional upland use.
6. Residential Densities.
- a. Maximum residential densities listed as percentages of maximum density set forth in future land use designation of the Comprehensive Plan.
  - b. Sets forth conditions by which existing uses of a structure may be "grandfathered".
    - (1) The structure, project, or use has been occupied or constructed, or has received a building permit, site plan, or other County development approval prior to July 12, 1984;

and

- (2) Development of the structure, project, or use is completed within all applicable approval periods and time limits.
  - c. Allows payment of Alternate Development Fee to exceed the maximum residential densities.
  - d. Allows for increases in the maximum residential densities, if the roadway capacity increases to a higher Level.
7. Environmentally Sensitive Areas.

Imposes an additional requirement on residential densities permitted in the Dune Preservation Zone and wetlands. The densities may only be used if clustered to uplands located on the parcel proposed for development, or if clustered to that portion of the wetlands filled in accord with permits from appropriate federal or state agencies.

**D. St. Lucie County Beach and Dune Protection Ordinance**

All development must comply with the following restrictions and criteria to protect against erosion, maintain habitat value and productivity, maintain natural scenic values, prevent damage to beach and dune vegetation, and promote natural rebuilding of the dune through wind forces.

- 1. Dune Preservation Zone Restriction: Prohibits development within the zone, other than:
  - a. for non-rigid or flexible structures, rigid structures, or other shoreline protection development;
  - b. beach access;
  - c. beach safety;
  - d. approved sea turtle research; and
  - e. other beach dependent or public uses approved by DEP.
- 2. Beach and Dune Criteria: Prohibits development that would threaten the

stability of the frontal dune or beach in front of or adjacent to any parcel of land.

3. Restrictions on the Use of Rigid, Fixed Above-Ground Structures and Materials: Prohibits use of such structures and materials, except when:
  - a. Used as part of a comprehensive plan for beach-dune restoration.
  - b. Non-structural alternatives are unacceptable.
  - c. It can be convincingly demonstrated that no negative impacts on water quality, the natural habitat, adjacent shore areas, or beach will result.
4. Design and/or Positioning of Structures: Recognizes that structures might act as traps to adult sea turtles, and requires they be designed and/or positioned to avoid this.
5. Treatment of Impenetrable, Buried, Synthetic Materials: Requires such materials (used for beach-dune preservation, stabilization, or restoration) to be sufficiently covered by beach sediments and maintained to allow for normal sea turtle nesting.
6. Erosion Control: Lists mandatory criteria for development, to protect coastal area resources and natural processes within the Beach-Dune Shoreline Area:
  - a. Limitations - erosion control measures can not interfere with normal littoral processes, sea turtle nesting and hatching activities, or negatively impact coastal area resources.
  - b. Replacement of Damaged Structure - damaged erosion control structures may be replaced only with structures which are compatible with the intent of Subsection 6a and identified as necessary to protect existing, previously approved development.

## **IX. VOLUSIA COUNTY, FLORIDA: COMPREHENSIVE PLAN - COASTAL MANAGEMENT ELEMENT**

### **A. Introduction**

The nature of the objectives and policies in its coastal management element indicates that Volusia County is aware of natural processes and functions in the coastal area, and recognizes the need to preserve these. The element contains many provisions for the review and analysis of existing land use and development regulations, in order to make adjustments whenever deficiencies are noted. It also acknowledges human impacts in the coastal area, and

stresses the mitigation or avoidance of these harmful impacts.

## **B. Coastal Resources**

### 1. General Considerations

- a. The element is viewed as an opportunity to identify, evaluate, and manage the critical natural resources degraded or destroyed by previous land use practices and development, using watersheds as the basic management unit.
- b. Recognizes the interconnection of the habitats represented in the County and asserts the need for plans to prevent the isolation of habitats and envelopment by urbanization or agriculture. Also recognizes the need to protect and maintain biological diversity.

### 2. Goal 11.1

Conserve, protect and manage the coastal resources of Volusia County including the wetland and upland ecosystem so as to maintain and enhance native habitats, floral and faunal species diversity, water quality, and natural surface water characteristics.

- a. Objective 11.1.1: Adopt management programs to ensure the long-term protection and enhancement of wetland habitats and water quality prior to 1991, and selected natural upland habitats prior to 1993. The primary means of accomplishing this objective will be through the retention of interconnected hydroecological systems where the wetlands and uplands function as a productive unit resembling the original landscape.
  - (1) Policy 11.1.1.1: Assigns responsibility of developing management plans and standards that protect and conserve natural systems within the coastal area to the Volusia County Environmental Management Department (EMD) in connection with the Environmental and natural Resources Advisory Committee.
  - (3) Policy 11.1.1.4: Recommends the designation of areas of critical wetland and native upland habitats not connected to corridors that exhibit resource values as conservation or recreation areas within future development plans. Also recommends secondary linkages to nearby corridors, and the consideration of new corridor construction as a form of mitigation.

- (4) Policy 11.1.1.5: Requires EMD to prepare review standards to minimize long-term and cumulative impacts on coastal habitat by requiring site specific analysis during the review process.
- (5) Policy 11.1.1.9: Requires EMD to prepare standards for habitat mitigation that identify situations where mitigation is acceptable, unacceptable, or problematic. Gives list of requirements to be included in the mitigation plan.
- (6) Policy 11.1.1.11: Requires EMD to prepare a prioritized listing of habitats and properties for potential future public acquisition. Also gives list of criteria to be used for determining which areas are priorities:
  - (a) Removing debris and toxic materials.
  - (b) Stabilizing shorelines.
  - (c) Creating wetland habitat such as mangrove and salt marsh.
  - (d) Dune restoration.
  - (e) Relocating or eliminating storm water/domestic waste and effluent.
  - (f) Maintenance of stormwater facilities and retrofitting where needed.
  - (g) Regulation of urban shoreline redevelopment.
- (7) Policy 11.1.1.15: Requires EMD to provide an annual report to the County, discussing the adequacy of land use and development regulations and management plans. Provides for adjustments to be made whenever deficiencies are noted.
- (8) Policy 11.1.1.16: Requires a habitat buffer zone for development adjacent to estuarine and riverine shoreline areas.
- (9) Policy 11.1.1.17: Development in habitat areas "listed" as Endangered, Threatened, or Species of Special Concern shall not adversely impact the listed species.

## C. Land Uses

### 1. General Considerations

- a. Recognizes the extensive alteration to the coastal area ecosystem by man's activities (specifically listed are: urbanization, silviculture, agriculture, and mosquito control).
- b. Sets forth the following objectives:
  - (1) to mitigate the environmental impact of development; and
  - (2) to limit the extent to which growth increases exposure to coastal hazards.
- c. Recognizes the role land acquisition has played in removing areas from potential private development.

### 2. Goal 11.2

To conserve, protect, and restore coastal resources by managing growth and land use so as not to damage or destroy those resources.

- a. Objective 11.2.1: Establish land use regulations that provide for the location, extent and distribution of land uses consistent with the protection of coastal resources.
  - (1) Policy 11.2.1.1: Requires appropriate mitigation for land uses which have significant adverse impacts on coastal resources to the point where they would cease to be viable.
  - (2) Policy 11.2.1.3: Requires protection of designated natural resource areas, significant environmental or ecological features, critical wildlife habitat, environmental system corridors or conservation areas through a variety of mechanisms including buffer zones, restoration, limiting density and intensity, conservation easements, acquisition, density transfers, TDRs, purchase of development rights or land exchanges.
  - (3) Policy 11.2.1.4: Establishes the priority for new development to be in areas of urban infill.
- b. Objective 11.2.2: Develop standards for appropriate densities,

intensities, buffer zones, resource protection and location for development adjacent to aquatic and natural preserves, wildlife refuges, and environmental system corridors to protect the natural character, scenic values and public benefit of these areas.

(1) Policy 11.2.2.1: Requires a zoning evaluation program for lands zoned for development which are inconsistent or incompatible with the protection or conservation of coastal resources.

(2) Policy 11.2.2.3: Requires the use of innovative or alternative zoning districts or techniques to protect coastal resources, such as overlay districts, floating zones, bonus ordinances, performance standards, fast-tracking of development applications, quality development programs, TDRs, or other incentive based methods.

c. Objective 11.2.3: Priorities for shoreline land use shall be given to water-dependent uses over water-related land uses and shall be based on type of water-dependent use, adjacent land use, water quality, impact on critical habitat and impact on coastal resources.

(1) Policy 11.2.3.1: Sets forth shoreline land use priorities to be used when reviewing applications:

(a) Water-dependent uses such as fish, shellfish and wildlife production, protection and conservation of coastal and natural resources, recreation, public access, marinas and navigation, and water-dependent utilities and industry, which do not create a significant adverse impact upon the water of land use.

(b) Water-enhanced uses such as recreation, certain utilities, commerce and industrial uses.

(c) Low density residential.

(d) Non-water dependent or related activities such as intensive urban residential, non-water dependent industry and commerce.

(e) Of lowest priority are those uses which are non-water dependent, non-water enhanced which result in a reduction of coastal resources.

## **D. Beach and Dune Systems**

### **1. Goal 11.4**

Protect, enhance and restore the functioning of the beach and dune systems and prohibit development activities that would damage or destroy such systems.

a. Objective 11.4.1: Initiate a dune restoration program and adopt standards to minimize the impacts of structures and development on beach and dune systems.

(1) Policy 11.4.1.1: Actively participate with the Florida Division of Beaches and Shores to redraw the CCCL to incorporate the listed criteria:

(a) For non-seawalled open-ocean coast, the CCCL should be located behind the landward base of the foredune ridge. The foredune ridge should be allowed to expand landward. A buffer between the landward base of the foredune ridge and building construction should be established.

(b) For seawalled coast, the CCCL should be drawn behind the bulkhead line in accordance with the 100-year storm surge.

(2) Policy 11.4.1.2: Amend the comprehensive plan to incorporate the new CCCL.

(3) Policy 11.4.1.3: Only allows "soft engineering techniques" to protect property threatened by erosion.

(4) Policy 11.4.1.4: Sets forth conditions for permissible construction or replacement of seawalls after designation of the new CCCL: no construction of new seawalls except for replacement of existing seawalls, consistent with Policy 11.4.1.8 and if approved by DEP, in an emergency event to protect public health and safety, or to fill in small gaps (<200 feet) within existing seawalls.

(5) Policy 11.4.1.7: Prohibits man-made destruction or removal of existing dunes and dune vegetation.

- (6) Policy 11.4.1.8: Allows only those structural development along Atlantic beaches that enhance, and not further degrade, the coastal beach and dune system. Lists criteria to apply:
  - (a) Shoreline buffer zones shall be established to protect and preserve the coastal BDS fronting the Atlantic Ocean.
  - (b) Structures shall be prohibited within the established buffer areas except where overriding public interest is apparent for public park and recreation facilities, or for structures that are necessary for reasonable access and are elevated above the dune vegetation.
  - (c) Buffer areas shall be measured landward from the existing or historical vegetative line and established after adoption of the new CCCL.
- (7) Policy 11.4.1.13: Requires development of public awareness program to inform citizens on "how the coastline works."
- (8) Policy 11.4.1.16: Requires the incorporation of dune restoration projects and revegetation into public improvement projects on, or adjacent to, the beach.
- (9) Policy 11.4.1.20: Recommends development of strategies for responding to sea level rise, including:
  - (a) Analyses of the estimated sea level rise and its effects on estuaries, wetlands, barrier islands and uplands.
  - (b) Identification of structure and areas of possible risk.
  - (c) Determination of additional data and research needed.
  - (d) Assistance from state and federal agencies.
  - (e) Consideration of additional buffer areas from wetlands, water bodies and dunes in order to protect life and property.
  - (f) An evaluation of locating public facilities in areas

projected to be affected by rising sea level.

- (g) Consideration of the effects on potable water sources, salt water intrusion, septic systems, wastewater treatment facilities and the water table.

## **E. Coastal High Hazard Area**

### 1. Goal 11.5a

Lessen the impact of a destructive storm on human life, property, public facilities and natural resources.

### 2. Goal 11.5b

Discourage the location of new development in the CHHA by limiting new public expenditures in these areas.

- a. Objective 11.5.3.a: Adopt land development regulations governing development in the Hurricane Vulnerability Zone and CHHA that minimize danger to life and property.

- b. Objective 11.5.3.b: New public expenditures shall be prohibited that will subsidize development inside the CHHA, unless it is consistent with policies specifically identified in the Coastal Management Element or cross-referenced to another appropriate element included in the Capital Improvements Element.

#### (1) Policy 11.5.3.1: Defines CHHA:

- (a) FEMA designated V-zones.
- (b) Lands seaward of the state designated CCCL.
- (c) Inlets not structurally controlled.
- (d) Lands where public facilities have been or potentially could be damaged or undermined by coastal storms such as hurricanes.

- (2) Policy 11.5.3.2: Sets forth the public facilities allowed in the CHHA (only for increasing public access and recreation facilities or resource restoration facilities).

- (3) Policy 11.5.3.3: Public facilities are allowed in the Hurricane Vulnerability Zone only after a determination that there are no other feasible sites outside the area.
  - (4) Policy 11.5.3.4: Those public facilities constructed in the Hurricane Vulnerability Zone must be flood proofed to ensure minimum damages from storms and hurricanes.
  - (5) Policy 11.5.3.5: Examine the need for and implement additional regulations that provide for: setbacks in areas of critical erosion, conservation and enhancement of dunes and vegetation, flood proofing of utilities, and appropriate requirements for structural wind resistance and flood plain management.
  - (6) Policy 11.5.3.8: Uses the federal flood hazard requirements as a standard for development in the Hurricane Vulnerability Zone.
- c. Objective 11.5.4: Work with the East Central Florida Regional Planning Council to undertake an evaluation of the long-term problems related to post-disaster relief. Amend the comprehensive plan, if necessary, based upon the findings, which will be part of the Post-Disaster Relief Plan.
- (1) Policy 11.5.4.1: Sets forth elements of the Post-Disaster Relief Plan: identification of land areas that should not be reconstructed; abandonment and/or relocation of buildings, rebuilding of public facilities; and reconstruction with structural modification.
  - (2) Policy 11.5.4.3: Requires the Post-Disaster Relief Plan to establish principles for repairing, replacing, modifying, or relocating public facilities in the Hurricane Vulnerability Zone.
  - (3) Policy 11.5.4.4: Sets forth the Build-Back Policy (to be incorporated in land development regulations):
    - (a) Structures damaged less than 50% of their replacement cost at the time of damage may be rebuilt to their original condition, subject only to current building and life-safety codes.

- (b) Structures damaged more than 50% of their replacement cost at the time of damage can be rebuilt to their original square footage and density, provided that they comply with:
  - i. Federal requirements for elevation above the 100-year flood level;
  - ii. Building code requirements for floodproofing;
  - iii. Current building and life-safety codes;
  - iv. State CCCL;
  - v. Any required zoning or other development regulations (other than density or intensity), unless compliance with such regulations would preclude reconstruction otherwise intended by the build-back policy; and
  - vi. Any other relevant federal or local regulations.
  
- (c) The land development regulations may establish procedures to document actual uses, densities, and intensities, and compliance with regulations in effect at the time of construction, through such means as photographs, diagrams, plans, affidavits, permits, appraisals, and tax rewards.

## **APPENDIX A: SOURCES OF INFORMATION**

The following individuals or offices were contacted for this report:

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Teresa Bishop, St. John's County Planning Department  
Bruce Bortz, Planning Department, Town of Nags Head  
David Brower, Center for Urban and Regional Studies, UNC at Chapel Hill  
Rick Bruce, Lee County Planning Department  
The Center for Marine Conservation  
Dwayne DeFreese, Coordinator, Environmentally Endangered Lands Acquisition Program  
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Phillip Flood, Jr., Department of Environmental Protection, Bureau of Beaches and Coastal Systems  
City of Ft. Walton Beach, Planning Department  
David Godfrey, Caribbean Conservation Corporation  
David Godschalk, Center for Urban and Regional Studies, UNC at Chapel Hill  
Charlie Gonzalez, Bay County  
Jack Gorzeman, Environmental Management Department, Manatee County  
Paul Grabiell, Chief Building Inspector, Galveston, Texas  
Richard Grosso, Attorney at Law  
Betti Johnson, Principal Planner, Tampa Bay Regional Planning Council  
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Clay Saucier, FEMA, Region IV, Community Rating System  
Mel Scott, Brevard County Planner  
Richard Smith, Florida State University, Planning Department

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Martin County, Florida: Comprehensive Plan, Coastal Management Element

Metro Dade, Florida: Comprehensive Plan, Coastal Management Element

Monroe County, Florida: Comprehensive Plan, Coastal Management Element

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