

**HURRICANE MITIGATION AND POST-DISASTER REDEVELOPMENT:
PROGRAM ANALYSIS OF FLAGLER COUNTY, FLORIDA**

Report to the Flagler County Planning Department

Florida Coastal Management Program
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John Tucker, Todd Trexler, and Jeff Wade
Center for Governmental Responsibility
University of Florida College of Law



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expressed herein are those of the authors and do not necessarily
reflect the views of the State of Florida, NOAA or any of its subagencies.

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FOREWORD

This report, "Hurricane Mitigation and Post-Disaster Redevelopment: Program Analysis of Flagler County, Florida" represents the second 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 contains a brief summary of general principles and comprehensive planning requirements for coastal management, and an in-depth assessment of Flagler County's approach to coastal hazard mitigation and post-disaster redevelopment, including analysis of relevant comprehensive plan elements and land development regulations.

This report is the second of several reports which the subcontractor will provide as part of this project. The first report, submitted January 19, 1996, contains two volumes, the first of which 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 first report includes full copies of the adopted plans, policies and ordinances summarized in Volume I.

The third report will analyze legal issues relating to coastal management and hurricane mitigation and post-disaster redevelopment, including a review of the requirements of state and federal laws. The legality of various land use control mechanisms, liability of local government, and private property rights issues will also be analyzed.

The fourth report will contain recommendations for improving Flagler County's coastal management program, including suggested amendments to the County's comprehensive plan and land development regulations.

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I. INTRODUCTION

This report assesses Flagler County's approach to coastal hazard mitigation and post-disaster redevelopment. The goal of the report is to provide a thorough critique of the County's approach, including identification of any weaknesses or inconsistencies. The research methodology involves an analysis of the extent to which the County's approach is consistent with comprehensive planning requirements and general coastal management principles, and whether the approach is internally consistent.

The report is divided into five sections, the first of which is this introduction. Section II of the report summarizes general principles of hurricane mitigation and post-disaster redevelopment.¹ Section III summarizes the principal requirements of the Growth Management Act, which requires local governments to adopt comprehensive plans to guide and control future growth.² Section IV, the core of this report, analyzes Flagler County's approach to coastal management in general, and to hurricane mitigation and post-disaster redevelopment in particular. This section includes a thorough assessment of the County's comprehensive plan and land

¹A more detailed discussion of these principles is contained in the first report for this project, entitled "Hurricane Mitigation and Post-Disaster Redevelopment: Principles and Practices."

²The requirements of the Growth Management Act are discussed in greater detail in the first project report. Legal issues relating to local government implementation of the Growth Management Act will be addressed in the third project report.

development code. Section V of the report contains general conclusions and preliminary recommendations.

II. SUMMARY OF GENERAL PRINCIPLES OF HURRICANE MITIGATION AND POST-DISASTER REDEVELOPMENT

A. AVOID EXPOSURE

The first general principle of effective coastal management is to avoid exposure to the threat of coastal storms. This approach includes measures designed to restrict development in potentially dangerous coastal areas and to provide for safe and effective evacuation of residents in the event of a coastal storm.

1. Prohibit or Limit Development in High-risk Areas

Coastal areas which are susceptible to damage from a storm surge and other hurricane impacts should be identified as the Coastal High Hazard Area (CHHA). Local governments should prohibit or limit development in these areas. Thus, the appropriate identification of this area is crucial to an effective management scheme. Several planning and regulatory tools are available to limit population densities in the CHHA. The area should be identified on the Future Land Use Map and designated to accommodate only water dependent or resource compatible activities. Overlay districts or floating zones can be used to delineate this area as high risk. When appropriate, development should be transformed out of the CHHA through a clustering or Transferable Development Rights (TDR) program. Public expenditures for new infrastructure and facilities should be restricted in these hazardous areas. Additionally, the capacity of facilities serving existing development in the CHHA should be restricted, to further control inappropriate future development.

2. Maintain a Safe and Effective Evacuation Plan

Local governments should design and adopt an effective evacuation plan that identifies all available evacuation routes and shelters, necessary information on evacuation times, and a public education program. Local governments should review the existing transportation systems to identify potential limitations on the systems' ability to support such a plan. Information gathered in connection with design and adoption of the evacuation plan can be used to improve response to a coastal storm event and to support appropriate post-storm redevelopment efforts.

B. MINIMIZE IMPACTS BY MAINTAINING NATURAL DEFENSES

The second principle is to minimize the impacts of a storm event by adopting measures to maintain the natural defenses of the coastal area. Intact and well-functioning natural systems serve a vital function in buffering coastal development from storm impacts. Recognizing that the coastal area is an attractive location for development, it is crucial to minimize the impact of such development on coastal resources and systems. Strong management policies are required to protect not only the coastal area's natural systems in general, but to preserve environmentally sensitive areas such as wetlands, floodplains, and beach and dune systems (BDS).

1. Protection of Native Vegetation and Topography

Native plant communities and topographic features help deflect and absorb storm forces, including wind, waves, and flood waters. Coastal wetlands, floodplains and beach and dune systems are of particular importance. Wetlands and floodplains serve as flood control areas that help regulate the flow of water and protect uplands and associated structures from flooding. The BDS serves as a physical barrier against the destructive forces of wind and waves. Native vegetation in the BDS such as sea oats, is essential to maintain the integrity and structure of the BDS.

Local governments should protect wetlands, floodplains, and the BDS from development which degrades or destroys these areas. There are a variety of planning and regulating tools available to local governments. For example, buffer zones preserve native vegetation and temper the impacts of encroaching development. Clustering and TDRs can be used to transfer development out of these areas. Strict standards should be established to minimize the destruction of natural vegetation in the coastal area. Restrictions should be imposed on structures that increase erosion and alter the natural flow of sand along the beach. The county should also prioritize coastal natural areas for acquisition.

2. Protection of Wildlife Habitat

The same plant communities and topographic features that physically mitigate storm forces also provide essential habitat for wildlife. Thus, conservation of coastal wetlands, coastal strand, floodplains, and BDSs contributes to conservation of both plant and animal biodiversity. Although conservation of wildlife may not be directly related to maintaining natural coastal defenses, wildlife conservation is explicitly required by Florida's Growth Management Act. Planning and regulatory tools should be implemented to protect wildlife habitat in the coastal area. An inventory should be conducted to determine areas which provide habitat for wildlife, particularly endangered or threatened species. Several approaches can be taken to protect these areas, including the use of buffer zones and land acquisition. Consideration of wildlife habitat should be required as part of the development review process. Additionally, public education

See FLA. STAT. chs. 163.3177(6)(g), 163.3178 (1995).

programs should be conducted to provide general information for those living in or visiting the coastal area and to involve the public in protecting coastal resources and processes.

C. MINIMIZE IMPACTS BY IMPROVING CONSTRUCTION STANDARDS AND SITING REQUIREMENTS

The third principle is to minimize the impacts of a coastal storm event by adopting measures to improve the capacity of development to withstand the storm event. The survivability of permitted construction in the coastal area should be improved by developing and enforcing improved construction standards affecting the location, type, elevation, and design of structures in the coastal area.

1. Construction Standards

Strict construction standards should be enforced to mitigate the destructive forces of wind, flooding, waves, and erosion. Building code requirements should be updated to reflect minimum elevation and wind resistance requirements. Provision should also be made to account for nonconforming structures.

2. Setback Lines

Strict enforcement of setback lines should accompany the development review process. Setbacks can be established to protect wetlands, critical erosion areas, and all other environmentally sensitive areas.

D. IMPROVE REDEVELOPMENT PRACTICES

The final principle of effective coastal management is to prevent future losses by adopting measures to control redevelopment practices following a coastal storm event. This involves creating a rational framework of procedures, policies, and standards to guide redevelopment

practices in the post-storm environment. These measures should be in place before a coastal storm event occurs to ensure the policies reflect prudent efforts to cope with post-disaster situations, thereby reducing the emotional and political pressure to allow ill-advised reconstruction.

1. Recovery Task Force

An effective means of implementing this principle is to establish a Recovery Task Force to guide redevelopment efforts, and to provide recommendations for new or amended redevelopment policies where needed. Without such planning, attempts to normalize the community living environment in the aftermath of a hurricane disaster may lead to poorly considered permits, allowing redevelopment in areas that may be devastated by the next major storm, or which provide important buffering functions, or which are required to be protected under Florida laws.

2. Redevelopment Policies and Standards

Generally, effective redevelopment plans will steer development away from hazardous areas, reduce at-risk populations, restore and protect natural features and processes, and improve the survivability of permitted construction. Planning tools such as building moratoria, relocation requirements, and a strict build-back policy should be included in redevelopment practices.

III. SUMMARY OF COMPREHENSIVE PLANNING REQUIREMENTS FOR COASTAL MANAGEMENT

The Local Government Comprehensive Planning and Land Development Regulation Act (Growth Management Act) requires local governments to prepare or amend comprehensive plans which address a number of elements related to the orderly growth of an area. A local plan must be consistent with the State Comprehensive Plan and the applicable comprehensive regional policy

FLA. STAT. §§ 163.3167-163.3243 (1995).

See generally Pelham, Hyde & Banks, *Managing Florida's Growth: Toward an Integrated State, Regional, and Local Comprehensive Planning Process*, 13 FLA. ST. U.L. REV. 515 (1985); Orshesky, Gallop & Knox, *Local Government Comprehensive Planning, Florida Environmental and Land Use Law (Vol. II)*, Environmental and Land Use Law Section, The Florida Bar (1987); Christie, *Growth Management in Florida: Focus on the Coast*, 3 J. LAND USE & ENVTL. L. 33 (1987).

FLA. STAT. §§ 187.101-187.201 (1995). Among the policies enumerated in the Coastal and Marine Resources element of the State Comprehensive Plan are several with mitigative effects, including:

1. Accelerate public acquisition of coastal and beachfront land where necessary to protect coastal and marine resources or to meet projected public demand;
2. Avoid the expenditure of state funds that subsidize development in high hazard coastal areas;
3. Protect coastal resources, marine resources and dune systems from the adverse effects of development;
4. Develop and implement a comprehensive system of coordinated planning, management, and land acquisition to ensure the integrity and continued attractive image of coastal areas;
5. Encourage land and water uses which are compatible with the protection of sensitive coastal resources;
6. Protect and restore long-term productivity of marine fisheries habitat and other aquatic resources;
7. Avoid the exploration and development of mineral resources which threaten marine, aquatic, and estuarine resources;
8. Prohibit development and other activities which disturb coastal dune systems, and ensure and promote the restoration of coastal dune systems that are damaged;
9. Give priority in marine development to water-dependent uses over other uses.

plan, as well as having internal consistency among its own elements. Local governments must also adopt or amend, and enforce land development regulations that are consistent with and implement their comprehensive plans. The local planning agency is required to evaluate, appraise and update the local comprehensive plan at least once every five years, in a report to the local governing body and the Department of Community Affairs (DCA).

A. LOCAL PLAN REQUIREMENTS

Sections 163.3177 and 163.3178, Florida Statutes contain the minimum required elements for the comprehensive plan of a coastal local government. Required elements must address: 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.

There are also several optional elements, which are required elements for local governments with populations over 50,000. These include elements for the protection of

FLA. STAT. § 163.3177(4)(a) (1995); *see* FLA. STAT. §§ 186.507-186.508 (1995) for description and authorization of comprehensive regional policy plans.

FLA. STAT. § 163.3177(2) (1995); *see also* FLA. ADMIN. CODE Rule 9J-5.021 (1987). Amendments to the local comprehensive plan must also preserve internal consistency. FLA. STAT. § 163.3187(2) (1995).

FLA. STAT. § 163.3202(1) (1995).

FLA. STAT. § 163.3191 (1995).

FLA. STAT. §§ 163.3177(3), 163.3177(6)(a)-(h) (1995).

FLA. STAT. § 163.3177(6)(i) (1995); *see* FLA. STAT. § 86.901 (1995), for population census determination.

residents and property from fire, hurricane and other catastrophes, including evacuation routes, water supply requirements, minimum road widths, clearances around and elevations of structures, and related matters; mass transit; port, aviation, and related facilities; circulation of recreational traffic; offstreet parking facilities; public buildings and related facilities; recommended community design; general area redevelopment; historical and scenic preservation; and economic development.

B. COASTAL MANAGEMENT ELEMENT

Counties and municipalities abutting the Gulf of Mexico or the Atlantic Ocean, or which front on waters of the state where marine species of vegetation predominate are also required to adopt a coastal management element, appropriately related to the conservation and recreation and open space elements. The coastal management element must include policies for the implementation of the following objectives:

1. Maintenance, restoration, and enhancement of the overall quality of the coastal zone environment.
2. Continued existence of viable populations of all species of wildlife and marine life.
3. 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.

FLA. STAT. § 163.3177(7)(a)-(k) (1995).

Local governments required by law to prepare coastal management elements are listed in the document, "Local Governments Required to Include Coastal Management Elements in their Comprehensive Plans," dated July 1, 1986, and available from the DCA on request. FLA. ADMIN. CODE Rule 9J-5.012 (1987).

FLA. STAT. § 163.3177(6)(g) (1995).

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.
9. The orderly development and use of ports to facilitate deepwater commercial navigation and related activities.
10. Preservation, including sensitive adaptive use of historic and archaeological resources.

Section 163.3178 of the Act is specifically directed to coastal management, with a legislative intent "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." The section adds specific components to be addressed by the coastal management element of a local comprehensive plan, and directs that the element be based on verifiable studies, surveys and data.

At present, the designated ports include: Jacksonville, Tampa, Port Everglades, Miami, Port Canaveral, Ft. Pierce, Palm Beach, Port Manatee, Port St. Joe, Panama City, St. Petersburg, and Pensacola. FLA. STAT. § 403.021(9) (1995).

FLA. STAT. § 163.3177(6)(g) (1995).

FLA. STAT. § 163.3178(1) (1995).

FLA. STAT. § 163.3178(2) (1995).

Each coastal element must contain a land use and inventory map of coastal uses, wildlife habitat, wetland and other vegetative communities, undeveloped areas, areas subject to coastal flooding, public access routes, historic preservation areas, and other areas of special concern. It must contain an analysis of the environmental, socioeconomic, and fiscal impact of development, redevelopment and associated infrastructure proposed in the future land use plan, as it relates to natural and historical resources of the coast. The element also requires plans and principles to control development and redevelopment, to eliminate or mitigate adverse impacts on every part of the coastal ecosystem. Existing drainage systems, and point and nonpoint source pollution must also be analyzed for their effects on estuarine water quality, and plans created for the maintenance or upgrading of water quality and quantity.

The coastal element calls for an outline of the principles for hazard mitigation and protection of human life against the effects of natural disaster, including population evacuation, taking into account projected population densities in the future land use plan element. Regulatory and management techniques must be identified to mitigate such threats to human life, and to control proposed development or redevelopment in order to protect the coastal environment. A redevelopment component must include principles to be used to eliminate inappropriate and

FLA. STAT. § 163.3178(2)(a) (1995).

FLA. STAT. § 163.3178(2)(b) (1995).

FLA. STAT. § 163.3178(2)(b) (1995).

FLA. STAT. § 163.3178(2)(c) (1995).

FLA. STAT. § 163.3178(2)(d) (1995).

FLA. STAT. § 163.3178(2)(j) (1995).

unsafe development in the coastal area after storm damage. Local governments in coastal areas must also designate high-hazard areas, subject to destruction or severe damage by natural disasters, which will not receive state funds to increase infrastructure capacity. The Legislature defined high hazard areas as category 1 hurricane evacuation zones. A related component requires principles for protecting beach and dune systems from artificially-induced erosion and for restoring altered systems.

C. MINIMUM CRITERIA: INVENTORIES AND ANALYSIS

Chapter 9J-5 of the Fla. Admin. Code contains detailed minimum criteria used by the DCA for review of local comprehensive plans, and for determining whether the plans are in compliance with the state plan and comprehensive regional policy plan. The coastal management element of a comprehensive plan must be based on an inventory and analysis of several aspects of the coastal area. Existing land uses must be inventoried, including a map of land uses and water-dependent uses, with an analysis of conflicts among shoreline uses and the need for water-dependent development sites. Inventories, maps and analyses must be made of the effect of future land uses on coastal natural resources, including wetlands, coastal floodprone areas, wildlife habitats, and

FLA. STAT. § 163.3178(2)(f) (1995).

FLA. STAT. § 163.3178(2)(h) (1995).

FLA. STAT. § 163.3178(2)(h) (1995).

FLA. STAT. § 163.3178(2)(e) (1995).

FLA. ADMIN. CODE Rule 9J-5.001 (1996); *see* FLA. ADMIN. CODE Rule 9-10 (1987) for the procedures used by the DCA and RPC's in reviewing and adopting the comprehensive regional policy plans.

FLA. ADMIN. CODE Rule 9J-5.012(2)(a) (1994).

living marine resources. Known point and non-point source pollution in estuaries must be assessed, as well as the impacts of proposed facilities in several plan elements on water quality, circulation patterns, and contaminants in sediments. Beach and dune systems, including erosion and accretion trends, the effects of shore protection structures and existing and potential beach renourishment areas must also be inventoried and analyzed.

Finally, existing infrastructure in the coastal area must be inventoried, including roads, bridges, public utilities, public shore protection structures, and renourishment projects. The demands upon, and capacity of existing infrastructure must be analyzed, taking into account estimated future needs and the estimated costs, funding sources and phasing of any needed improvements. The present capacity of and projected need for public access facilities, including coastal roads, parking facilities, access points, boat launching facilities, and piers must also be analyzed, and coordinated with the recreation and open space element. The impacts of proposed development and redevelopment on historic resources must be analyzed.

D. MINIMUM CRITERIA: GOALS, OBJECTIVES, POLICIES

The coastal management element must use the above inventories and analyses to set long term goals, specific objectives, and policies, including regulatory or management techniques for

FLA. ADMIN. CODE Rule 9J-5.012(2)(b) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(2)(d) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(2)(f) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(2)(h) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(2)(g) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(2)(c) (1994).

implementing the plan. Goal statements must reflect the legislative intent of the Act, which is to restrict development activities that would damage or destroy coastal resources, protect human life, and limit public expenditures in areas subject to destruction by natural disasters. One or more specific objectives must be prepared for each goal statement, which address the Act's requirements for coastal elements and which:

1. Protect, conserve or enhance remaining coastal wetlands, living marine resources, coastal barriers, and habitat.
2. Maintain or improve estuarine environmental quality.
3. Protect beaches or dunes, establish construction standards which minimize impacts of man-made structures, and restore altered beaches or dunes.
4. Limit public expenditures that subsidize development permitted in coastal high-hazard areas, except for the restoration or enhancement of natural resources.
5. Direct population concentrations away from known or predicted coastal high-hazard areas.
6. Maintain or reduce hurricane evacuation times.
7. Prepare post-disaster redevelopment plans which will reduce or eliminate the exposure of human life and public and private property to natural hazards.
8. Provide criteria or standards for prioritizing shoreline uses, giving priority to water-dependent uses.
9. Increase public access, consistent with projected needs.
10. Provide for protection, preservation or sensitive reuse of historical resources.

FLA. ADMIN. CODE Rule 9J-5.012(3) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(3)(a) (1994).

11. Establish level of service standards, areas of service, and phasing of infrastructure in the coastal area.

The coastal management element must also contain one or more policies for each stated objective, and must include regulatory or management techniques for the implementation of the policies. These must be aimed at:

1. Limiting the specific and cumulative impacts of development or redevelopment on wetlands, water quality or quantity, wildlife habitat, living marine resources, and beach dune systems.
2. Restoring or enhancing disturbed or degraded natural resources, including beaches, dunes, estuaries, wetlands, and drainage systems, with programs to mitigate future disruptions or degradations.
3. General hazard mitigation, such as regulation of building practices, floodplains, beach and dune alteration, stormwater management, and land use to reduce exposure to natural hazards; incorporating recommendations of the hazard mitigation reports.
4. Relieving any deficiencies in hurricane evacuation.
5. Post-disaster redevelopment policies to: distinguish between immediate action for the public health and safety, and long-term repair and redevelopment action; remove, relocate or modify damaged infrastructure and structures; limit redevelopment in repeatedly damaged areas; and incorporate recommendations of the hazard mitigation reports into the local comprehensive plan.
6. Identifying areas needing redevelopment and eliminating unsafe conditions and inappropriate uses as the opportunities arise.
7. Designating coastal high-hazard areas, limiting development in these areas, and relocating or replacing infrastructure away from these areas.

FLA. ADMIN. CODE Rule 9J-5.012(3)(b) (1994).

FLA. ADMIN. CODE Rule 9J-5.012(3)(c) (1994).

8. Establishing priorities for shoreline land uses, providing for siting water-dependent uses, establishing standards for shoreline development, and criteria for marina siting.
9. Providing ongoing public access to beaches, including transportation or parking facilities.
10. Protecting historic resources.
11. Orderly development of deepwater ports, including concerns with land use, natural hazards, and protection of natural resources.
12. Ensuring that infrastructure will be available to serve development or redevelopment at densities proposed in the future land use plan, consistent with resource protection and safe evacuation, by assuring that necessary funding for infrastructure will coincide with the demands generated by the development.
13. Providing for intergovernmental protection of estuaries.
14. Coordinating with other resource protection plans.

E. ADOPTION OF LAND DEVELOPMENT REGULATIONS

Within one year of the date it submits its comprehensive plan for review by the DCA, a local government must adopt or amend and enforce land development regulations that are consistent with and implement the comprehensive plan. Any existing development regulation

FLA. ADMIN. CODE Rule 9J-5.012(3)(c) (1994).

FLA. STAT. § 163.3202(1) (1995); "land development regulations" are defined as ordinances enacted by a local governing body for the regulation of any aspect of development, including a subdivision, building construction, landscaping, tree protection, or sign regulation or any other regulation concerning the development of land. This term shall include a general zoning code, but shall not include a zoning map, an action which results in zoning or rezoning of land, or any building construction standard adopted pursuant to and in compliance with the provisions of chapter 553." FLA. STAT. § 163.3213(2)(b) (1995).

Land development regulations are considered consistent with the comprehensive plan "if the land uses, densities or intensities, and other aspects of the development permitted by such...regulation are compatible with and further the objectives, policies, land uses, and densities or intensities in the comprehensive plan and if it meets all other criteria enumerated by the local government."

which is not consistent with the plan must be amended so as to be consistent. During any interim period, in which unamended regulations remain inconsistent with the adopted comprehensive plan, the plan itself will govern any action taken in regard to an application for a development order.

The regulations must be specific, and at a minimum must:

1. Regulate the subdivision of land.
2. Regulate use of land and water for those categories of land use included in the land use element; ensure compatibility of adjacent uses; and provide open space.
3. Protect potable water wellfields.
4. Regulate areas subject to seasonal and periodic flooding, and provide for drainage and stormwater management.
5. Ensure protection of environmentally sensitive lands designated in the comprehensive plan.
6. Regulate signage.
7. Ensure safe traffic flow, considering needed parking.
8. Provide that public facilities and services meet the standards of the capital improvements element and are available when needed, or that development orders and permits are conditioned on the availability of facilities to serve the proposed development. Local governments are not allowed to issue a development order or

FLA. STAT. § 163.3194(3)(a) (1995).

FLA. STAT. § 163.3202(1) (1995).

FLA. STAT. § 163.3194(1)(b) (1995).

FLA. STAT. § 163.3194(1)(b) (1995).

permit which results in a reduction in the level of services for the affected public facilities below the level of services provided in the local comprehensive plan.

After its review and consultation process, if the DCA determines that the local government has not adopted the required regulations, it may file suit in circuit court to require adoption of the regulations.

FLA. STAT. § 163.3202(2) (1995).

FLA. STAT. § 163.3202(4) (1995).

IV. ANALYSIS OF FLAGLER COUNTY'S HURRICANE MITIGATION AND POST-DISASTER REDEVELOPMENT PROGRAM

A. COASTAL HAZARDOUS AREAS

1. General Policy Toward Growth

Flagler County's Coastal Management Element recognizes that a portion of its shoreline, starting at the northern border with St. Johns County and extending south 8.2 miles, is considered a "high risk" area based on concerns such as flood risk, beach erosion, and evacuation difficulty. These risk factors are closely linked to the impacts of coastal storm events. The remaining shoreline (south to Volusia County) is considered "moderate risk." Although the Coastal Management Element identifies much of the coastal area as "high" or "moderate" risk, the element acknowledges that most future development will take place in the Coastal Area and the urban service area therein.

More specifically, the projected spatial distribution for year 2000 shows the most dense population concentrations in the city of Flagler Beach and the unincorporated Palm Coast communities of Palm Harbor, Woodlands, Matanzas Shores, Hammock Dunes, Sea Colony and River Club. Of these vested developments, Matanzas Shores, Hammock Dunes, and Sea Colony are located within the "high risk" area along the shoreline. The suitability of these areas for development is questionable, especially in light of Objective 2.3 of the Coastal Management

Flagler County, Florida, Comprehensive Plan, Coastal Management Element 59 (rev. Mar. 1992).

Id.

Id. at 26.

Id. at 79. These are vested developments.

Element, which expressly directs population concentrations away from known or predicted coastal high-hazard areas.

Flagler County should consider taking several actions to reduce densities of existing developments located in high risk coastal areas, including designating these communities as inappropriate for re-development. In addition, the County should seek to reduce the build-out densities of vested developments located in hazardous areas. The County should not provide extensions to vested developments that are not built-out by the date established by the original development order. Whenever possible, the County should seek to negotiate reduced densities as a condition to granting requests for other modifications. The County should also ensure that future development approvals are consistent with Objective 2.3, directing population concentrations away from coastal high hazard areas.

2. Coastal High Hazard Areas (CHHA) Delineation

The Growth Management Act requires that the County identify Coastal High Hazard Areas, which the legislature defined in 1993 as category 1 hurricane evacuation zones. The Department of Community Affairs has further defined CHHA to include category 1 hurricane evacuation zones, "as established in the regional hurricane evacuation study applicable to the local government."

Flagler County's CHHA was established prior to the Legislature defining CHHAs as category 1 hurricane evacuation zones. The County's CHHA is not consistent with the statutory

FLA. STAT. § 163.3178(2)(h) (1995). The Florida Legislature defined coastal high hazard areas as Category 1 evacuation zones in a 1993 amendment to Chapter 163, Florida Statutes. 1993 Fla. Laws ch. 93-206.

definition because it excludes from the CHHA certain areas designated as category 1 hurricane evacuation zones. The Northeast Florida Regional Planning Council's (NFRPC's) Traffic Evacuation Zones map designates two areas in Flagler County as category 1-2 evacuation areas. The first of these areas conforms to the County's existing CHHA, which is narrowly defined to only include areas seaward of the Coastal Construction Control Line and areas within FEMA designated velocity zones ("V-zones"). No V-zones have been designated in Flagler County. The second is a large area located further inland. Plate 1 of the "Hurricane Storm Tide Atlas for Flagler County" plainly indicates that this second area is subject to the storm surge associated with a category 1 hurricane. Flagler County should amend its CHHA to include all areas designated on the most recent NFRPC storm surge map as category 1 hurricane evacuation zones.

General principles of coastal planning also dictate a broader delineation of the CHHA. Although the state designated Coastal Construction Control Line (CCCL) represents a potentially hazardous zone, hazardous coastal areas are not necessarily confined to the area seaward of the

FLA. ADMIN. CODE ANN. r. 9J-5.003(19) (1995).

Northeast Florida Regional Planning Council, Hurricane Evacuation Study 32 (1988). Map 7 on page 69 of Flagler County's Coastal Management Element depicts the same areas.

See, Flagler County, Florida, Comprehensive Plan, Coastal Management Element, Policy 2.2.02 (rev. Mar. 1992). The Flagler County Coastal Management element designates this second area as a Level "A" flooding area, yet fails to include it in the CHHA.

Northeast Florida Regional Planning Council, Hurricane Evacuation Study 32 (1988).

DIVISION OF EMERGENCY MANAGEMENT, DEPARTMENT OF COMMUNITY AFFAIRS, HURRICANE STORM TIDE ATLAS FOR FLAGLER COUNTY, Plate 1 (September, 1990). The designated area may be changed based on a new model due in January of 1997.

CCCL. The CHHA should also include hazardous areas that warrant special attention, including areas subject to the flood impacts associated with hurricanes and other storms. Tropical storms account for the majority of coastal flooding the County has experienced in the past. Thus, the location of coastal floodprone areas should be designated on the County's future land use map as part of the County's CHHA. At a minimum, Flagler County should re-delineate its CHHA to include all category 1 evacuation zones.

3. Land Use in the CHHA

As discussed above, Flagler County has not designated certain hazardous areas as part of its CHHA. The majority of this excluded area is currently designated on the Future Land Use Map as high intensity commercial, high density residential, and low density residential. These uses are inconsistent with the principle of restricting development in areas subject to the impacts of coastal storm events. The County should amend the Future Land Use Map to reflect appropriate uses for areas subject to hazardous coastal flooding.

For example, a 200 foot wide residential-commercial district extends along much of State Road A1A. The County should consider amending the future land use map to reduce allowable densities in this area, while still providing for mixed use. One option would be to limit new multi-

For example, the term hazardous coastal areas has been defined to include "beachfront areas that are especially susceptible to high rates of erosion and where erosion and other coastal processes threaten the stability of upland structures." FAU/FIU Joint Center for Environmental and Urban Problems. February, 1994. *Prestorm Planning for Post-Storm Redevelopment: Policies and Options for Florida's Beachfront Areas (Phase I)*. Florida Department of Environmental Protection, Division of Beaches and Shores.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 42 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Future Land Use Map (Feb. 1994).

family housing in this district. Lowering densities in this district would also alleviate a potential problem relating to existing Developments of Regional Impact (DRIs). Presently, existing DRI density caps may be set lower than the maximum allowable density in the residential-commercial district. When DRI development orders expire, the density limits for these developments will revert back to the underlying density, which may be higher than was allowed under the cap. Lowering the maximum allowable density for the entire residential-commercial district would limit future expansion of existing DRIs or new development at inappropriately high densities.

4. CCCL

The County relies on the Florida Department of Environmental Protection (DEP) to regulate proposed development seaward of the CCCL. The County should consider adopting and enforcing standards that reflect the type of protection more appropriate to its local needs. For example, the 1988 relocation of the CCCL placed several developed areas within the CHHA. By adopting a setback to serve as a line of prohibition in hazardous areas, Flagler County could more effectively protect development from potential hurricane damage. An alternative to establishing

Flagler County, Florida, Comprehensive Plan, Coastal Management Element policy 1.6.01 (rev. Mar. 1992). Section 3.02.01 E. of the Land Development Code affirms this, stating that the CCCL "shall be the setback line for all lots fronting the Atlantic Ocean, unless the Florida Department of Natural Resources has issued a permit for construction seaward of the [CCCL]."

JACK SALMON AND DON HENNINGSSEN, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF WEST FLORIDA, *PRIOR PLANNING FOR POST-HURRICANE RECONSTRUCTION*, 86 (November, 1986).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element 76 (rev. Mar. 1992).

Sarasota County has enacted a County Setback Ordinance which imposes a strict prohibition against construction or excavation seaward of the setback line. SARASOTA COUNTY, FLORIDA, *Coastal Setback Ordinance, Unofficial Codification § 3.1* (March, 1994). The ordinance vests responsibility for the administration of the ordinance in the County Natural Resources Management Department, with the advice of any appropriate County staff or state agency. *Id.* §

an entirely new setback line is to use the existing CCCL, yet impose County-level requirements and standards, as demonstrated by Brevard County's Setback Ordinance.

The Flagler County Land Development Code requires a building restriction line "to designate floodplain or unsafe building areas in all cases where the areas are not shown on the preliminary and final plats as right-of-ways or easements in accordance with this article." Unsafe land is based on a determination by the county engineer that the land is "unsafe for development use by reason of its being subject to flooding, erosive stream action, unstabilized slope or fill or otherwise located in a situation so that safe, healthful development cannot be maintained on the land." Flagler County could use this provision to prevent development in hazardous floodprone areas, serving much the same purpose as the two ordinances discussed above. However, the Coastal Management Element should include reference to this regulation, to provide guidance for the county engineer, and to serve as notice for proposed development in hazardous coastal areas.

5. Infrastructure

a. As a Means of Control

3.2.

BREVARD COUNTY, FLORIDA, Coastal Setback Ordinance, No. 85-17 (June 10, 1985). The ordinance requires the minimization of any expected adverse impact on the Beach and Dune System (BDS) for adjacent properties, and also sets the design wind velocity at a minimum of 140 miles per hour, for habitable major structures at a height of 30 feet above the average surrounding ground level. *Id.* § 10.

Flagler County, Florida, Land Development Code § 4.04.10 C.

Id. § 4.04.10B.

Florida's concurrency requirement can serve as part of the County's mitigative strategy. By withholding infrastructure from hazardous areas, the County can exercise more control over the capacity for development, consistent with the general principles of coastal management. This strategy is also effective for controlling redevelopment efforts after hurricane strikes. The County's Capital Improvement Element should address coastal management issues more directly, by establishing design standards and service capacity limits on proposed capital improvements in hazardous areas. One technique is to create a special use district that imposes user and impact fees to compensate for higher than normal capital costs associated with development in hazardous coastal areas. The County should create such a special use district only after first clearly articulating the findings and factual basis documenting that capital costs are, in fact, higher in hazardous coastal areas.

See FLA. STAT. chs. 163.3180(2)(a)-(c) (1995).

See e.g., TREASURE COAST REGIONAL PLANNING COUNCIL, HURRICANE CONTINGENCY PLANNING STUDY, 95 (May 1987); EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL, HURRICANE CONTINGENCY AND MITIGATION STUDY, 7-4 (September, 1987); DIVISION OF COASTAL RESOURCES, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, COASTAL STORM HAZARD MITIGATION: ATLANTIC COUNTY BARRIER ISLANDS AND OCEAN CITY, NEW JERSEY 55 (1985); David R. Godschalk, and David J. Brower, *Mitigation Strategies and Integrated Emergency Management*, PUBLIC ADMINISTRATION REVIEW 64, 66 (1985).

TREASURE COAST REGIONAL PLANNING COUNCIL, HURRICANE CONTINGENCY PLANNING STUDY 95 (May 1987).

David R. Godschalk, and David J. Brower, *Mitigation Strategies and Integrated Emergency Management*, PUBLIC ADMINISTRATION REVIEW 64, 66 (1985).

JACK SALMON AND DON HENNINGSSEN, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF WEST FLORIDA, PRIOR PLANNING FOR POST-HURRICANE RECONSTRUCTION 88 (November, 1986).

Policy 2.2.06 of the Coastal Management Element, which prohibits County-funded public facilities in the CHHA, reflects this approach. The policy reflects the state's coastal infrastructure policy that bans the use of state funds to build facilities in the CHHA, unless consistent with the local comprehensive plan. One potential weakness corresponds to the projected increase in growth for the coastal area by the end of the year 2000 planning period. The ability to address this weakness is limited, however, as most of these areas refer to facilities associated with approved DRI development agreements. One approach is to develop policies which restrict new infrastructure and build-back of previously existing infrastructure after a catastrophic storm in all at-risk areas.

Although the absence of facilities can serve to limit development, the presence of infrastructure should not serve as a justification to encourage growth. Nor should inappropriate development in the coastal area require the establishment of inappropriate public facilities and infrastructure. The Sanitary Sewer, Drainage, Potable Water, Natural Groundwater Aquifer Recharge and Solid Waste Element (Sewer and Water Element) states that the availability of central potable water and sanitary sewer services help explain the growth in the coastal area. The

See FLA. STAT. ch. 380.27 (1995).

Goal 4 of the Coastal Management Element states that "[p]ublic facilities shall be adequate and available to serve the residents and visitors to the county's coastal area." This language weakens the potential role infrastructure can play in controlling growth. Language stating that development shall not exceed the capacity of existing public facilities is more consistent with the general principles of coastal management.

Flagler County, Florida, Comprehensive Plan, Sanitary Sewer, Drainage, Potable Water, Natural Groundwater Aquifer Recharge and Solid Waste Element 8 (rev. Mar. 1992) [hereinafter Sewer and Water Element].

areas served by centralized sanitary sewer systems are almost entirely within the Coastal Area. In addition, the Future Land Use Element states that the presence of questionable soil associations for use with septic tanks is a justification for limiting residential density, absent a central sanitary sewer system. This statement should be qualified to include exceptions such as the Coastal Area. Existing or planned central sanitary sewer service should not be used to justify concentrating ill-advised development in coastal hazardous locations.

The Sewer and Water Element states that centralized utility services are intended to serve as a growth management tool by limiting central utility systems to areas within the designated Planned Urban Service Area (PUSA). However, the PUSA is located almost entirely within the Coastal Area, thus this growth management tool is inconsistent with the general principles, which require a more critical evaluation of proposed development in this area.

b. Capital Improvements

To further effectuate the general principles of coastal management, the capital improvement review process should include provisions that sufficiently address issues relating to hurricane mitigation and post-disaster development practices. Provisions in the Capital Improvements Element calling for the minimization of the amount of time needed for the implementation of capital improvements by streamlining and coordinating the internal review process may conflict with efforts to restrict capital improvements in hazardous areas after storm

Sewer and Water Element, map 4.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 63 (Feb. 1994).

Sewer and Water Element, policy 1.8.1.

events. Though streamlining the process may provide administrative benefits, it should include careful review of capital improvements in the context of hazard mitigation and redevelopment policies.

The Capital Improvement Element states that continued public investment in the infrastructure in the Coastal Area is supportive of sound land use practices. While this may be true for portions of the Coastal Area, it is not true for hazardous and environmentally sensitive coastal areas. The element also states that adequate land acreage exists in this area to accommodate the projected growth. The County should promote the reuse and rehabilitation of capital improvement projects over the construction of new projects, and discourage capital improvements in the hazardous and environmentally sensitive coastal areas. The Capital Improvement Coordinating Team should address coastal management issues in its evaluation and ranking of proposed capital improvements.

c. Clarity of Standards and Criteria

Flagler County, Florida, Comprehensive Plan, Capital Improvements Element, policy 1.1.4 (Aug. 1993).

Flagler County, Florida, Comprehensive Plan, Capital Improvements Element 34 (Aug. 1993).

Id.

Policy 1.1.3 of the Capital Improvements Element promotes reuse and rehabilitation over new construction where financially feasible. Flagler County, Florida, Comprehensive Plan, Capital Improvements Element, policy 1.1.3 (Aug. 1993).

Policy 1.1.10 of the Capital Improvements Element lists criteria for ranking proposed improvements. Flagler County, Florida, Comprehensive Plan, Capital Improvements Element, policy 1.1.10 (Aug. 1993). This policy should be amended to include consideration of coastal issues, including the appropriateness of capital improvements in hazardous and environmentally sensitive areas.

The Coastal Management Element deals with hazard mitigation and the CHHA. Specifically, the element states that general hazard mitigation to reduce the exposure of human life and property to natural hazards shall be addressed through implementation of the land development regulations and the DRI review process. The County should provide greater detail in the Coastal Management Element in order to effectively implement its hurricane mitigation strategy. For example, the element encourages relocation of infrastructure that is threatened or damaged out of the coastal high-hazard zone. By including criteria to assist in the determination of "threatened and/or damaged," the County can provide guidance for property owners and County officials in the enforcement of this provision.

For example, Brevard County requires that public structures within the coastal area be analyzed to determine those that are most likely to be damaged or destroyed during a hurricane. The plan provides a minimum set of criteria to consider which includes:

- A. The cost effectiveness of relocation versus repair shall be analyzed.
- B. Alternatives shall be considered in the light of mitigative impacts, growth management consistency, impacts to the public, timeliness, legal issues, environmental impacts and cost.

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, objective 2.2 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 2.207 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 2.3.01 (rev. Mar. 1992). The term "coastal high-hazard zone" in Policy 2.3.01 should be amended to read "coastal high-hazard area" or the coastal high-hazard zone should be defined, if it is intended to represent something different from the CHHA.

Brevard County, Florida, Comprehensive Plan, Coastal Management Element, policy 10.6.

- C. The following alternatives, at a minimum, shall be analyzed:
 - 1. Repair of the structure to the pre-disaster conditions.
 - 2. Repair of the structure to the pre-disaster conditions with physical protective structures, such as seawalls or revetments.
 - 3. Vertical relocation of the structure, e.g. elevating roadways with bridges.
 - 4. Relocation further inland.
- D. Reconstruction or relocation of SR A1A and other roadway segments within the coastal high hazard area shall be included within this study.
- E. Analysis of County service center and other facilities shall be in conjunction with the County's Space/Needs Assessment.
- F. Those structures within the high risk vulnerability zone to be included are the Central Brevard Service Complex, Central Brevard Administration, Venetian Way complex, District II Road and Bridge, County Sign Shop, District II Commission Office, Southern Bell Building, public libraries, and County fire stations.
- G. The study shall be consistent with the East Central Florida Regional Planning Council studies. The hurricane scenarios and loss estimates shall be consistent with the Hurricane Loss Study, and shall be coordinated with other appropriate agencies.
- H. The impact of sea level rise and the projected 30-year erosion line shall also [be] analyzed.

6. Evacuation Plan

The Traffic Circulation Element, while not specifically addressing evacuation concerns, provides the foundation for an effective County Evacuation Plan. For example, Policy 2.3.2 requires the protection of the traffic carrying capacity of arterial roadways by restricting the number of driveway and median cuts. In addition, the element includes transportation system

Id.

management improvements which address impediments to the flow of traffic. Flagler County staff indicate that population increases and future build-out of existing developments may cause the level of service (LOS) in certain coastal high hazard areas to drop to LOS standards E and F, including critical evacuation routes such as the Palm Coast Parkway. Where possible, the County should address evacuation system concerns in this element.

The Coastal Management Element also addresses evacuation by including safeguards which prohibit new development that increases evacuation times, and requiring all road improvements along the evacuation routes to provide remedies for flooding problems. The County should continue efforts to educate the public and raise awareness of the importance of the County's Evacuation Plan and of compliance with that plan.

The existing transportation system should be analyzed for deficiencies regarding capacity and level of service (LOS) standards. An obvious deficiency involves the inability of several critical bridges to support evacuation traffic once wind speeds exceed 45 miles per hour at ground level. Accordingly, officials should initiate evacuation at an earlier point in time than might

Flagler County, Florida, Comprehensive Plan, Traffic Circulation Element, objectives 2.2, 2.4, and policy 2.4.1 (rev. Mar. 1992). The improvements include additional lanes, turn lanes, and signal modifications to maximize system capacity. *Id.*

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 2.1.01 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 2.1.02 (rev. Mar. 1992).

For example, the Coastal Management Element states that use of the Hammock Dunes Bridge is not recommended if wind speeds exceed 45 mph at ground level. Flagler County, Florida, Comprehensive Plan, Coastal Management Element 76 (rev. Mar. 1992). The Element should be amended to expressly prohibit use of these bridges when ground wind speeds exceed 45 mph.

otherwise be warranted. This situation could result in an increase in unnecessary evacuations or reluctance to order evaluations, because officials must predict the likelihood of storm strikes when storms are located quite far from the County.

The LOS standards set forth in the Traffic Circulation Element should consider existing deficiencies in the evacuation system. For example, the element lists State Road 100 (from US 1 east to A1A), State Road A1A (from the St. Johns County Line to the Volusia County Line), and the Palm Coast Parkway (from A1A to Belle Terre Parkway), as having LOS D. This standard is defined in the Traffic Circulation Element as:

Level of Service D represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

Roadways with this LOS standard are not advisable for use during evacuation. The Traffic Circulation Element should reference these deficiencies not only as a response to system demands, but also as they relate directly to the impact on evacuation times.

Flagler County's coastal area includes several large residential projects which are not yet built out. The County should project the effect of future build-out of committed projects on hurricane evacuation capability. The County should consider these projections when determining

Flagler County, Florida, Comprehensive Plan, Traffic Circulation Element, policy 1.1.1 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Traffic Circulation Element, policy 1.1.2 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Traffic Circulation Element 1-16 (rev. Mar. 1992).

whether existing roads are adequate to service additional development, and limit future development when projections show safe evacuation will be jeopardized.

B. NATURAL SYSTEMS PROTECTION

Intact natural systems in the coastal area help protect life and property from the harmful effects of hurricanes and other storms. Intact natural systems also provide economic, aesthetic, and recreational value, and provide habitat for wildlife. Florida law acknowledges these functions, and requires that local governments protect natural systems in the coastal area through comprehensive planning and land development regulation.

The Growth Management Act includes several mandatory elements which relate to protection of coastal natural systems. Of the seven required elements, the coastal management, conservation, recreation and open space, future land use, and intergovernmental coordination elements are most important for protection of natural systems. The County's land acquisition program is also an important component of its overall efforts to protect natural systems. In order to assess how well Flagler County protects coastal natural areas, it is necessary to examine these elements and their implementing regulations.

The following analysis first examines selected provisions of Flagler County's Comprehensive Plan and land development regulations which apply throughout the coastal area.

See supra section IIB of this report, discussing the mitigating effects of natural systems on the adverse impacts of storms.

Id.

Id.

See supra note 11 and accompanying text.

The analysis then shifts to specific natural systems in the coastal area, including 1) beach and dune systems, 2) wetlands, 3) floodplains, and 4) other environmentally sensitive areas, including the coastal strand. The overall goal of this analysis is to evaluate the extent to which Flagler County's comprehensive plan and land development regulations consider and protect these natural systems.

1. General

The first goal of the coastal management element requires that Flagler County preserve, protect, or enhance the natural resources of the coastal area as development occurs. The County's plan and code include several provisions which relate to this goal, but which should be further utilized or strengthened.

a. Native Vegetation

One technique employed by the County is to require that developments containing native vegetation must preserve at least ten percent of this vegetation. Developments which cannot preserve at least ten percent of native vegetation must submit a mitigation plan. Mitigation may take the form of habitat creation, restoration, or purchase for the purpose of preservation.

Mitigation must involve similar habitat and be performed in the coastal area.

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, goal 1 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, objective 1.1 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.1.04 (rev. Mar. 1992).

Arguably, the ten percent rule applies to developments which impact the beach and dune system (BDS) and the coastal strand. There does not appear to be adequate guidance in the Comprehensive Plan or land development regulations regarding what portion of a site to preserve. For example, if a site is covered primarily by native vegetation, how does the County decide which portion of the site to preserve? There is also the question of whether protecting ten percent of native vegetation is enough to protect native vegetative communities, particularly "highly endangered" communities such as the coastal strand. Since larger preserved areas typically provide greater mitigative and habitat functions, does the County consider the relationship and potential linkages between preserved vegetation on one site and natural areas on other sites? It is not evident from the Comprehensive Plan or Land Development Code whether the County considers these factors and what criteria guide their decisions. The County should develop criteria and standards to guide application of the ten percent rule, and consider more stringent restrictions on clearing of native vegetation in environmentally sensitive and coastal high hazard areas where vegetation plays a key role in maintaining the integrity of natural defenses. The County should clearly articulate the factual basis for new criteria and standards.

The Flagler County Coastal Management Element describes the coastal barrier as being composed of two vegetative communities: the dunes and the coastal strand. The dunes are vegetated (crest and backslope) by salt tolerant plants such as sea oats, beach croton, gaillardia, beach sunflower, verbena, prickly pear cactus, and silk grass. The coastal strand is a transitional area located landward of the dunes, and includes saw palmetto, pepper vine, muscadine grape, catbrier, wild olive, yaupon, bracken fern, myrtle oak, sand live oak, prickly pear cactus, and hercules club. Flagler County, Florida, Comprehensive Plan, Coastal Management Element 4 (rev. Mar. 1992). Like the dunes, the coastal strand provides important storm hazard mitigation functions. Flagler County, Florida, Comprehensive Plan, Conservation Element 35 (rev. Mar. 1992).

See infra text accompanying notes 202-203, discussing the endangered status of the coastal strand.

The County's Land Development Code contains provisions restricting cutting of trees. However, these provisions do not provide ecological communities with significant protection, because they apply primarily to trees greater than six inches in diameter. Many mature coastal trees do not reach a diameter of six inches. Nor do the provisions protect the understory and ground cover which are critical components of any given ecological community. Similarly, the Code's landscaping standards do not protect natural ecological communities. The standards focus primarily on creating an aesthetically pleasing landscape which buffers noise and visual nuisances, rather than conserving or reproducing a functioning ecological community.

b. Recreation and Open Space and Land Acquisition

Designation of recreation and open space lands is another technique to conserve the natural resources of the coastal area. The Recreation and Open Space Element recognizes that thousands of acres of natural open space are provided by lakes, forests, agricultural lands, wetlands, beaches and state parks or preserves. Open space is defined as undeveloped land suitable for passive recreation and conservation uses. Passive recreation activities may include

Flagler County, Florida, Land Development Code § 6.01.00.

Id. § 6.01.01A. Appendix C of Flagler County's Future Land Use Element requires additional protection of trees greater than ten inches diameter in several specific upland hardwood hammocks that were the subject of future land use map amendments in 1991. Flagler County, Florida, Comprehensive Plan, Future Land Use Element 132 (Feb. 1994).

See Flagler County, Florida, Land Development Code § 5.01.01.

Flagler County, Florida, Comprehensive Plan, Recreation and Open Space Element 1 (Feb. 1994).

Id. at 10.

activities such as nature walks, birding, or a day at the beach. Many of the recreational opportunities are centered around the East Area beaches, the lakes in the Western Area and the state parks, aquatic preserves and Relay Wildlife Management Area.

The County recognizes the need to plan for the acquisition and development of new recreational sites and facilities, in order to provide necessary recreational opportunities and to keep pace with demands generated by recent growth. Recreational sites are classified as resource-based or activity-based. Resource-based site facilities are often centered around natural resources, and provide opportunities such as picnicking, hiking, hunting, water sports, fishing, or enjoying nature. Activity based recreational sites and facilities are developed for the enjoyment of particular activities such as softball, basketball, or recreation programs such as aerobics and many spectator sports.

The element recognizes that open space areas and planned greenways in the midst of developed urban settings help define urban form and are a basic element to good land use patterns. The County recognizes that as pressure from development activity increases, the need to set aside open space increases, to maintain an attractive low-density setting. Certain areas are

Id. at 2.

Flagler County, Florida, Comprehensive Plan, Recreation and Open Space Element 1 (Feb. 1994).

Id. at 2.

Id.

Flagler County, Florida, Comprehensive Plan, Recreation and Open Space Element 26 (Feb. 1994).

Id.

identified as candidates to become part of the open space network because they can fulfill potentially important open space functions. Many of Flagler County's recreation and open space sites are located in the Coastal Area. The County recognizes that acquisition of scenic easements is an effective method of guaranteeing that the land will not be developed to full intensity, thereby preserving open space. The County should consider referring to these easements as "conservation," rather than "scenic," because "scenic" implies the easements are solely for aesthetic purposes, while "conservation" is a broader term implying multiple purposes. Regardless of the term used, the County should develop and clearly articulate the factual basis and rationale for the easements.

Land acquisition for conservation purposes is another technique which the County uses to preserve natural systems. The Coastal Management Element lists the following coastal lands for acquisition, in order of descending priority: 1) marine wetlands, 2) coastal barrier property containing numerous vegetative communities and shoreline, 3) shoreline locations with limited habitat diversity, 4) coastal hammocks, and 5) any other native vegetative community. The County should consider elevating the rank of coastal barrier property, including the endangered coastal strand. Marine wetlands are currently ranked number one for acquisition, despite being fairly well protected under state and federal law. Although barrier uplands are likely to cost considerably more than coastal wetlands, their endangered status makes them more appropriate

Flagler County, Florida, Comprehensive Plan, Recreation and Open Space Element 41-42 (Feb. 1994).

Id. at 45.

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.1.07 (rev. Mar. 1992).

for acquisition. Further, acquisition of lands that are within Coastal High Hazard Areas would serve the dual function of protecting environmentally sensitive lands and protecting citizens from building in dangerous locations. The County should investigate state and federal hurricane mitigation acquisition programs which provide funds to purchase hazardous coastal areas. The use of County funds as match might improve the likelihood of obtaining state or federal funds.

c. Water Dependent Uses

The Coastal Management Element provides that water-dependent uses be given priority over other shoreline uses. The element prioritizes water-dependent uses for marine commercial areas, in order of descending priority, as follows: 1) public use marinas and other water oriented recreation; 2) low density residential with marinas; 3) aquaculture; 4) commercial fishing; 5) water-dependent industries or utilities; and 6) high density residential with marinas.

The linking of residential uses to marinas in priorities 2 and 6 is inconsistent with common definitions of water-dependent uses. Residential uses are not typically considered to be water-dependent. This provision encourages non-water-dependent uses in potentially hazardous and environmentally sensitive shoreline locations. Flagler County staff indicate that "low density with

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policies 1.8.01, 1.8.02 (rev. Mar. 1992).

See, e.g., federal regulations implementing the dredge and fill provisions of the Clean Water Act, defining an activity that is not water-dependent as one that "does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose." 40 C.F.R. § 230.10(a)(3).

See Deltona Corp. v. Alexander, upholding denial of a U.S. Army Corps of Engineers dredge and fill permit for a residential community on Marco Island in Southwest Florida because the basic purpose was to provide housing, which could be provided on upland sites as an alternative to dredging and filling valuable aquatic resources. 682 F.2d 888 (11th Cir. 1982).

marinas" typically involves docks associated with single-family housing, rather than marinas. Nonetheless, Flagler County should consider amending its comprehensive plan to remove residential uses from its prioritization scheme for water-dependent uses. At a minimum, the County should eliminate "high density residential with marinas" as an acceptable water-dependent use.

The Coastal Management Element also provides that shoreline uses outside of marine commercial areas shall be either recreation, conservation, or residential. The element does not establish any relative priority for these uses. The County should consider characterizing residential uses as the least desirable use for hazardous or environmentally sensitive shorelines.

d. Cumulative Impacts

The Coastal Management Element states that the County will limit the specific and cumulative impacts of development on water quality, living marine resources, and beach and dunes systems through its land development regulations and the Development of Regional Impact (DRI) process. Consideration of cumulative impacts is essential if the County is going to conserve its natural resources. Fragmentation and piecemeal destruction of natural systems reduces their overall integrity and habitat value. The Conservation Element recognizes this threat in its discussion of the endangered coastal strand:

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.8.03 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.1.09 (rev. Mar. 1992).

A major concern is the pressure imparted by development. Many new residences, hotels, motels and so forth are continuously chipping away at this ecological community.

After reviewing the County's Comprehensive Plan and Land Development Code, it is not clear how the County assesses the cumulative effects of development on natural resources. Neither the Plan or the Code provide criteria or a procedure for determining cumulative impacts. The County should develop and implement a program to assess cumulative impacts and to integrate their consideration into the permit review process. The element also states that the County needs a more comprehensive inventory of ecological communities to ensure they are not accidentally or needlessly destroyed.

Assessing cumulative impacts is a difficult task for regulators. Many state and federal agencies have done a poor job of assessing cumulative impacts, although this assessment is often required by authorizing statutes. An essential first step is to conduct a comprehensive inventory of ecological communities and wildlife. The County should consider seeking funding to support development of a model cumulative impacts assessment program.

e. Wildlife

Although conservation of wildlife may not be directly related to maintaining natural coastal defenses, wildlife conservation is explicitly required by Florida's Growth Management Act. Further, the same plant communities and topographic features that physically mitigate storm

Flagler County, Florida, Comprehensive Plan, Conservation Element 35 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Conservation Element 36 (rev. Mar. 1992).

See FLA. STAT. chs. 163.3177(6)(g), 163.3178 (1995).

forces also provide essential habitat for wildlife. Thus, protection of coastal wetlands, floodplains, BDS, and coastal strand contributes to conservation of both plant and animal biodiversity.

The Coastal Management Element goes into great detail concerning the terrestrial and aquatic wildlife found in the coastal area. The element identifies loss of habitat as a leading cause of species becoming threatened or endangered. Florida's Growth Management Act requires local governments to conserve all species of wildlife and marine life, not just those that are listed as threatened, endangered, or of special concern. Accordingly, the County's wildlife conservation strategy should focus on preserving adequate amounts of all ecological communities. The County's efforts to protect ecological communities are discussed throughout this report, and are thus not addressed here.

The Coastal Management Element states that the County shall adopt land development regulations to protect sea turtle nests from disturbance, to restrict beach cleaning activities in nesting seasons, and to control the emission of light from structures on or adjacent to the beach. The Land Development Code prohibits any person from disturbing turtles, their nests, and their eggs, but does not include provisions to restrict light emissions.

f. Innovative Mechanisms

Flagler County, Florida, Comprehensive Plan, Coastal Management Element 4-12 (rev. Mar. 1992).

Id. at 6.

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.3.01 (rev. Mar. 1992).

Flagler County, Florida, Land Development Code § 6.05.00.

Preservation of natural resources on private lands often requires the use of innovative regulatory and land use techniques. Local government concerns over potential Fifth Amendment takings challenges are not unfounded. Further, the state of Florida's recent adoption of property rights protection legislation may provide landowners with additional means to challenge local government regulations. Despite these legitimate concerns, there are a number of approaches which can lessen the likelihood of successful takings challenges and facilitate protection of valuable coastal natural resources.

Flagler County's Comprehensive plan recognizes the value of innovative land use mechanisms. The Coastal Management Element states that the County shall use selected application of a variety of mechanisms to balance growth and coastal resources, including:

See, e.g., Reahard v. Lee County, 30 F.3d 1412 (11th Cir. 1994) (overturning a federal district court finding that county land use category of "Resource Protection Area" amounted to a taking of private land owner's property, on basis that case was not ripe for federal court jurisdiction because property owner had not exhausted available state remedies). Even areas which have been traditionally regulated, such as wetlands, are receiving heightened judicial scrutiny. *See* Vatalaro v. Department of Environmental Regulation, 601 So.2d 1223 (Fla. 5th Dist. Ct. App. 1992) (holding that DEP denial of a permit for a residence and septic tank within a wetland was a taking requiring just compensation). *But see,* Glisson v. Alachua County, 558 So.2d 1030 (Fla. 1st Dist. Ct. App. 1990) (holding that county land use regulations requiring protection of wetlands did not amount to a 5th amendment taking); Florida Game and Fresh Water Fish Commission v. Flotilla, 636 So.2d 761 (Fla. 2nd D.C.A. 1994) (holding that Florida Game and Fresh Water Fish Commission restriction on development of 48 acres of 173-acre parcel to protect bald eagle nesting sites did not deprive developer of most or all of its interests in the property). A detailed analysis of takings law will be included in the third report of this project.

In 1995, the Florida Legislature adopted legislation to protect private property rights. 1995 Fla. Laws Ch. 95-181. The law creates a new cause of action to compensate landowners when governmental actions impose an "inordinate burden" upon the landowner's property which does not rise to the level of a taking under state or federal constitutions. *See* David L. Powell, et al., *Florida's New Law to Protect Private Property Rights*, FLA. B. J. 12 (Oct., 1995). *See, generally,* Ronald L. Weaver & Mark D. Solov, *Emerging Property Rights Protection*, FLA. BAR J. (June, 1994); Patrick R. Scott, *State and Local Regulations: Are We Being Taken?*, FLA. BAR

Buffer zones, restoration, limiting density and land use intensity, conservation easements, acquisition, density transfers, transfers of development rights, purchase of development rights or land exchanges.

Similarly, the Conservation Element requires the County to adopt land development regulations which provide for clustering, discourage fragmentation, and require buffering to protect ecological communities, including the BDS and the coastal strand. Further, the Future Land Use Element requires that the County evaluate and monitor new innovations for the protection of environmentally sensitive areas and prepare a biennial report, beginning in 1993, on the effectiveness of implementing those innovations in Flagler County.

Despite its endorsement of innovative land use mechanisms, the County has not incorporated many of these mechanisms into its Land Development Code. In its Future Land Use Element, the County acknowledges that it does not have adequate land development regulations to protect environmentally sensitive lands. The element states:

J. (Nov., 1993).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.1.08 (rev. Mar. 1992).

See infra, notes 204-205 and accompanying text.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element, objective 2b, policy 2b.1, objective 3 (rev. Feb. 1994).

The Future Land Use Element does require the County to make specific findings regarding the impact of proposed comprehensive plan amendments or proposed development on the topography, vegetation, wildlife habitat, flood hazard, the 100-year floodplain and soils. Flagler County, Florida, Comprehensive Plan, Future Land Use Element, policies 3a.1, 3a.2 (rev. Feb. 1994).

Flagler County does not have adopted land development regulations to ensure protection of ... sensitive ecological communities.... [S]ensitive ecological communities should be protected and buffered from the negative impacts of development.

Flagler County should consider placing high priority on protecting coastal areas because they contain unique environmentally sensitive lands that are subject to substantial development pressure. As part of this effort, the County should incorporate more innovative mechanisms into its planning and development review process. The general language contained in the comprehensive plan has little positive effect if it is not implemented through land development regulations.

2. Beach and Dune Systems

The County presently relies almost exclusively on the Department of Environmental Protection (DEP) to regulate development seaward of the CCCL. This includes most of the BDS within Flagler County, at least that portion "which is subject to severe fluctuations based on a

Flagler County, Florida, Comprehensive Plan, Future Land Use Element, 86 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.6.01 (rev. Mar. 1992). DEP regulates development seaward of a state delineated Coastal Construction Control Line (CCCL), which generally includes the area of severe impact of the 100-year storm event. FLA. STAT. ch. 161.053 (1995). The purpose of the program is to regulate development within the CCCL to reduce structural damage and beach erosion within that zone. The program prohibits most development seaward of the 30-year seasonal high-water line. FLA. STAT. ch. 161.053(6)(b) (1995). Development seaward of the CCCL must be designed and sited to protect beaches and dunes from damage, to prevent accelerated beach erosion to adjacent properties, and to enhance the survivability of permitted structures under severe storm conditions. *See generally*, Florida Department of Community Affairs, *A Coastal Barriers Resource Manual: Federal and State Program Highlights* 22-29 (1986).

100-year storm surge, storm waves, or other predictable weather conditions." More static portions of the BDS may extend landward of the CCCL.

Although the County relies on DEP to regulate portions of the BDS seaward of the CCCL, the coastal management element includes several provisions relating to protection of the BDS. The Coastal Management Element states that "[e]fforts will be made to maintain the natural integrity" of the shoreline by continuing to enforce Flagler County ordinances pertaining to construction seaward of the Coastal Construction Control Line." Presumably, this includes the Flagler County Coquina Rock Protection Ordinance and the Coastal Building Code.

The Coastal Building Code applies to the land area between the seasonal high-water line landward to a point 1500 feet landward of the CCCL. The Coastal Building Code contains general language stating that its purpose is to "address design features which affect the structural stability of the beach, dunes, and topography of adjacent properties." Despite this language, it is not clear to what extent the Code protects the structural stability and topography of the dunes and adjacent lands, such as the coastal strand. The Code's standards for habitable major structures

FLA. STAT. § 161.053(1)(a) (1995).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, objective 1.6 (rev. Mar. 1992).

See Flagler County, Florida, Comprehensive Plan, Coastal Management Element 61 (rev. Mar. 1992) (stating that the County protects beaches and dunes primarily through two ordinances, the coastal building code and the coquina rock protection ordinance).

Flagler County, Florida, Ordinance No. 86-16 § XXO3.1.5(a) (1986).

Flagler County, Florida, Ordinance No. 86-16 § XXO1.1 (1986).

focus solely on structural requirements and do not address factors such as location, clearing, excavation, grading, or paving.

The Coastal Management Element also prohibits construction of groins or other structures which interfere with the littoral movement of submerged sand. The County has only one site with an erosion control structure in place. The Florida Department of Transportation put 1500 feet of rocks in place in response to the Thanksgiving Day Storm of 1984. The rocks function as a simplified revetment, put in place to protect State Road A1A. The county-wide impacts of this structure have not been analyzed. The County does not own or maintain any coastal or shore protection structures at this time. The element also requires that areas with less than 100 feet between the CCCL and State Road A1A be zoned either low density residential or conservation, unless the area is included in a Development of Regional Impact (DRI).

The Coastal Management Element requires that the County adopt a dune management strategy program by 1993, to prohibit excavation and destruction of native vegetation and other activities that interfere with the normal transport of dune sediments. In the interim, dune systems

The Code does address location and impact to dune stability of nonhabitable major structures. Flagler County, Florida, Ordinance No. 86-16 § XXO4.6 (1986).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.6.01 (rev. Mar. 1992).

Flagler County, Coastal Management Element, p. 60.

Id. at 76.

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.6.02 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.5.02 (rev. Mar. 1992).

are to be protected, preserved, or restored through the requirements of the Coastal Construction Control Line (CCCL), approved DRI's, and Site Plan Review. The County has not yet adopted a dune management program, despite the 1993 deadline.

The Coastal Management Element also addresses beach renourishment. Flagler County's coastline is currently in a dominant erosion period, where erosion exceeds accretion. The element requires that the County "aim to equal or exceed the current acreage of beaches and dunes by the year 2000," through beach renourishment projects and a dune management program. Despite this objective, the County has no beach renourishment projects and has not yet adopted a dune management program. However, Beverly Beach and Flagler Beach, both located within Flagler County, have beach renourishment projects.

The Future Land Use Element projects that privately owned coastal beachfront areas will be developed in the near future. The element states that the County protects the BDS by

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.5.02 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element 59 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, policy 1.5 (rev. Mar. 1992).

A U.S. Army Corps of Engineers Reconnaissance Report of Flagler County's coastline recommended that beach renourishment studies be terminated due lack of economic justification for expanded feasibility studies. Flagler County, Florida, Comprehensive Plan, Coastal Management Element 60 (rev. Mar. 1992).

See supra notes 151-152 and accompanying text.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 68 (rev. Feb. 1994).

cooperating with the state CCCL program, and by applying strict conservation measures during the Development of Regional Impact (DRI) review process.

The Future Land Use Map designates much of the coastal shoreline area as mixed use, including low intensity commercial and low and medium density residential. These designations allow housing densities up to 7 dwelling units per acre. The Future Land Use Element describes conservation as an appropriate use for beaches and shorelines, yet the Future Land Use Map does not designate any beach and shoreline conservation areas.

Commercial and medium density residential uses are not appropriate in hazardous and environmentally sensitive coastal locations. The County should strengthen its efforts to protect the BDS and coastal strand by adopting standards to limit destruction of natural vegetation and topography, reducing residential densities, encouraging transfers of housing density out of these areas, and targeting these lands for acquisition.

3. Wetlands

The County recognizes that wetlands are fragile ecological communities dependent upon a particular hydrologic regime to supply the water necessary to support the particular plants and animals which inhabit wetlands. In addition, the County recognizes that wetlands serve critical flood control functions, including: serving as natural water retention systems; regulating the flow

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 69 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 117-118 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 121 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 40 (rev. Feb. 1994).

of water; protecting otherwise dry uplands from inundation; and providing the main habitat for many species in the food chain. The County also recognizes that when an area is flooded, wetlands accept the excess water, and when an area is particularly dry, wetlands keep the surrounding area from becoming parched.

Development has encroached into the County's wetlands, particularly along the banks of the Intracoastal Waterway. The most significant encroachment occurred when the saltwater canals of the Palm Coast community were dredged in the early 1970s, which resulted in the north portion of Graham Swamp and some marsh areas being eliminated.

The County requires compliance with all relevant state and federal regulations before issuing a County permit. The element recommends that the County develop coordinated and consistent land development regulations to protect wetlands, and prepare and execute an interlocal agreement to resolve conflicts among permitting agencies. The Florida Department of Environmental Protection (DEP) and the St. Johns River Water Management District are responsible for administering statutes and rules related to surface and groundwater water quality and wetlands protection, as well as regulating dredge and fill in marine coastal and wetland areas.

Id. at 41.

Id.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 41 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Intergovernmental Coordination Element 15 (rev. Mar. 1992).

Id.

These efforts are coordinated with the County Engineer, Road and Bridge Department, and County Planning Offices.

The Future Land Use Element directs the County to adopt land development regulations to ensure protection of viable wetlands. The County had adopted wetlands protection provisions in its Land Development Code. The Code prohibits all non-exempt "uses and activities involving structures, grading, filling, dredging, vegetation removal, and disturbance of wetland water supply and flora and fauna." The Code also forbids a net loss of wetlands in the County. Significant exemptions include manual clearing with motorized hand tools of up to 10 percent of a wetland, silvicultural operations that comply with state best management practices, agricultural operations, and activities impacting wetlands less than one-half acre in size.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 85-86 (rev. Feb. 1994).

Flagler County, Florida, Land Development Code § 6.02.04.

Id.

The exemption of wetlands less than 0.5 acres in size corresponds with wetlands regulations of the St. Johns River Water Management District. *See, e.g.,* St. Johns River Water Management District Applicants Handbook: Management and Storage of Surface Waters § 12.2.2.1, *incorporated by reference* in FLA. ADMIN. CODE ANN. r. 40C-4.091 (1994) (exempting wetlands less than 0.5 acres in size from permitting requirements, unless the wetland is used by threatened or endangered species or is determined by the district to be of more than minimal value to fish and wildlife). This exemption is authorized by statute. *See* FLA. STAT. § 373.414(2) (1993). However, certain species of amphibians, including the southern chorus frog and the eastern spadefoot toad are dependent upon small ephemeral wetlands for their existence. Joseph M. Schaefer, *Wildlife Resources of the Econlockhatchee River Basin*, 1 ECONLOCKHATCHEE RIVER BASIN NATURAL RESOURCES AND DEVELOPMENT AND PROTECTION PLAN 3-25 (final report to the St. Johns River Water Management District, Palatka, Fla., 1990). *See also*, Robin Hart & James R. Newman, *The Importance of Isolated Wetlands to Fish and Wildlife in Florida* 22 (Florida Game and Fresh Water Fish Commission Nongame Wildlife Program report no. NG88-102 (Nov., 1990). Permitting programs which exempt wetlands less than 0.5 acres in size may fail to consider or protect the habitat needs of these species.

The Code requires that wetland alterations must be mitigated. The Code prioritizes mitigation methods as follows: 1) avoid impacts, 2) minimize impacts, 3) rectify the impact by repairing, rehabilitating, or restoring the affected environment, 4) reduce or eliminate impact over time by preservation and maintenance operations, and 5) compensate for the impact by replacing or providing substitute resources through wetlands creation, enhancement, or re-establishment. The Code requires that applicants provide a conservation easement over mitigated wetlands. Wetlands mitigation should be of the same type as the destroyed wetland, where practicable.

4. Floodplains

The County recognizes that its major causes of flooding are storm surge generated in the Atlantic Ocean and heavy rainfall from tropical disturbances. Floodplains are important because they provide overflow for flood waters, thereby protecting life and economic value of nearby uplands. Floodplains are also important because they provide a rich diversity of vegetation and wildlife and facilitate groundwater recharge during high water levels.

The Future Land Use Element recognizes several problems caused by development in flood prone areas. These include: the risk of loss of life; potential damage to property; increase in development costs; degradation of the environment; and the absence of services and facilities.

Flagler County, Florida, Land Development Code § 6.02.09B.

Flagler County, Florida, Land Development Code § 6.02.09F.

Id. at 6.02.09C(1).

Flagler County, Florida, Comprehensive Plan, Conservation Element 10 (rev. Mar. 1992); Future Land Use Element 42 (rev. Feb. 1994).

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 81 (rev. Feb. 1994).

The element attributes a reduction of inappropriate floodplain development to implementation of Flagler County's Flood Damage Preservation Ordinance (85-10), rules of the St. Johns Water Management District, and the Federal Emergency Management Agency Flood Insurance Program. However, the element recognizes that a complete elimination of inappropriate floodplain development is not achieved through these tools. Therefore, the element calls for limiting floodprone areas to selected agricultural uses, or very low density residential development, and conditioning development approval on obtaining all required permits from the appropriate regulating agencies.

Due to the hazards associated with the coastal floodplain, the Future Land Use Element recommends limiting uses therein to those uses which are clearly in the public interest. The element further recommends requiring these uses to be extensively floodproofed; limiting redevelopment in floodprone areas; and implementing special zoning to minimize redevelopment except for those uses clearly in the public interest. If implemented, these recommendations could help reduce ill-advised floodplain development.

The Conservation Element requires protection of the natural functions of the 100-year floodplain, so that flood-carrying and flood storage capacity are maintained. The Conservation

Id.

Id.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 82 (rev. Feb. 1994).

Id.

Flagler County, Florida, Comprehensive Plan, Conservation Element, objective 3 (rev. Mar. 1992).

Element also recognizes the potential for recreational use and wildlife habitat preservation of floodplains through designation as parklands or open space. One tool for protecting floodplains is the Flagler County Flood Damage Prevention Ordinance.

The Land Development Code contains subdivision regulations that also deal with the control of floodplain areas and unsafe lands. The Code establishes minimum elevations for roads and floors, and provides the County Commission with authority to establish a building restriction line within which development is prohibited because the land is unsafe due to its instability or susceptibility to flooding. The Commission may establish this line when floodprone or unsafe areas are not shown on the preliminary and final plats as right-of-ways or easements. The Code prohibits issuance of building permits within any building restriction line or other areas within a floodplain or other unsafe area. This provision provides a useful tool to protect the coastal area's floodplain. The County should use this provision to control development within floodplains.

Flagler County, Florida, Comprehensive Plan, Conservation Element 64 (rev. Mar. 1992).

The Flagler County Flood Damage Prevention Ordinance is incorporated into the Flagler County Land Development Code as section 6.04.00. *See infra* notes 187-191 and accompanying text.

Flagler County, Florida, Land Development Code § 4.04.10.

Flagler County, Florida, Land Development Code § 4.04.10.

Id.

Id. This provision applies to new structures or additions to existing structures, except for fences, public utility structures, or other structures determined by the County Commission to be reasonable and not contrary to the safety, health, and welfare of the citizens of the county. *Id.*

The Land Development Code also addresses floodplains in its resource protection standards. The Code requires any new construction, or substantial improvement to an existing structure, to be placed not lower than one foot above base flood elevation. The Code identifies the CHHA as an area of special flood hazard and establishes specific construction standards for structures within the CHHA. Coastal high hazard areas (those areas associated with wave wash) are required to have the lowest supporting horizontal member (excluding pilings and columns) located at or above the same level. The CHHA is subject to these special standards, as well as general provisions for flood hazard reduction contained in the Code. The areas of special flood hazard, in turn, are based on FEMA's Flood Insurance Study. The Code also prohibits destruction of sand dunes or mangrove stands which would increase potential flood damage.

The County has allowed development in floodprone areas, including portions of the Palm Coast and Matanzas shore development. The NFRPC's depiction of certain inland areas as category one hurricane evacuation areas is likely due to the low elevation and susceptibility to flooding. Not coincidentally, portions of these areas are depicted on the existing floodplain maps

Flagler County, Florida, Land Development Code § 6.04.00.

Flagler County, Florida, Land Development Code § 6.04.05B.

Id. § 6.04.05B5.

Id.

Id. § 6.04.05B5(g).

Flagler County, Florida, Comprehensive Plan, Future Land Use Element 81 (rev. Feb. 1994). *See supra* notes 54-59 and accompanying text, discussing the County's failure to designate certain areas included within the category 1 hurricane evacuation zone as part of the CHHA.

as lying within the 100-year and 500-year floodplains. For these reasons, it is crucial that these inland floodprone areas be included in the CHHA.

Several other elements of Flagler County's Comprehensive Plan also relate to floodplains. The Sewer and Water Element recognizes that flood control is one purpose of stormwater management. The element recognizes the destructive nature of flooding due to storm surge events and finds that development exacerbates flooding by increasing the amount of impervious area or by reducing the area available for the natural storage of water, thereby causing increased runoff volumes and rates.

The Sewer and Water Element seeks to ensure the development, operation and maintenance of a cost-effective and efficient surface water management system which minimizes flood damage and losses, prevents water quality degradation of receiving water bodies and promotes groundwater aquifer recharge. The element requires the County to adopt in its Land Development Code the latest available regulations promulgated by FEMA to reduce property damage and loss of life due to flooding. The County must also prohibit new development within the 100-year floodplain unless the structure uses elevated first floors and provides compensating storage.

Sewer and Water Element, at 62.

Id. at 62, 64.

Sewer and Water Element, goal 4.

Id. objective 4.6.

Id. policy 4.6.1.

The Intergovernmental Coordination Element directs the County to cooperate with FEMA, the Florida Department of Community Affairs, and the St. Johns River Water Management District in regulating most issues associated with the floodplain. FEMA regulates development in the 100-year floodplain through the NFIP. The federal role involves information gathering, developing floodplain management criteria, floodplain mapping, and providing technical planning and implementation services to state and local governments. Flagler County bases its floodplain ordinance on base flood elevations provided by FEMA. The County's program is coordinated by the Flagler County Civil Defense Office and the Flagler County Engineering Office.

5. Other Environmentally Sensitive Areas

The future development expected in the Coastal Area is likely to impact both wetland and upland communities. The value of environmentally sensitive lands, regionally significant recreation areas, and critical habitats for flora and fauna is clearly stated in the Conservation element. However, development in the natural areas of Atlantic coastal frontage and Intracoastal Waterway frontage has steadily been creating a loss of the most attractive and the most vital parts of these areas. The Coastal Management Element states that future development will most likely occur in dunelands, coastal strand, and hammock associations east of State Road A1A. This future development will probably cause significant losses of dunes, coastal strand, and coastal

Flagler County, Florida, Comprehensive Plan, Intergovernmental Coordination Element 14 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Conservation Element 44 (rev. Mar. 1994).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element 26 (rev. Mar. 1992).

hammock between the CCCL and State Road A1A. While sufficient provisions exist to protect wetlands from potential development, efforts should be made to protect upland communities, such as the coastal strand and upland hammock communities.

The Conservation Element identifies the North Florida coastal strand as an important ecological community in the coastal area. The element acknowledges the importance of this community in regulating the effects of coastal wave action, including beach and dune erosion. However, the element states that the coastal strand is "highly endangered," due in large part to development activities.

The Conservation Element contains a section entitled "The Plan," which recommends that the County protect all ecological communities by including provisions in the land development regulations to:

- (a) preserve the most sensitive portions of the community;
- (b) cluster dwelling units away from sensitive portions of community associations;
- (c) discourage fragmentation of large community associations;
- (d) provide for buffering adjacent to the community; and
- (e) require sustaining management programs to restore disturbed portions.

The Conservation Element also addresses protection of ecological communities in the goals, objectives, and policies section. Policy 9-2 directs the County to adopt land development

Id. at 27.

Flagler County, Florida, Comprehensive Plan, Conservation Element 35 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Conservation Element 35 (rev. Mar. 1992).

Flagler County, Florida, Comprehensive Plan, Conservation Element 68 (rev. Mar. 1992).

regulations to provide for clustering, discourage fragmentation, and require buffering to protect ecological communities, including the BDS and the coastal strand. These provisions could provide substantial protection for the endangered coastal strand. The County should have incorporated these provisions into its land development regulations by March of 1993. The County's Land Development Code does provide for clustering residential development, but fails to include standards for buffers adjacent to environmentally sensitive lands, other than a 25 foot buffer around wetlands, or to discourage fragmentation. The Conservation element also acknowledges that the County needs a more comprehensive inventory of ecological communities to ensure they are not accidentally or needlessly destroyed.

C. POST-DISASTER REDEVELOPMENT PLAN

1. Generally

Effective redevelopment planning which occurs well before a storm hits will allow the County to respond appropriately in the wake of storm events which have more than minor effects on property and infrastructure. Public reaction and efforts to "normalize" conditions after a

Flagler County, Florida, Comprehensive Plan, Conservation Element, policy 9-2 (rev. Mar. 1992). Policy 9-2 incorporates by reference Maps 7a-g, entitled Ecological Communities in Flagler County. *Id.* Map 7f delineates the coastal strand in Flagler County. *Id.* at 28.

Policy 9-2 states that the County "shall amend and adopt within one year after submission of the revised comprehensive plan for review land development regulations which include provisions to protect [ecological communities]. Flagler County, Florida, Comprehensive Plan, Conservation Element, policy 9-2. The revised comprehensive plan was adopted in March, 1992, therefore the County should have revised the land development regulations by March, 1993.

Flagler County Land Development Code § 4.05.00.

Flagler County Land Development Code §§ 6.02.02A, 6.02.10.

Flagler County, Florida, Comprehensive Plan, Conservation Element 36 (rev. Mar. 1992).

hurricane have the potential to place pressure on the County's resources, as well as create political pressure to rebuild in hazardous areas. Though a hurricane can traumatize local populations and economies, it also represents an opportunity to improve development patterns and the survivability of permitted construction in order to reduce the impacts of the next major storm. A carefully prepared and agreed upon redevelopment plan can give the community leverage and a sense of direction during the vulnerable post-storm period.

Section 163.3178(2)(f) of Florida's Growth Management Act requires, as part of the County's Coastal Management Element, "[a] redevelopment component which outlines the principles which shall be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise." Rule 9J-5.012(2)(e), Florida Administrative Code, requires an inventory and analysis of post-disaster redevelopment concerns, 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." The rule requires analysis of specific measures to mitigate the threat of hazards, including structural modification, relocation, and public acquisition. Regulatory or management techniques to implement the findings of the analyses must also be adopted.

These requirements provide the basis for establishing County policies and standards which best serve the overall purpose of hazard mitigation. Pre-storm planning is crucial to this process;

³JACK SALMON AND DON HENNINGSEN, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF WEST FLORIDA, PRIOR PLANNING FOR POST-HURRICANE RECONSTRUCTION, 6 (November, 1986).

FLA. ADMIN. CODE ANN. r. 9J-5.012(2) (1995).

FLA. ADMIN. CODE ANN. r. 9J-5.012(3)(c)5 (1995).

an ad hoc approach to redevelopment following a coastal storm event does not provide the necessary guidance to address pre-existing weaknesses in coastal development patterns.

Flagler County's Coastal Management Element, in a general section entitled "Post Disaster Planning Concerns and Coastal High-Hazard Areas," contains good language which recognizes that the "typical reaction is to rebuild everything to the condition that existed before the storm. Rebuilding to pre-storm conditions may be imprudent and result in repeated damage to the same structures." The element also recognizes that the vulnerability of certain areas to damage from storm events should be viewed as an opportunity to revise land use and capital facilities plans in order to make the community safer. It goes on to state that "it is necessary to examine in advance the areas, structures and facilities most likely to be damaged and provide alternates to current land use plans and facility sites which can be adjusted following a storm event." This section of the Coastal Management Element provides good justifying language for objectives and policies which would indicate the County's commitment to careful post-hurricane redevelopment planning.

Effective redevelopment plans are more easily implemented if population densities in hazardous coastal areas are carefully controlled. The element subsection entitled "Projected

⁴JACK SALMON AND DON HENNINGSEN, DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF WEST FLORIDA, PRIOR PLANNING FOR POST-HURRICANE RECONSTRUCTION, 5 (November, 1986).

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, 75 (rev. March, 1992).

Id.

Id.

Id.

Future Conditions" recognizes that additional strong growth is expected in the coastal area, and projects that for the year 2000, some of the densest concentrations will occur in Flagler Beach and the unincorporated Palm Coast communities of Palm Harbor, Woodlands, Matanzas Shores, Hammock Dunes, Sea Colony and River Club. Matanzas Shores, Hammock Dunes and Sea Colony are located within the "high risk" area along the shoreline. This is an apparent inconsistency with Objective 2.3 of the element which states that the County "shall direct population concentrations away from known or predicted coastal high-hazard areas...."

Goal 2 of the Coastal Management Element ("Reducing Vulnerability to Hurricanes") states that "[p]eople and property in Flagler will be protected from the effects of hurricane storm damage." One of the most effective means of providing these protections is by maintaining existing natural defenses, as represented by intact wetlands, beach-dune systems, and coastal strand areas. Though Objectives 1.1, 1.2 and 1.3 refer to County efforts to preserve vegetation and habitat in the coastal zone, there is no objective under Goal 2 which recognizes this principle as it relates to reducing vulnerability to hurricanes.

A corresponding objective under Goal 2 which cross-referenced Objectives 1.1, 1.2 and 1.3 would reinforce the important fact that preserving natural systems helps protect people and property from storm impacts. Similarly, Objectives 1.1 through 1.3 would gain additional justification by referring to the value of natural systems in helping protect lives and property

Id., at 79.

Id.

Id. at 125.

Id., at 122.

during hurricanes. Though Objective 2.2 ("Hazard Mitigation and Coastal High-Hazard Areas") states that public funding for facilities within the high-hazard areas shall be limited to public access resource restoration and passive recreation facilities, it would be strengthened by including a commitment to using public funding for acquiring lands appropriate for access and passive recreation, including undisturbed areas with the capacity to absorb storm impacts.

2. Post-Disaster Redevelopment Plan

The only direct reference to post-hurricane planning in the comprehensive plan is Objective 2.4 of the Coastal Management Element, which states that by 1996, the County shall develop a "post-hurricane disaster plan." Though this plan has yet to be adopted, it is not clear that the objective is intended to direct the development of a post-disaster redevelopment plan. The single policy under this objective is Policy 2.4.01, which only states that the plan "shall consider the following: a) land uses and public facilities in the coastal zone area; b) areas of known high-hazard; c) the effects of hurricanes on the coastal areas; and d) prior arrangements with owners in the CHHA, to facilitate acquisition." These factors represent a starting point for a post-disaster redevelopment plan, but should be revisited and substantially strengthened in order for the policy to provide effective guidance to a post-disaster redevelopment planning effort.

Objective 2.5 is titled "Post-Disaster Redevelopment," however the language of the objective refers to the County's intent to "provide immediate response to post-hurricane situations via the timely and judicious response of a damage assessment team," which is not congruent with

Id. at 125.

Id.

Id. at 126.

post-disaster redevelopment planning. Normally, a damage assessment team would simply be one component of a post-disaster redevelopment plan, activated by the preexisting plan immediately after a hurricane.

The policy statements within Objective 2.5 appear to confuse the roles of a damage assessment team and a post-disaster redevelopment planning team. Policy 2.5.01 states that in the immediate aftermath of a hurricane, the County Commission will declare a building moratorium and will appoint a Damage Assessment Team. Policy 2.5.02 specifies the membership of the team, while Policy 2.5.03 lists the duties for which the team is responsible. The list of professions and County departments to be represented on the Damage Assessment Team strongly suggests that it is strictly intended to serve in an assessment capacity, however the duties listed in Policy 2.5.03 are almost exclusively those associated with a post-disaster redevelopment planning and implementation effort.

Planning activities listed in Policy 2.5.03 which ideally should be completed before a major storm event include: analyzing and recommending to the County Commission hazard mitigation options including reconstruction or relocation of damaged public facilities; developing a redevelopment plan; and recommending amendments to the comprehensive plan, Local Peacetime

One example of effective pre-storm planning is Lee County's Post-Disaster Recovery Ordinance, which calls for the creation of a Disaster Advisory Council, whose primary function is pre-disaster planning and post-disaster recommendations. Lee County, Florida, Post-Disaster Redevelopment Ordinance, 95-14 (August, 1995). *See also*, Town of Nags Head, North Carolina, Hurricane and Storm Mitigation and Reconstruction Plan (October 10, 1988).

Id.

These include: the County Building official, real estate appraisers, contractors, insurance agents, utility and public works representatives, police and fire representatives, the County Extension Service, and other members as directed by the County Commission. *Id.* at 126.

Emergency Plan, and other appropriate policies and procedures. However, relevant policies within Objective 2.5 would assign these tasks after a hurricane, to a team of people (Damage Assessment Team) whose expertise would not represent a cross-section of skills and interests necessary to the accomplishment of such tasks. Thus, considered together, Objectives 2.4 and 2.5 do not represent a post-disaster redevelopment plan, and provide insufficient direction to the group which would normally be charged with developing such a plan.

Because several plan objectives, policies, and land development code provisions together comprise an incomplete approach to post-hurricane redevelopment planning, it is advisable to formally amend the comprehensive plan to create and provide specific direction and support to a redevelopment planning team. Relevant provisions of the current plan and land development code can be carefully considered by the team in the light of good planning principles and local conditions, then organized and supplemented, as necessary, by additional provisions in order to produce a coherent redevelopment plan. Certain provisions of the redevelopment plan may be incorporated as amendments to appropriate sections of the County Comprehensive Plan and land development code, however organizing and publishing the redevelopment plan as a separate document assures that its conditions and stipulations will be well understood.

Several provisions of the Coastal Management Element have the potential to serve as beginning points for effective redevelopment planning. One example is the County's the build-back policy. In evaluating the threshold of damage beyond which the County will consider alternatives to the existing situation, reference is made to the "50 percent" level established by the

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, Policy 2.5.03 (rev. March, 1992).

National Flood Insurance Program as a good standard to use in Flagler County. Once the 50 percent threshold is reached, the suggested requirement is to require the owner to rebuild landward of the existing structure, and for structures which are seaward of the "control line," the suggested requirement is to rebuild landward of the line. It is not clear whether the reference is to the Coastal Construction Control Line, or to some other boundary definition. County acquisition of the most severely damaged structures and their lots is raised as a potential response. These represent good practices, yet the policies contained in the Coastal Management Element lack sufficient detail to guide their implementation.

Another provision, contained in the data analysis section of the Future Land Use Element, recognizes that existing residential development in some floodprone areas on the coast has produced significant potential problems with flooding, property damage and potential loss of lives. The section contains good language which states that the best course of action is to limit uses within coastal floodplains only to those which are clearly in the public interest, and to limit uses in such areas to selected agricultural uses or very low density residential. The section also states that redevelopment in coastal floodplains should be limited and techniques such as transfer

Flagler County, Florida, Comprehensive Plan, Coastal Management Element, pp. 79-80 (rev. March, 1992).

Id. at 80.

Id.

Flagler County, Florida, Comprehensive Plan, Future Land Use Element, at 81 (rev. February, 1994).

Id. at 82.

of densities and development rights should be used to minimize inappropriate redevelopment. However, there is no objective or policy which clearly reflects the County's commitment to this approach, or to a post-disaster redevelopment policy which would work to move inappropriate uses out of such areas.

Whenever possible, redevelopment plan provisions and goals should be justified in terms of multiple, interlocking benefits which promote the public health, safety and welfare. One example is County land acquisition policy, which can be directed toward acquiring parcels that serve more than one function, as recreation and open space, conservation lands, wildlife habitat, floodplain protection and hurricane flooding protection. Redevelopment planning provisions can identify and prioritize coastal areas which, in a post-storm situation, would be considered for acquisition.

Id.

V. CONCLUSIONS

Florida's Growth Management Act places a substantial burden on coastal counties to plan and regulate to protect coastal resources and life and property. The Act and its implementing regulations contain numerous general and specific requirements which counties must address. Flagler County has done a good job of creating the framework for an effective coastal management program.

Flagler County's Comprehensive Plan provides general authority for the County to mitigate hurricane impacts and to develop an effective post-disaster redevelopment program. The Plan acknowledges the need to restrict development in hazardous coastal locations so as to minimize loss of life and property during a hurricane or other substantial storm event. The Plan also acknowledges the role that natural systems perform in deflecting and absorbing storm forces, including wind, waves, and flood waters, thereby protecting life and property. In addition, the Plan acknowledges the importance of developing an effective redevelopment plan that creates a rational framework of procedures, policies, and standards to guide redevelopment in a manner that reduces the susceptibility of life and property to damage from the next major storm.

As with most regulatory programs, there remains room for improvement in Flagler County's coastal management program. One important area involves the translation of comprehensive plan goals, objectives, and policies into specific land development regulations. For example, the County's comprehensive plan directs the County to adopt a dune management program, yet the County has not yet adopted a plan or implementing regulations. Similarly, the County has not yet adopted a redevelopment plan or regulations. Thorough implementation of

various comprehensive plan goals, objectives, and policies through clear and enforceable land development regulations will greatly strengthen the County's program.

There are a number of specific actions which the County should consider taking to improve its program. For example, the County should re-define the Coastal High Hazard Area to include category 1 hurricane evacuation zones, as well as other especially hazardous areas. The County should direct development away from hazardous and environmentally sensitive coastal areas, using innovative land use tools, and designate conservation and recreation uses for these areas. The County should consider adopting and enforcing more stringent standards in the CCCL and the Coastal Building zone to protect life, property, and natural systems.

The County should ensure that the present availability of infrastructure in the Coastal Area does not serve as a justification to encourage development in unsafe or environmentally sensitive areas. The County should project the effect of future build-out of committed projects on hurricane evacuation capability and consider these projections when determining whether existing roads are adequate to service additional development.

The County should develop criteria and standards to guide application of the ten percent rule restricting the clearing of native vegetation, and consider more stringent restrictions on clearing of vegetation in environmentally sensitive and coastal high hazard areas where vegetation plays a key role in maintaining the integrity of natural defenses. The County should strengthen its efforts to protect the BDS and coastal strand by adopting standards to limit destruction of natural vegetation and topography, reducing residential densities, encouraging transfers of housing density out of environmentally sensitive and hazardous areas, and targeting these lands for acquisition. The County should seek to restore vegetation where it has been removed in the

coastal area, and should seek grants to fund these restoration projects. The County should continue to aggressively use its land acquisition program to acquire environmentally sensitive and hazardous coastal properties, and should consider elevating the rank of coastal barrier property for acquisition, including the endangered coastal strand.

Flagler County should amend its comprehensive plan to remove residential uses from its prioritization scheme for water-dependent uses. The County should develop and implement a program to assess cumulative impacts and to integrate their consideration into the permit review process. The County should conduct a more comprehensive inventory of ecological communities to ensure they are not accidentally or needlessly destroyed. The County should consider establishing building restriction lines to prohibit development in unsafe floodplains and other hazardous coastal areas. The County should develop an effective redevelopment plan that creates a rational framework of procedures, policies, and standards to guide redevelopment so as to protect life and property from the next major storm. The County should educate the public about hurricane mitigation and redevelopment issues. The County should also enforce sign ordinances and trash ordinances to ensure that discarded objects do not become dangerous projectiles during storms. Finally, the County should seek to renovate antiquated subdivisions whenever possible.

Detailed recommendations and draft language for changes to the comprehensive plan and land development code will be provided in a subsequent report.