

CHAPTER 11

COASTAL MANAGEMENT ELEMENT

1.0 INTRODUCTION

With its abundance of scenic resources, recreational opportunities and waterways and beaches, and natural habitat, coastal Volusia County and its 11 coastal cities will continue to experience rapid growth from migration and natural increases. The historical development pattern has resulted in the destruction of critical wildlife habitat and native vegetation, the lowering of water quality, and the degradation or removal of beach and dune systems. If these resources are to be conserved in the future, development must be carefully and deliberately orchestrated.

The Coastal Management Element is one of the critical parts of the overall Comprehensive Plan that each municipality and the County must prepare in accordance with State legislation. The purpose of the Element is to "plan for and where appropriate, restrict development activities where such activities would damage or destroy coastal resources, and protect human life and limit public expenditures in areas that are subject to destruction by natural disaster.

Within the context of the Comprehensive Plan, the Coastal Management Element has a special status. Although it must be integrated into and consistent with all the other Elements of the Plan, the Coastal Management Element not only addresses the protection of coastal resources, it also addresses other related issues of land use, traffic circulation, public access, and public services, facilities and infrastructure.

Volusia County and the coastal municipalities have cooperated in the preparation of this Element. Early on, the County and coastal communities recognized that coastal issues and resources should be coordinated with a systems approach. Environmental systems such as estuaries, watershed, or wildlife habitat, and man-made systems like traffic circulation or drainage structures, do not start or stop at political boundaries.

Although the Coastal Management Element is included in the County's Comprehensive Plan, the inventory, analysis and the goals, objectives and policies (GOPs) have been structured to be broad-based so that each community can choose to adopt all or part of the Element into their individual Comprehensive Plans. Individual municipalities have rearranged the goals, objectives and policies to suit their particular need.

The central concept of the Element is to promote consensus among and between coastal communities so that common problems can be identified and common solutions proposed and implemented. The intent is to emphasize cooperation in implementing and achieving the goals, objectives and policies. It is not the intent of the County to mandate certain requirements through this Element beyond their statutory authority. Rather, the approach taken is to stress intergovernmental coordination and mutual cooperation through the use of interlocal agreements.

The coastal study area was established to include all areas of Volusia County that drain to the estuarine areas of the County (seaward of the St. John's River Basin). Demarcating the coastal area along the westward extent of the East Volusia drainage basin area is intended to facilitate a comprehensive management of the County's coastal resources. Instead of utilizing an arbitrary boundary, the existing drainage basin approach, which is based on actual field features, defines an area that is an appropriate boundary for the coastal area of Volusia County. Approximately 450.5 square miles of the County are included within this study area. It ranges from between four and 16 miles wide to approximately 50 miles long, and is bounded to the east by the Atlantic Ocean, west by

the watershed boundary as determined by the U.S.G.S. Hydrologic Unit Map of Florida, and to the north by Flagler County, and to the south by Brevard County (see Figure 11-1, Coastal Study Area Boundary, Appendix 1 Maps and Figures).

Six distinct primary watersheds were identified within the study area boundary:

- 1 Tomoka River North
- 2 Tomoka River South
- 3 Halifax River
- 4 Mosquito Lagoon/Indian River North
- 5 Indian River South
- 6 Spruce Creek

As illustrated in Figure 11.2, Watershed and Sub-Basin Boundaries, Appendix 1 Maps and Figures, the Tomoka River South primary basin was further divided into five sub-basins, the Spruce Creek Basin into eight sub-basins, and the Halifax Basin and Indian River North Basin into barrier island, estuarine, and mainland sub-basins.

The Coastal Management Element is separated into several sections or sub-elements. Technical background reports and analyses were prepared resulting in an extensive database. This database, along with a series of workshops and meetings with the public, the County Council and the Coastal Management Technical Steering Committee were used to formulate the goals, objectives and policies as well as the Coastal Area Plan. The major sections are:

- Section 2.0 Coastal Resources
- Section 3.0 Land Use
- Section 4.0 Water Quality
- Section 5.0 Beach and Dune Systems
- Section 6.0 Coastal Hazards
- Section 7.0 Public Access
- Section 8.0 Public Services
- Section 9.0 Intergovernmental Coordination

2.0 COASTAL RESOURCES

2.1 Introduction

The Volusia County Coastal Area is a complex, dynamic natural system comprised of barrier islands, estuarine and river systems, and mainland watersheds. The watershed is considered the basic ecosystem unit for evaluating the combination of natural and man-induced characteristics. Watershed energy flow is affected by biological and physical influences. The physical forces such as tidal fluctuations, rainfall, heat energy, winds, and sunlight form the basic energy sources that determine the composition of the biological community as well as soil and water characteristics.

The hydrologic boundaries between watersheds serve as complex biophysical membranes. They naturally divide the landscape into a mosaic of distinct units, each possessing a physical/chemical integrity defined by topography and drainage. At the same time, these membranes are also permeable. Each watershed, upon closer examination, is itself partitioned into a mosaic of natural habitats and cultural land uses which often transcend hydrological boundaries. Through biological transport, cultural activities, and atmospheric processes, energy and matter are constantly exchanged across watershed boundaries. Within each watershed there is also a systematic partitioning of physical/ chemical resources by competing animals and plants.

Although Volusia County has been fortunate in acquiring environmentally sensitive lands and waters for conservation, past practices of land use and development have degraded or destroyed critical natural resources. The Coastal Management Element is a coordinated effort to identify, evaluate and manage these resources as interconnected systems - utilizing watersheds as the basic management unit.

Each of the habitats represented within the natural systems are interdependent, and therefore, future management plans should consider the linkage of these systems. Plans must conserve the variety of interconnected habitats, not permitting their individual isolation and envelopment by urbanization or agriculture. Since organisms and materials move between different types of habitats (i.e., seagrasses and mangroves), terrestrial and marine communities cannot be defined simply by their physical boundaries. The effectiveness of efforts to protect one community type may be diminished by failing to protect neighboring communities or habitats as well as adjacent watersheds. When such efforts fail, the loss of native habitats causes a direct and proportional loss of fish and wildlife. This has already happened in parts of the coastal area.

The coastal wetlands remain generally intact. However, the interface of remaining native uplands with these shoreline areas has all but disappeared throughout most of the coastal zone. Upland habitats, such as coastal scrub, may not have a high number of animal species present, but may have a high proportion of species not found elsewhere (i.e., high endemism). Such areas are considered valuable for maintaining biological diversity. Without immediate institution of a balanced resource management plan, the future Volusia County coastal zone will consist of completely urbanized lands with a fringe of saltmarsh and mangroves. Gone will be the functioning native lands, their floral and faunal constituents, and the contribution attributable to the natural systems.

The coastal wetlands are dominated by 15,196 acres of salt marsh and 1,265 acres of mangrove remaining intact outside the urban centers on the estuary. Freshwater wetlands are dominated by 44,006 acres of forested habitats generally occurring within the interior of the coastal zone, west of

the estuary. The coastal wetlands are currently afforded some degree of regulatory protection by the U.S. Army Corps of Engineers (aided by the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and National Marine Fisheries Service), Florida Department of Environmental Protection (FDEP), St. John's River Water Management District (SJRWMD) and the County. The protective measures generally afforded by these agencies are limited only to wetlands. However, the County does regulate upland buffer areas adjacent to wetlands.

The coastal zone contains a variety of native upland habitats including:

- pine flatwood (18,046 acres)
- pine-mesic oak (7,112 acres)
- temperate hardwoods (5,517 acres)
- coastal scrub (5,267 acres)
- palmetto prairie (5,159 acres)
- cabbage palm (4,112 acres)
- rangeland (2,736 acres)
- sand pine (2,493 acres)
- sand live oak (2,368 acres)
- long leaf pine - xeric oak (985 acres)
- live oak (602 acres)

As with the wetland habitats, these upland communities provide habitat to a wide range of flora and wildlife species including many species listed as endangered, threatened, or endemic.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

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

OBJECTIVE:

- 11.1.1 Maintain management programs to ensure the long-term protection and enhancement of wetland habitats, water quality, and selected natural upland habitats. The primary means of accomplishing this objective will be through the retention of interconnected hydroecological systems where the wetlands and uplands function as a productive unit resembling the original landscape.

POLICIES:

- 11.1.1.1 The Volusia County Environmental Management Division in connection with the Environmental and Natural Resources Advisory Committee will be responsible for developing management plans and standards that protect and conserve natural systems within the coastal area.

11.1.1.2 The Ponce DeLeon Port Authority will continue to be responsible for implementing and updating the FDEP certified Inlet Management Plan.

11.1.1.3 The Volusia County Growth Management has identified all hydroecological corridors in each watershed using the Coastal Management Element Natural Resource data base and other information. Environmental system corridors will integrate the critical habitats listed below to the maximum extent possible as an interconnected system.

NATIVE UPLANDS

Palmetto Prairie
Coastal Strand
Maritime Hammock
Pine Flatwood
Pine-Xeric Oak
Sand Pine
Pine/Mesic Oak
Live Oak
Cabbage Palm
Sand Live Oak
Laurel Oak Hammock
Saltwater Marsh

WETLANDS

Natural streams, ponds
sloughs, creeks, rivers
estuaries, and beach
shorelines
Wetland Hardwoods
Bay Swamps
Mangrove Swamps
Mixed Wetland Hardwoods
Cypress-Pine Cabbage Palm
Wetlands Forested
Mixed Freshwater Marsh
Wet Prairies

11.1.1.4 Areas of critical wetland and native upland habitats not connected to corridors that exhibit resource values should be evaluated for inclusion as conservation or recreation areas within future development plans. Secondary linkage to nearby corridors, even if by artificial means, should be considered and encouraged. Construction of new corridors or linkages should be considered as a form of mitigation where appropriate.

11.1.1.5 The County shall continue to implement conservation, management, and development review standards of the development review process. Such reviews are intended to minimize long-term and cumulative impacts on coastal habitat by requiring site specific analysis during the review process.

11.1.1.6 Land development regulations which require an Environmental Impact Assessment, as outlined in the Conservation Element of this Comprehensive Plan, were adopted. The assessment shall be submitted, reviewed, and approved prior to the issuance of a development order to insure protection of the NRMA.

11.1.1.7 Encourage coordination of the corridors with the municipalities to ensure the system remains intact even after annexation.

11.1.1.8 Manage spoil islands so that they may become an integral component of lagoon ecology.

11.1.1.9 The Environmental Management Division will maintain standards for wetland habitat mitigation. These standards identify situations where mitigation may be acceptable (e.g., non-forested wetland or mangrove swamp creation), unacceptable (e.g., certain

endangered species habitat such as an eagle nest), or problematic (e.g., experimental or unproven). In all cases the proposed mitigation plan should be designed and the project monitored by a qualified professional. The mitigation plan should include the following:

- A. A statement of mitigation goals and objectives.
- B. Watershed and adjacent habitat evaluation.
- C. Geohydrological analysis.
- D. Detailed construction plans, planting and maintenance schedules.
- E. A long term management plan for the created wetland habitat in the watershed in which it is located (inappropriate future land uses surrounding the created or enhanced wetland habitat may alter the habitat's character or eliminate it completely).
- F. The removal or control of exotic or nuisance vegetation.
- G. Monitoring methodology to evaluate the degree of success obtained.
- H. Proper contracted supervision by a qualified expert.
- I. A detailed budget and cost estimates.
- J. The entity responsible for undertaking maintenance and a long-term management plan with available funding required to ensure future success.

11.1.1.10 For all habitat mitigation plans, programs or activities, the Environmental Management Division should identify quantifiable, realistic goals, maintain direct supervision through the construction and monitoring process, utilize a minimum of flexibility for minor or insignificant post-construction modifications and, if problems or failures result, be able to enforce permit conditions.

11.1.1.11 Lands/areas proposed for acquisition under the Volusia Forever Program shall be processed and evaluated in the manner specified by the applicable County Resolution.

11.1.1.12 The Environmental Management Division will continue to support and sponsor estuarine, oceanfront, and shoreline habitat restoration and protection projects. Projects will target identified shore lines where restoration is required to offset impacts from existing upland development including stormwater discharges, bulk heading, dumping and land clearing. Restoration will include but not be limited to:

- A. Removing debris and toxic materials.
- B. Stabilizing shorelines.
- C. Creating wetland habitat such as mangrove and salt marsh.
- D. Dune restoration.
- E. Relocating or eliminating storm water/domestic waste and effluent.
- F. Maintenance of stormwater facilities and retrofitting where needed.
- G. Regulation of urban shoreline redevelopment.

11.1.1.13 The County will maintain a central clearing house for environmental and natural resource studies and recommendations by both public and private organizations.

11.1.1.14 The County will archive and periodically update the Ground Cover Survey maps to reflect changing conditions.

- 11.1.1.15 The County will provide issue specific reports and updates periodically to the County on the status of natural resources. The reports will focus on the adequacy of land use and development regulations and management plans to protect and enhance the natural systems. Adjustments shall be made in the regulatory process whenever deficiencies are noted.
- 11.1.1.16 Development adjacent to estuarine and riverine shoreline areas shall maintain a habitat buffer zone to protect or conserve the canopy, understory and ground cover of native upland vegetation and wetlands.
- 11.1.1.17 Development in habitat areas that include species listed by the State of Florida and/or U.S. Fish and Wildlife Service as Endangered, Threatened or Species of Special Concern shall not adversely impact that habitat or the listed species within it.
- 11.1.1.18 Activities regulated or allowed by the County that could potentially adversely affect manatees shall be offset by conservation measures. Measures designed to protect manatees shall be consistent with the Manatee Protection Plan for Volusia County (MPP) as incorporated by reference (Phase I, dated February 19, 2001 and Phase II dated October 19, 2005.) Phase I of the MPP addresses manatee/human interaction, habitat inventory, habitat protection, education, research and governmental coordination. Phase II of the MPP includes, but is not limited to, a boat facility siting plan (wet and/or dry slips, and/or boat ramp parking spaces), as required by Section 379.2431(2)(t)2, Florida Statutes, the requirement of mitigation through contribution to the manatee conservation fund, and other conservation measures such as educational requirements relating to Manatee Protection.

3.0 LAND USE

3.1 Introduction

The future of Volusia County's coastal resources depends largely on decisions regarding the use of land within the coastal area. During the past century, the coastal area ecosystem has been extensively altered by man's activities, including urbanization, silviculture (tree farming), agriculture, and mosquito control. Despite these activities, many coastal resources remain intact.

Today, the coastal area provides habitat for many varieties of fish and wildlife, potable water for county residents, and outstanding scenic qualities and recreational opportunities. The natural resources documented in the last chapter coexist with an urban area that is home to about 250,000 permanent and 50,000 seasonal residents. The balance between the natural and built environments is sometimes tenuous; careful management of both will be required in the future to protect the resource base -- and to protect residents from the hazards inherent in coastal areas.

Although the Coastal Management Element is not intended to supersede the city and county land use plans, its findings and policies should be consistent with the Future Land Use Elements in the comprehensive plans of the county and each coastal city. Consistency is essential if the resource conservation goals set forth in this document are to be achieved.

Coastal Volusia County is expected to gain about 100,000 new residents throughout the unincorporated coastal areas by the year 2025. This chapter describes how resource losses can be minimized as growth occurs. The environmental impact of development can be greatly mitigated if growth occurs within specific geographic areas, following design standards and principles which conserve vegetation and water quality and respect the natural features of each site.

A second and equally important objective of this section is to limit the extent to which growth increases exposure to coastal hazards. By directing development away from areas most vulnerable to coastal storms -- especially hurricanes -- future losses of life and property can be minimized.

Volusia County has taken actions that are consistent with this overall objective of meeting Section 163.3178, Florida Statutes by reducing the density for the multifamily residential development on the barrier islands. In some instances the permitted density was as high as 60 units per acre with the majority of areas at 30 units per acre. These densities have been reduced to 20 units per acre as the highest allowable density in any zoning classification. However, density reductions of multi-family residential development were not intended to place a non-conforming burden on existing legal multi-family projects. The County has also maintained the single family character of the unincorporated portions of the County by limiting the multifamily areas to those areas that are already developed in that manner, without any expansions into the single family areas.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

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

OBJECTIVE:

- 11.2.1 Establish land use regulations that provide for the location, extent and distribution of land uses consistent with the protection of coastal resources.

POLICIES:

- 11.2.1.1 Land uses which have significant adverse impact on coastal resources to the point where coastal resources would be degraded as a result of the proposed land use shall be required to provide appropriate mitigation to those impacts.
- 11.2.1.2 An environmental impact assessment provision has been developed for the protection of the NRMA.
- 11.2.1.3 Designated natural resource areas, significant environmental or ecological features, critical wildlife habitat, environmental system corridors or conservation areas shall be protected through a variety of mechanisms including buffer zones, restoration, limiting density and intensity, conservation easements, acquisition, density transfers, transfer of development rights (TDRs), purchase of development rights or land exchanges.
- 11.2.1.4 The priority for new development shall be in areas of urban infill in order to contain sprawl, use existing developable lands, maximize the provision of urban services and facilities and protect remaining coastal habitat.

OBJECTIVE:

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

POLICIES:

- 11.2.2.1 Volusia County has rezoned the unincorporated Coastal area consistent with the protection or conservation of coastal resources.
- 11.2.2.2 Utilize innovative or alternative zoning districts or techniques to protect coastal resources. Such techniques could include overlay districts, floating zones, bonus ordinances, performance standards, fast-tracking of development applications, quality development programs, Transferable Development Rights, or other incentive-based methods.
- 11.2.2.3 Maintain a database and information system on land use and acreage by watershed within the coastal area. The unincorporated county and coastal municipalities should periodically update this data.

- 11.2.2.4 Cooperate and coordinate with local governments, state agencies, and special districts in developing consistent standards, criteria and land development regulations for protection of coastal resources.

OBJECTIVE:

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

POLICIES:

- 11.2.3.1 When reviewing applications for zoning, plan amendments or development orders, shoreline land uses shall have the following priorities:
- A. Water-dependent uses such as aquaculture and wildlife production, recreation, public access, marinas and navigation, and water-dependent utilities and industry, which do not create a significant adverse impact upon the waters or land use.
 - B. Protection of coastal and natural resources.
 - C. Water enhanced uses such as recreation, certain utilities, commerce and industrial uses.
 - D. Low density residential.
 - E. Non-water dependent or related activities such as intensive urban residential, non-water dependent industry and commerce.
 - F. Of lowest priority are those uses which are non-water dependent, non-water enhanced which result in a reduction of coastal resources.
- 11.2.3.2 Land development reviews, for the purposes of siting, or expanding marinas or boat facilities shall include the following criteria with priority given to expansion of existing marinas:
- A. Consistency with provisions included in the Manatee Protection Plan for Volusia County.
 - B. Sufficient upland areas to accommodate needed support facilities such as adequate parking, dry storage, work areas, stormwater management facilities, and other non-water dependent uses.
 - C. Preference will be given to locating marinas and boat facilities in areas which require minimal dredging or no dredging or filling to provide access by either canal, channel or road.

OBJECTIVE:

- 11.2.4 Consistent with the Historic Preservation Element protect and preserve historic and archaeological resources.

POLICIES:

- 11.2.4.1 Include historic and archeological resources in land acquisition programs for open space, recreation, preservation, or conservation.
- 11.2.4.2 The County has undertaken a comprehensive historic and archeological survey of the unincorporated coastal area. The survey has been added to the Florida Master Site File data base and is archived at the Leisure Services Division.
- 11.2.4.3 Volusia County shall maintain standards, regulations and guidelines for the protection of historic and archeological resources through the Volusia County Historic Preservation Ordinance.
- 11.2.4.4 Maintain a common data base to include survey information, a complete set of Florida Master Site file forms for all recorded sites and archival materials.
- 11.2.4.5 Nominate eligible historic and archeological resources to the National Register of Historic Places.
- 11.2.4.6 Utilize as feasible incentive-based techniques for historic and archeological preservation such as building code relief, TDRs, tax relief, or waiving of certain zoning requirements (setbacks, lot coverage, parking, etc.).
- 11.2.4.7 Volusia County shall cooperate with local governments in establishing historic preservation commissions, conducting surveys and studies, developing standards, regulations and guidelines, and adopting historic preservation ordinances or developing historic and archeological preservation programs.
- 11.2.4.8 Areas identified as having a high redevelopment probability shall be evaluated by each jurisdiction for appropriate land uses, eliminating unsafe conditions, and restoring coastal resources.
- 11.2.4.9 Redevelopment activity shall not result in increasing hurricane evacuation times above the clearance time identified in this Element.
- 11.2.4.10 Redevelopment should be viewed as an opportunity to restore beach and dune systems, improve visual appearance, incorporate landscaping and buffer areas, improve traffic circulation, and upgrade stormwater management systems.

4.0 WATER QUALITY

4.1 INTRODUCTION

Section 163.3178, Florida Statutes, mandates that coastal counties conduct an inventory and analysis of "...estuarine pollution conditions and actions needed to maintain estuaries...". This is to be accomplished through the assessment of current estuarine conditions, the identification of point and non-point pollution sources, the assessment of present and future land use plans as they relate to water quality, and the identification of current and proposed state, regional, and local programs which will maintain or improve current estuarine water quality conditions. The support document presents the current understanding of water quality conditions in coastal Volusia County, relates these conditions to present land use practices and provides suggestions for future action by governmental agencies to maintain and/or improve estuarine water quality in Volusia County. The expenditure of time and effort to complete such a study is justified by the tremendous value of estuarine systems. Estuaries are economically important for shellfish and finfish production as well as recreational boating. In addition, estuaries are ecologically important habitats for numerous animal and plant species.

The entire study area was considered in the preparation of this report, not just the estuaries and the immediately surrounding uplands. This allows the entire watershed of a particular waterbody to be evaluated for potential pollution sources. The water quality within an estuary cannot be expected to be of significantly higher quality than the water which enters it. The holistic approach of considering individual watersheds as a fundamental unit will produce more realistic and meaningful analysis and management of estuarine water quality conditions.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

- 11.3 To protect, enhance, and improve the quality of the estuarine environment throughout Volusia County.

OBJECTIVE:

- 11.3.1 To monitor and improve estuarine water quality by maintaining an ongoing water quality sampling and monitoring program, establishing base line conditions, and identifying standards as parameters to measure changes in water quality.

POLICIES:

- 11.3.1.1 A comprehensive water quality sampling and monitoring network shall be maintained for the coastal area. The data shall be evaluated to detect possible problems and to determine where corrective action is needed.
- 11.3.1.2 A water quality monitoring program shall be maintained so that point and non-point sources and facilities which are identified as potential water quality problems are regularly and periodically inspected.

- 11.3.1.3 Permits issued by the Florida Department of Health for individual septic tank systems shall include a nomenclature system so that the information can be retrieved and evaluated by basin, sub-basin and jurisdiction.
- 11.3.1.4 The County shall identify areas that utilize individual septic systems. These areas will be prioritized for incorporation into public wastewater treatment systems. The following criteria will be utilized for prioritizing areas:
- A. Soil type
 - B. Water table level
 - C. Proximity to Aquatic Preserves and Outstanding Florida Waters
 - D. Proximity to open shellfish harvesting areas
 - E. Proximity to other water bodies
 - F. Density of septic tank systems
 - G. Areas known or suspected to be impacting surface or ground water quality
 - H. Proximity to existing or planned public wastewater treatment systems
 - I. Directives of the Indian River Lagoon Act
 - J. Directives of the Northern Coastal Basin SWIM
- 11.3.1.5 Future individual on-site disposal systems in the Mosquito/Indian River Lagoon area shall be managed under the Surface Water Improvement Management Area Overlay Zone requirements of the Volusia County Zoning Ordinance. If no central sewer is available, on-site sewage disposal systems within the subject overlay zone may be required to be aerobic systems depending on soil type and water table parameters.
- 11.3.1.6 Continue to upgrade existing sewage treatment plants. As additional sewage treatment plants are constructed and/or existing plants are expanded, a concerted effort and commitment shall be made to utilize the highest level of treatment possible, or alternative methods of effluent disposal such as reuse and land spreading/spray irrigation should be used to reduce nutrient loadings to the rivers and estuaries.
- 11.3.1.7 Maintain development regulations that limit the amount of sediment reaching all surface waters. Maintain erosion and sediment control provisions as part of the development review process. Soil conservation regarding agricultural uses will be encouraged by the Natural Resource Conservation Service and the Agricultural Cooperative Extension Service.
- 11.3.1.8 The construction of future storm water management systems and the redesign of existing systems shall consider the timing of discharge of fresh water to the estuary and ocean, the hydroperiod of the wetlands as well as the potential loadings. Storm water systems should be designed to gradually release water via sheet flow through natural or constructed wetlands.
- 11.3.1.9 The use of pipes, ditches and canals which transport large volumes of fresh water rapidly to the estuaries and ocean shall be prohibited.
- 11.3.1.10 A Master Stormwater Management Plan that includes minimum standards by watershed shall be addressed in cooperation with the cities and County. The plan shall

address specific and cumulative impacts to prevent estuarine pollution and control surface water runoff.

- 11.3.1.11 Continue to incorporate pertinent recommendations of the Volusia Council of Governments' Action Plan to implement the 2008 Water Quality Plan.
- 11.3.1.12 The Master Stormwater Management Plan will provide recommendations for the maintenance or restoration of the desired seasonal base flows and water quality.
- 11.3.1.13 In 1991, a study, known as the Taylor Study, was completed to document the flushing patterns in the Halifax River and Indian River North/Mosquito Lagoon. As part of the study, the need to replace the existing causeways with bridges (with the exception of the north causeway in New Smyrna Beach) in order to increase tidal flushing of the Halifax River and Indian River North was evaluated. The potential impact on tidal and gravitational flow of current and future construction projects along these rivers was also evaluated. Residence times for pollutants (i.e., STP effluent) were assessed.
- 11.3.1.14 The preparation of management plans, water quality studies, and sampling programs will be coordinated with the coastal municipalities, the SRWMD, and the FDEP.
- 11.3.1.15 The findings and recommendations from the Surface Water Improvement Management (SWIM) programs will be incorporated into the plans and regulations of the affected local governments.
- 11.3.1.16 Continue water quality sampling and reporting requirements for assessing and monitoring impacts of cumulative development on storm water runoff and water quality.
- 11.3.1.17 Volusia County and the coastal cities shall continue their commitment to improve and enhance water quality and estuarine conditions through intergovernmental cooperation by a variety of mechanisms such as:
 - A. Continuation of the Environmental Natural Resource Advisory Committee.
 - B. Participation in amendment area-hoc or other special technical advisory committees.
 - C. Exchange of data and information among and between the County and the municipalities as well as Flagler and Brevard Counties.
 - D. Presentations and discussions with the Volusia Council of Governments.
 - E. Updating data in cooperation with FDEP and SJRWMD.
 - F. Notification of proposed programs, development regulations or activities that address water quality.
 - G. Participation in the SWIM and NEP Programs.
 - H. Implementing the policies or recommendations of the Aquatic Preserve Management Plans.
 - I. Participation and assistance in establishing and maintaining the water quality sampling and monitoring program.
 - J. Continued efforts to manage stormwater run-off.

5.0 BEACH AND DUNE SYSTEMS

5.1 Summary of Existing Beach and Dune Conditions and Historical Erosion and Accretion Trends

The Volusia County coastline consists of a 49 mile long, continuous barrier island broken only by Ponce DeLeon Inlet. Prior to human habitation, this barrier-island system was characterized by a relatively high (15-20 feet), well-vegetated, foredune ridge system that prevented storm-surge overwash and tidal-inlet formation. The large width and elevation of the Volusia coastal barrier, compared to many other barrier islands in Florida or elsewhere, resulted from the net onshore transport of sand in the recent geologic past.

This barrier system continues to receive an onshore supply of sand as evidenced by the new, incipient dunes being established on the dry berm or up against seawalls. Additionally, historical shoreline data indicate that, over a 100 year time frame, the Volusia coast has remained stable. Considering the myriad of coastal erosion problems that plague other developed shorelines, Volusia County has relatively few problems. Undoubtedly, the lack of tidal inlets is a contributing factor.

However, a few beach and dune problems exist. First, Ponce DeLeon Inlet has been responsible for shoreline changes extending approximately from DEP monuments 130 North to 165 South. Beaches in this area have undergone landward/seaward shifts nearly ten times greater than beaches outside the inlet's length of influence. Second, recession of the foredune ridge scarp in the Bethune Beach area, where homes are located too close to the beach in the first place, has created a zone of some concern to residents in the community. In addition, some topographically low and narrow sections of the barrier island south of Ponce Inlet could overwash or break through by storm surge during a major storm event.

The FDEP, Bureau of Beaches and Coastal Systems released preliminary data (May 1989) indicating historical shoreline changes. The following points are immediately obvious from this data set:

- A. Most of the County coastline has accreted during the past 115 years.
- B. The zone of greatest shoreline change including erosion is near Ponce DeLeon Inlet.
- C. Most of the County coast has undergone erosion during the 1970s.

A review of the 2006 updated beach profile data obtained by the Bureau of Beaches and Coastal Systems suggests that in 2006, four sections totaling 22.1 miles, of Volusia County beaches were listed as critically eroded. The current status may be due to the affects of an active hurricane season in 2004. Volusia County is still recovering from the 2004 erosion event and it may be years before a larger trend can be identified.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

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

OBJECTIVE:

- 11.4.1 Maintain standards to minimize the impacts of structures and development on beach and dune systems and where necessary initiate dune restoration programs.

POLICIES:

- 11.4.1.1 Continue to coordinate with the Bureau of Beaches and Coastal Systems concerning the Coastal Construction Control Line (CCCL) to implement the following criteria.
- A. For non-seawalled open-ocean coast, the CCCL should be located behind the landward base of the foredune ridge. The foredune ridge should be allowed to expand landward. A buffer between the landward base of the foredune ridge and building construction should be established.
 - B. For seawalled coast, the CCCL should be drawn behind the bulkhead line in accordance with the 100-year storm surge.
- 11.4.1.2 Volusia County has amended the Zoning maps to depict the reestablished CCCL.
- 11.4.1.3 New seawalls shall only be allowed in an emergency situation to protect health, safety, principal buildings, public infrastructure, or to fill in small gaps (size of gaps will be consistent with FDEP definition of a gap) between existing seawalls. The construction of new seawalls shall be consistent with Policies 11.4.1.5, 11.4.1.6, and 11.4.1.7. Also, new seawalls must receive proper permits from the County and the FDEP prior to construction.
- 11.4.1.4 Reconstruction or replacement of existing hard erosion control structures along the oceanfront shall be consistent with Policies 11.4.1.5, 11.4.1.6, and 11.4.1.7; except for the maintenance and care of public navigational structures such as Ponce DeLeon Inlet, structures which are needed to protect evacuation routes, public facilities, and public utilities. Also, such seawalls must receive proper permits from the County and the FDEP prior to construction.
- 11.4.1.5 Seawall construction in the County shall be consistent with State requirements and should be of a low profile design that relates to local beach conditions. In addition, all new seawalls shall be designed and constructed to minimize adverse effects to adjacent properties.
- 11.4.1.6 A dune system shall be developed and vegetated with suitable materials to bury all new, and/or reconstruction or replacement seawalls within the County.
- 11.4.1.7 Dune systems created to bury seawalls shall be maintained to emulate natural dune systems and to prevent seawalls from being exposed. If a dune system created to bury a wall is eroded resulting in a seawall being exposed, the dune system shall be reconstructed to bury the wall and repair dune damage. All dune reconstruction or maintenance shall be done following the end of, and prior to the beginning of the marine sea turtle nesting season.

- 11.4.1.8 The FDEP maintains standards for the maintenance and restoration of dune areas.
- 11.4.1.9 Coastal construction shall be planned, designed, and constructed to avoid the man-made destruction or removal of existing dunes and dune vegetation. Where such impacts cannot be avoided, such impacts shall be mitigated.
- 11.4.1.10 Structural development along beaches fronting the Atlantic Ocean shall enhance and not further degrade the coastal beach and dune system. The following criteria shall apply in the implementation of this policy:
- A. Shoreline buffer zones shall be established to protect and preserve the coastal beach and dune systems fronting the Atlantic Ocean.
 - B. Structures shall be prohibited within the established buffer areas except where overriding public interest is apparent for public park and recreation facilities, or for structures that are necessary for reasonable access and are elevated above the dune vegetation.
 - C. Buffer areas shall be measured seaward from the existing or historical vegetative line and re-established upon changes to the new Coastal Construction Control Line.
- 11.4.1.11 Beach and dune management plans have been prepared that assess temporal and spatial long shore transport rates and direction, rates of on-shore sand movement, rates of dune build-up, wave focusing and off-shore topography refracting waves, the rate at which Ponce DeLeon Inlet is ingesting sand, and the effects of mechanical devices such as sand dredging machines. The subject plans will be utilized to manage applicable coastal management issues.
- 11.4.1.12 Maintain expertise in coastal geology/engineering to design research projects and to conduct field and lab work to complete these projects.
- 11.4.1.13 As part of the coastal resource function, exchange information and monitor data collection of the FDEP, the US Army Corps of Engineers, Florida Sea Grant College, universities and other appropriate agencies.
- 11.4.1.14 In cooperation with the FDEP, develop information and education programs to inform citizens on how the coastline works. Provide technical assistance to land owners, citizens, community interest groups and local governments.
- 11.4.1.15 Utilize State and Federal grants and community resources to implement beach and dune restoration projects such as civic associations, community groups, an "Adopt-A-Beach" program, private donations, or other similar techniques.
- 11.4.1.16 The County has conducted successful dune restoration demonstration projects in several areas of the County. These dune restoration projects serve as examples of appropriate dune restoration.

- 11.4.1.17 Incorporate dune restoration projects and revegetation into public improvement projects such as park, recreation facilities, and off-beach parking areas, adjacent to the beach, and vacant county owned land east of Coastal Construction Coast Line.
- 11.4.1.18 Prepare interlocal agreements with coastal cities and the State of Florida for the funding and development of beach maintenance and restoration programs and projects.
- 11.4.1.19 The stabilization and depth maintenance of Ponce DeLeon Inlet and the longshore transport of sediment relations to the Inlet zone of influence shall continue to be managed under the FDEP certified Inlet Management Plan.
- 11.4.1.20 Sands dredged from the Ponce DeLeon Inlet should be used to stem beach erosion within the zone of influence. All sand dredged from Ponce DeLeon Inlet shall be managed in accordance with the FDEP certified Ponce DeLeon Inlet Management Plan.
- 11.4.1.21 Volusia County should continue to monitor sea level rise science to determine how sea level rise will affect the County. Based on pertinent data, the County will act accordingly.

6.0 COASTAL HIGH HAZARD AREA AND HURRICANE VULNERABILITY ZONE

The Coastal High Hazard Area (CHHA) for the Comprehensive Plan is depicted by Figure 1-10 of the Future Land Use Element (See Appendix 1, Maps and Figures). The "East Central Florida Hurricane Evacuation Study, Update 1999" prepared by the East Central Florida Regional Planning Council (ECFRPC) served as the basis for identification of the CHHA. The CHHA is defined as the area below the elevation of the category 1 storm surge line as established by a Sea, Lake and Overland Surges from Hurricanes (SLOSH) computerized storm surge model.

The CHHA is a component of the broader Hurricane Vulnerability Zone (HVZ). The HVZ consists of that portion of the unincorporated region to be evacuated in Category 3 or greater intensity storm as identified in the County's Comprehensive Emergency Management Plan.

¹ The Saffir/Simpson Hurricane Scale categorizes hurricanes into 5 different types of storms. A Category 1 storm has winds of 74-95 mph, with storm surges of 4-5 feet above normal. A Category 2 storm has winds of 96-110 mph, with storm surges of 6-8 feet above normal. A Category 3 storm has winds of 111-130 mph, with storm surges of 9-12 feet above normal. A Category 4 storm has winds of 131-155 mph, with storm surges of 13-18 feet above normal. A Category 5 storm has winds greater than 155 mph, with storm surges greater than 18 feet above normal.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

- 11.5 Lessen the impact of a destructive storm on human life, property, public facilities and natural resources by discouraging the location of new development in the coastal high hazard area through limitations to new public expenditures in these areas.

OBJECTIVE:

- 11.5.1 Evacuation of Population. Maintain the clearance time of the population in the Hurricane Vulnerability Zone at nineteen (19) hours based on a level of service standard "D."

POLICIES:

- 11.5.1.1 Land use plan amendments in the Hurricane Vulnerability Zone shall strive to reduce and shall not increase the clearance time in the Hurricane Vulnerability Zone above 19 hours.
- 11.5.1.2 Assess the impact of new development on hurricane evacuation network to ensure it will not increase clearance time of the population in the Hurricane Vulnerability Zone above 19 hours.
- 11.5.1.3 Ensure adequate roadway capacity to facilitate the evacuation of residents in the Hurricane Vulnerability Zone. The County, in conjunction with the coastal cities, the Metropolitan Planning Organization, and/or Florida Department of Transportation (as

appropriate), shall seek to mitigate issues associated with the critical roadway segments for evacuation routes, as identified in the "East Central Florida Hurricane Study, update 1999" so as to maintain an acceptable clearance time.

- 11.5.1.4 Future roadway improvements shall minimize the impact of flooding and storm damage on evacuation route facilities.
- 11.5.1.5 Evacuation routes shall be designated in such a way as to distribute traffic demand to provide optimum utilization of available roadway facilities.
- 11.5.1.6 Volusia County shall coordinate the Comprehensive Emergency Management Plan with the coastal cities to ensure the orderly evacuation of the population in the Hurricane Vulnerability Zone.

OBJECTIVE:

- 11.5.2 Shelter for Population. In cooperation with the American Red Cross, Volusia County shall designate hurricane evacuation shelters to protect the population in the Hurricane Vulnerability Zone.

POLICIES:

- 11.5.2.1 Volusia County in cooperation with the American Red Cross continues to designate hurricane emergency shelter facilities to accommodate at least 10% of the population in the Hurricane Vulnerability Zone, based upon a standard of 20 square feet of shelter space per person.
- 11.5.2.2 New hurricane emergency shelter space shall not be located in the Hurricane Vulnerability Zone.

OBJECTIVE:

- 11.5.3 Mitigation of Property Damage. Ensure that development in the Hurricane Vulnerability Zone and Coastal High Hazard Area minimizes danger to life and property.

POLICIES:

- 11.5.3.1 Public facilities shall be prohibited that will encourage new development inside the Coastal High Hazard Area, unless the facilities are consistent with policies specifically identified in the Coastal Management Element or cross-referenced to another appropriate element and included in the Capital Improvements Element. This prohibition does not include: facilities associated with redevelopment or development of properties in accordance with previously approved subdivisions or site plans; public access and recreation facilities; facilities necessary for public health/safety/welfare; or resource restoration projects/facilities.
- 11.5.3.2 Prior to the development of public facilities in the Coastal High Hazard Area, it shall be determined that there are no other feasible sites outside that area.

- 11.5.3.3 If constructed, all public facilities in the Coastal High Hazard Area shall be flood proofed to ensure minimum damages from storms and hurricanes.
- 11.5.3.4 The County shall enforce, where necessary and appropriate, regulations that provide for: dune protection and stabilization, flood proofing of utilities, and requirements for structural wind resistance and flood plain management.
- 11.5.3.5 All development in the Hurricane Vulnerability Zone shall be consistent with the federal flood hazard requirements.
- 11.5.3.6 The County shall continue to participate in the National Flood Insurance Program (NFIP).
- 11.5.3.7 The County shall maintain, and pursue improvement of, its insurance rating under the NFIP Community Rating System (CRS).
- 11.5.3.8 If feasible, and where State funds are anticipated to be needed, County-owned infrastructure presently within the Coastal High Hazard Area shall be relocated outside of said area when repairing/replacing the infrastructure. If relocation of the infrastructure is deemed by the County to not be feasible, any reconstruction or repair of the infrastructure necessitating State funds shall be designed so as to minimize potential damage (i.e., wind and/or flooding) from hurricanes or other storms.
- 11.5.3.9 The County, in accordance with Federal Emergency Management Agency requirements, has adopted and is implementing a mitigation plan through the task force "Volusia Prepares" to reduce damage in areas of repetitive loss due to flooding.
- 11.5.3.10 A "Local Mitigation Strategy" (LMS) has been prepared by the County's Emergency Management Services. The LMS is resultant of a county-wide multi-jurisdictional program (Volusia 2020). The County shall, as practical, continue participation in this program and implement the LMS, as necessary and appropriate, through capital improvements programming and land development regulations to establish a continuing program of hurricane mitigation.
- 11.5.3.11 The County shall continue to direct growth away from the CHHA by utilizing land use controls, acquisition techniques, and other methods as deemed appropriate.
- 11.5.3.12 New or expanded manufactured or mobile home housing developments or recreational vehicle developments shall be required to include a hardened central clubhouse or similar structure to serve as a shelter for residents. The clubhouse or similar structure shall be hardened to withstand 150mph winds.

OBJECTIVE:

- 11.5.4 Post Disaster Redevelopment. Prior to 2010, Volusia County with the East Central Florida Regional Planning Council and the coastal cities, as appropriate, shall undertake an evaluation of the long-term problems related to post-disaster redevelopment and based upon those findings prepare a Post-Disaster Redevelopment

Plan. If necessary, amendments shall be made to the Comprehensive Plan based upon the Post-Disaster Redevelopment Plan.

POLICIES:

- 11.5.4.1 The Post-Disaster Redevelopment Plan shall include, but is not limited to: the identification of land areas that should not be reconstructed, limiting redevelopment in documented areas of repetitive loss, abandonment and/or relocation of buildings, rebuilding of public facilities, reconstruction with structural modification and distinguishing between immediate repair/cleanup actions and actions needed to protect public health and safety and long-term repair and redevelopment.
- 11.5.4.2 The Post-Disaster Redevelopment Plan shall also identify structures in the Coastal High Hazard Area that might be of some utility for public access to coastal beaches and waterways, and make recommendations for acquisition when post-disaster opportunities arise. It shall establish guidelines for determining priorities for the acquisition of storm-damaged property in the Coastal High Hazard Area and Hurricane Vulnerability Zone.
- 11.5.4.3 The Post-Disaster Redevelopment Plan shall establish principles for repairing, replacing, modifying, or relocating public facilities in the Coastal High Hazard Area and Hurricane Vulnerability Zone.
- 11.5.4.4 As provided for by the land development regulations, the following post-disaster reconstruction policy is to be applied after a hurricane. For other disasters, refer to Policy 1.1.2.2 (Future Land Use Element).
- A. Structures damaged less than 50% of their replacement cost at the time of damage may be rebuilt to their original condition, subject only to current building and life-safety codes.
 - B. Structures damaged more than 50% of their replacement cost at the time of damage can be rebuilt to their original square footage and density, provided that they comply with:
 - 1. Requirements of the County's land development regulations for elevation above the 100-year flood level;
 - 2. Building code requirements for flood proofing (non-residential);
 - 3. Current building and life-safety codes (at the time of building permit application);
 - 4. State Coastal Construction Control Line Regulations; and
 - 5. Any required zoning or other development regulations (other than density or intensity), unless compliance with such regulations would preclude reconstruction otherwise intended by the post-disaster reconstruction policy.
 - C. The land development regulations may establish procedures to document actual uses, densities, and intensities, and compliance with regulations in effect at the

time of construction, through such means as photographs, diagrams, plans, affidavits, permits, appraisals, and tax rewards.

- 11.5.4.5 The Volusia County Comprehensive Emergency Management Plan for post-disaster recovery provides for immediate repair and clean up actions in the form of disaster assessment, the provision of temporary housing, and individual assistance. These efforts shall be coordinated between Volusia County and the coastal cities. Reconstruction shall be consistent with the Recovery Annex of the Comprehensive Emergency Management Plan, as appropriate, until such time as the Post-Disaster Redevelopment Plan has been adopted.

7.0 PUBLIC ACCESS

7.1 Categories of Public Access Facilities

Facilities that provide public access to the County's coastal beaches and inland waterways in the Coastal Management Planning Area can be organized into the following seven categories:

- A. Coastal Beach Access Facilities. These facilities afford access to the areas along the County's coast that are seaward of the mean high-water line. Beach access facilities include any facility that increases the opportunity for the public to enjoy the beach, such as parking facilities, restrooms or mini ocean parks. There are two distinct types of Coastal Beach Access Facilities in Volusia County:
 - i) Vehicular Beach Ramps. These ramps are located on public easements or lands that extend from public roads to the coastal beaches. They are used primarily for the purpose of affording vehicular access to the beaches, though pedestrians can also use them; and
 - ii) Pedestrian Access Facilities.
 - 1. Walkways. Improved paths of either concrete or asphalt which traverse public easements or lands, and which permit pedestrian access to the coastal beaches.
 - 2. Walkovers. Structures consisting of a combination of ramps and stairs over the dune system in the County which are built on public lands or easements and link the coastal beaches with public roads and rights-of-way.
 - 3. Unimproved Paths. Public easements or lands cut through the existing dune system which permit pedestrian access to the coastal beaches.
- B. Fishing Piers. Publicly or privately owned piers or boardwalks, provided primarily for the purpose of non-boat fishing along either the County's coastal beaches or the inland waterways of the Coastal Management Planning Area, or other facilities along these waterways which serve as traditional locations for fishing, such as bridges and jetties. No attempt has been made to identify other areas along the coast which are used for fishing, recognizing that fishing occurs all along the coastline, and on many of the bridges in the Coastal Management Planning Area.
- C. Marinas and Docks. Publicly or privately owned boat docking facilities for general public use, typically used upon payment of a fee. Facilities which restrict their use to membership in a group or organization not directly related to the marina itself, such as condominium associations, are not included. Similarly, boat docking facilities located at private homesites are not included.
- D. Boat Ramps. Publicly or privately owned boat launching lanes located in the Coastal Management Planning Area that provide direct access to the inland waterways of the

Coastal Management Planning Area. Boat Ramps are generally developed in conjunction with parking facilities.

- E. Park Facilities. Public lands (owned by either the federal or state governments, Volusia County, or the coastal cities) that are developed for the purpose of providing either passive or active recreational opportunities in relation to the County's coastal beaches or the inland waterways in the Coastal Management Planning Area.
- F. Undeveloped Lands. Publicly owned lands in the Coastal Management Planning Area that provide broad expanses of open space and passive recreation opportunities (such as bird watching and fishing) contiguous to the County's coastal beaches or the inland waterways.
- G. Scenic Drives. Areas along coastal roads providing unique or unusual views of the coast, the inland waterways, or the natural environment of the coastal area. Other sites, which may offer scenic views, but do not offer extended opportunities for viewing, are not included.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

- 11.6 Maintain and improve public access to the sovereign lands of the Coastal Management Planning Area through the provisions of coastal beach access facilities, fishing piers, boat ramps and marinas.

OBJECTIVE:

- 11.6.1 Coastal Beach Access Facilities. In the areas of unincorporated Volusia County, except Ormond-by-the-Sea, Coastal Beach Access Facilities (Vehicular Beach Ramps, Walkways, or Walkovers) shall be provided at no greater than 2 mile intervals, except for the area north of Bass Drive and the area in Canaveral National Seashore. In the area of unincorporated Ormond-by-the-Sea, Coastal Beach Access Facilities shall be provided every ¼ mile, on average. Volusia County shall be responsible for the actual provision, maintenance, and operation of these facilities unless otherwise indicated.

POLICIES:

- 11.6.1.1 Beach Access Facilities shall, to the extent feasible, be provided in accordance with the Beach Management Plan.
- 11.6.1.2 Volusia County, shall ensure that all Coastal Beach Access Facilities shall include access to a public road.
- 11.6.1.3 The establishment and/or improvement of vehicular beach ramps, including ramp expansion and improved handicapped access shall be consistent with the County's Beach Management Plan.

- 11.6.1.4 The priority for new pedestrian access shall be pedestrian walkovers or other alternatives that do not harm the dune system.
- 11.6.1.5 The County shall, in cooperation with the appropriate coastal cities, identify the need for any new parking spaces so as to aid in relieving congested areas.
- 11.6.1.6 Access and accommodations for handicapped individuals shall be provided in accordance with the County's Beach Management Plan. Additionally, the County should continue to cooperate with VOTRAN to provide additional routes and stops at Coastal Beach Access Facilities and add any required equipment on the buses to accommodate wheel chairs and the needs of the handicapped.
- 11.6.1.7 Pedestrian Access Facilities shall, to the extent feasible, be provided in accordance with the Beach Management Plan.
- 11.6.1.8 Volusia County shall prohibit the vacation of public right-of-way that provides or could provide public access to the beach or off-beach parking without an equivalent type of access.
- 11.6.1.9 Volusia County shall maintain a financially feasible Beach Parking Plan to promote the protection of natural resources as well as to serve the need for public beach access.

OBJECTIVE:

- 11.6.2 Fishing Piers. In conjunction with the coastal cities and the Ponce DeLeon Port District, the County will endeavor to expand and construct pier opportunities to the greatest extent possible for the residents of the County.

POLICIES:

- 11.6.2.1 Fishing pier needs have been met through fiscal year 2010. New pier requirements shall be met through the utilization of fishing pier space with existing bridges. The County, in cooperation with the appropriate coastal cities and Ponce DeLeon Port District, shall determine the appropriate location at which fishing pier space can be utilized in conjunction with existing bridges.

OBJECTIVE:

- 11.6.3 Scenic Routes. Volusia County may establish scenic routes and roadways consistent with the Transportation Element, to preserve the natural beauty and vistas of the Coastal Management Planning Area.

POLICIES:

- 11.6.3.1 The County and the appropriate coastal cities should mutually agree to establish corridor management strategies and recommendations to protect the scenic quality of the identified scenic roadways, if any.

- 11.6.3.2 Signage shall be provided to identify Scenic Roadways, if any.
- 11.6.3.3 The County's Land Development Regulations may include land use controls such as overlay districts or site plan review requirements to ensure preservation of the natural and scenic resources of any Scenic Routes.

8.0 PUBLIC SERVICES

8.1 Introduction

Public facilities and services needed to support coastal growth and development are under the authority of a variety of jurisdictions. The majority of these facilities, particularly potable water, sewer, and public buildings, are the responsibility of individual municipalities. In some instances, a city may provide service to an adjacent jurisdiction. In other cases, the service or facility is provided by an independent agency or district such as the School District.

The areas designated as "Urban Infill" and "Planned Development" on the coastal area plan are targeted for the majority of urban growth and are expected to have the full range of public services and facilities. The first priority for receipt of these services and facilities are the existing urbanized areas - designated for "Urban Infill". The next priority for public services is the vacant land on the fringe of the existing urban area - the "Planned Development" areas designated in the Coastal Plan support document. It is recommended that new development have regional or central sewer and water, and that individual or non-regional facilities be phased out and connected to a central system. Areas that have a high concentration of individual septic systems with the potential to degrade water quality should also be targeted for connection to regional wastewater treatment facilities. Limitations of public expenditures that would subsidize development in the Coastal High Hazard Area will also govern how and where public facilities are extended.

This section is divided as follows:

- A. Transportation
- B. Potable Water Supply Systems
- C. Sanitary Sewer
- D. Stormwater Management
- E. Solid Waste
- F. Public Buildings

GOALS, OBJECTIVES, AND POLICIES

GOAL:

- 11.7 Public services and facilities shall be adequate and available to serve both current and future residents.

OBJECTIVE:

- 11.7.1 General. The land development regulations shall ensure that the provision of roads, potable water, sanitary sewer, drainage, recreation, mass transit, and solid waste facilities and services required to maintain the adopted Level of Service standards shall be consistent and phased with the level of development proposed in the Future Land Use Element.

POLICY:

- 11.7.1.1 Development or redevelopment within the coastal areas shall have public services and facilities available concurrent with the impacts of development.

OBJECTIVE:

- 11.7.2 Transportation. Ensure through land development regulations and capital improvements that the provision of roads and mass transit meet the adopted level of service standards.

POLICIES:

- 11.7.2.1 Maintain Level of Services consistent with the Transportation Element for roadway facilities within rural areas and for roadway facilities in urban areas within the coastal area.
- 11.7.2.2 Establish a Level of Service "D" for the purpose of calculating the capacity of road facilities to clear evacuees within the adopted hurricane evacuation time.

OBJECTIVE:

- 11.7.3 Potable Water Supply Systems. Ensure through land development regulations, capital improvements and development review, sufficient water resources to provide potable water needs to meet the needs of the coastal area population.

POLICIES:

- 11.7.3.1 Development in prime and moderate aquifer water recharge areas shall be consistent with the goal of protecting of water resources.
- 11.7.3.2 Require future development at urban densities and intensities to hook up to centralized potable water systems, consistent with the Potable Water Element, in those areas designated as urban on the Future Land Use Map.
- 11.7.3.3 Require adequate capacity in potable water storage, treatment, and distribution facilities to meet the demand of projected growth and development.
- 11.7.3.4 Adopt interlocal agreements among and between local governments to identify future service areas and potable water providers.
- 11.7.3.5 Require future development to comply with the County's land development regulations to protect potable water well fields from contamination.
- 11.7.3.6 Locate future well fields to protect against salt water intrusion.

- 11.7.3.7 Consistent with the requirements of FDEP and the SJRWMD, potable water withdrawal should be at the appropriate volumes and rates to avoid salt water intrusion and decreased aquifer levels.
- 11.7.3.8 The Level of Service for potable water within the coastal area shall be consistent with the Water and Sewer Sub-elements of the Comprehensive Plan.
- 11.7.3.9 Continue efforts to assess and upgrade water transmission facilities in areas experiencing low pressure conditions to ensure that an adequate water supply will exist during maximum daily demand periods to meet future growth.

OBJECTIVE:

- 11.7.4 Wastewater. Provide sufficient treatment capacity and effluent disposal methods to meet the demand projected by growth and development consistent with adopted water quality standards.

POLICIES:

- 11.7.4.1 Require future development or redevelopment at urban densities and intensities to connect to regional wastewater treatment facilities, consistent with the Sanitary Sewer Element, in those areas designated urban on the Future Land Use Plan.
- 11.7.4.2 Require existing and future wastewater treatment facilities permitted by the County to meet or exceed adopted FDEP or Volusia County water quality standards.
- 11.7.4.3 Adopt interlocal agreements among and between local governments to identify future wastewater service areas and collection and treatment responsibility.
- 11.7.4.4 The Level of Service for the provision of wastewater treatment in the unincorporated portions of the coastal area shall be consistent with the Water and Sewer Sub-element of the Comprehensive Plan.

OBJECTIVE:

- 11.7.5 Stormwater Management. Ensure that stormwater management systems do not degrade coastal resources including beach sand erosion by direct discharge.

POLICIES:

- 11.7.5.1 For new development and re-development, prohibit the untreated direct discharge of stormwater runoff into Class II Waters.
- 11.7.5.2 The Level of Service standard for stormwater runoff in the coastal area shall, as a minimum, be that required by the FDEP/SJRWMD Environmental Resources Permitting Program or the provisions of the County's Land Development Code, as applicable.

- 11.7.5.3 Coordinate and cooperate with Brevard and Flagler Counties by participating in basin-wide stormwater management programs and studies.
- 11.7.5.4 Establish basin-wide uniform standard procedures for sizing and designing facilities so those systems within one basin are structurally and functionally compatible.
- 11.7.5.5 Discharge from stormwater facilities shall not result in violation of adopted water quality standards.
- 11.7.5.6 Stormwater management systems shall be designed to remove oil and suspended solids prior to discharge.

OBJECTIVE:

- 11.7.6 Solid Waste. Ensure that solid waste facilities do not result in violation of adopted standards or degradation of coastal resources.

POLICIES:

- 11.7.6.1 The County shall continue to enforce rules/regulations governing the proper disposal of solid waste in the unincorporated portion of the Coastal Management Planning Area.
- 11.7.6.2 The Tomoka Farms Landfill shall continue to be monitored and the monitoring program evaluated to ensure ground water and surface water samples are collected. Water samples will meet federal and state water quality standards. This data shall be incorporated into the water quality sampling program.
- 11.7.6.3 The Level of Service standard for solid waste shall be as identified within the Solid Waste Element.
- 11.7.6.4 The County shall continue to investigate and review the available technology for resource recovery, recycling and other alternatives to solid waste management consistent with the protection and conservation of environmental resources and water quality.

OBJECTIVE:

- 11.7.7 Public Buildings. Ensure through capital improvement planning and site selection that public buildings meet the needs of population growth and are located outside of areas susceptible to damage from storms or flooding.

POLICIES:

- 11.7.7.1 Continue to cooperate with the School Board in selecting future sites for school facilities within the coastal area.

- 11.7.7.2 Encourage the School Board to locate future school facilities outside of areas susceptible to hurricane storm damage or areas prone to flooding, or as consistent with Chapter 235, Florida Statutes regarding flood plain and school building requirements.
- 11.7.7.3 Cooperate with the School Board and the Red Cross in the identification and designation of school facilities as hurricane evacuation and emergency shelters.
- 11.7.7.4 Encourage the School Board to design future school facilities, as required to address existing and future needs, to be utilized as emergency and evacuation shelters.
- 11.7.7.5 Provide for fire and law enforcement facilities commensurate with population growth and development in the coastal area.
- 11.7.7.6 Locate new fire and law enforcement facilities outside of the areas susceptible to hurricane storm damage or flooding where feasible.
- 11.7.7.7 Continue to update procedures as part of the Comprehensive Emergency Management Plan for emergency fire and police protection and response.

9.0 INTERGOVERNMENTAL COORDINATION

Early on in the preparation of the Coastal Management Element, the County and the coastal cities recognized that coastal issues and resources should be coordinated on a coastal-area wide basis. This is because environmental systems such as estuaries, watersheds, wildlife habitats, human-made systems like traffic and drainage, and safety concerns such as hurricane evacuation do not stop at political boundaries.

In recognition of these relationships, the analysis, management strategies, and the goals, objectives and policies included in the Coastal Management Element are based, where appropriate, on what best affects the entire Coastal Management Planning Area regardless of political boundaries.

However, because there are different political entities in the Coastal Management Planning Area, and because there are no existing legal or institutional arrangements that mandate implementation of coastal area-wide objectives, the Coastal Management Element has been designed, to the extent possible, to encourage cooperation among and between the local governments in the Coastal Area.

The central concept of the Coastal Management Element is to promote consensus among and between the County and coastal cities so that common problems can be identified and common solutions proposed and implemented. In this regard, the Element has structured the inventory, analysis and Goals, Objectives and Policies in a broad-based way so that each community can choose to adopt all or part of the element in their individual Comprehensive Plan.

Meetings, both informal and formal, of staff from the various coastal jurisdictions, should be used whenever practical so as to engender cooperation between local governments on issues related to the management of coastal resources, such as: land, water quality, beach and dune systems, coastal hazards, public access, and public services. The coastal jurisdictions continue to cooperate with one another on issues and the TSC was convened during the preparation of the Evaluation and Appraisal Report (EAR) and could be utilized for other coastal issues.

Another means of cooperation is the use of intergovernmental agreements in instances where there is agreement among and between the affected local governments that binding intergovernmental relationships are needed.

GOALS, OBJECTIVES, AND POLICIES

GOAL:

- 11.8 Foster and encourage intergovernmental coordination in the Coastal Management Planning Area between Volusia County, the coastal cities, adjacent local governments, regional, state, and federal government entities.

OBJECTIVE:

- 11.8.1 Coastal Resources. Continue to utilize development standards for appropriate densities, intensities, buffer zones, resource protection, and location for development

adjacent to aquatic and natural preserves, wildlife refuges, and environmental systems corridors that are consistent on an area-wide basis.

POLICIES:

- 11.8.1.1 Encourage consistency between the development standards of the coastal communities for issues/concerns which transcend jurisdictional boundaries.
- 11.8.1.2 Through formal (i.e., review of Plan amendments) and informal mechanisms, Volusia County shall promote the identification and protection of environmental systems corridors to ensure the viability and continuation of these cross-jurisdictional systems.
- 11.8.1.3 Volusia County shall continue maintaining and updating the Florida Land Use Cover and Forms classification system, maps, and database.

OBJECTIVE:

- 11.8.2 Land Use. Utilize the Coastal Management Element Plan as a guide in deciding issues of land use and zoning, the extension and provision of urban services, annexation, and the general location of environmental systems corridors in the Coastal Management Planning Area.

POLICIES:

- 11.8.2.1 Applications for land use amendments, zoning, and development shall consider the impacts on adjacent local governments.
- 11.8.2.2 The extension and provision of urban services and facilities shall be accomplished through the adoption of Interlocal Agreements.
- 11.8.2.3 The County and coastal cities shall cooperate in maintaining and updating land use information by watershed.
- 11.8.2.4 Provide land use and natural vegetation inventory data to the SJRWMD to aid in the development of the Surface Water Improvement and Management (SWIM) Plan for the Indian River Lagoon and the Northern Coastal Basin.

OBJECTIVE:

- 11.8.3 Water Quality. Maintain an effective ongoing water sampling and monitoring system which shall be applied by Volusia County and the coastal cities on an area-wide basis.

POLICIES:

- 11.8.3.1 Work with the water management districts and local governments in implementing a long-term, inter-agency water and sediment quality monitoring strategy for Mosquito/Indian River Lagoon and the Halifax River.

- 11.8.3.2 The County, using appropriate resources such as its state-certified laboratory, shall continue its program of water quality monitoring.
- 11.8.3.3 The County, in cooperation with the other appropriate jurisdictions, shall maintain and seek to expand the existing water quality monitoring program so that all point and non-point sources and facilities which are identified as potential water quality problems are regularly and periodically inspected. This effort shall be coordinated with the SJRWMD and FDEP and includes reviewing and updating all point and non-point discharge permits checking for accuracy and completeness.
- 11.8.3.4 Implement, as feasible, the stormwater management plans prepared by the County, which encompass, in all or part, the Coastal Management Planning Area.
- 11.8.3.5 Implement, as feasible, the completed "Taylor Study" which documented the flushing patterns of the Halifax River and Indian River North/Mosquito Lagoon.
- 11.8.3.6 Volusia County and the coastal cities shall continue their commitment to enhance water quality and estuarine conditions through these additional intergovernmental coordination mechanisms:
- A. Participation in ad-hoc or other special technical advisory committees.
 - B. Exchange of data and information among and between Volusia County and the coastal cities, as well as Brevard and Flagler Counties.
 - C. Presentation and discussions with the Volusia Council of Governments.
 - D. Updating data in cooperation with FDEP and SJRWMD.
 - E. Participation in the SWIM programs.
 - F. Implementing the policies or recommendations of the Aquatic Preserve Management Plans.

OBJECTIVE:

- 11.8.4 Beaches and Dunes. Volusia County and the coastal cities shall ensure that beach and dune management is coordinated throughout the Coastal Management Planning Area.

POLICIES:

- 11.8.4.1 Seawall construction in the County shall be consistent with the State requirement mandating design and construction to withstand a 100-year storm event.
- 11.8.4.2 Volusia County and the coastal cities shall maintain uniform standards for the maintenance and restoration of dune areas.
- 11.8.4.3 The County and coastal cities shall prepare a beach and dune management plan except that the Ponce DeLeon Port Authority shall implement the beach and dune management practices set forth in the "Inlet Management Plan" which has been certified by the Florida Department of Environmental Protection (FDEP) between FDEP monuments R-130 to R-165.

11.8.4.4 The Port Authority through the Inlet Management Plan, which has been certified by the FDEP, shall maintain a continuing scientific base and monitoring of Ponce DeLeon Inlet and the coastal beaches within the inlet's zone of influence, from FDEP monuments R-130 to R-165.

11.8.4.5 The Port Authority shall coordinate studies and monitoring efforts with the FDEP, and the U.S. Army Corps of Engineers (USCOE) for beach areas under the influence of the inlet as stated in the Inlet Management Plan (FDEP monuments R-130 to R-165).

OBJECTIVE:

11.8.5 Hurricane Evacuation. Volusia County and the coastal cities shall coordinate all hurricane evacuation activities through the Volusia County Emergency Management Services.

OBJECTIVE:

11.8.6 Coastal Beach Access Facilities. Additional improvements to and public parking facilities for the coastal beach access facilities shall be provided, as necessary and feasible.

OBJECTIVE:

11.8.7 Fishing Piers. The Port Authority shall enter into interlocal agreements with the coastal cities to provide for the completion of a study to determine the location at which fishing pier space can be utilized in conjunction with existing bridges.

OBJECTIVE:

11.8.8 Scenic Routes. Volusia County and the coastal cities shall establish the scenic routes identified in the Coastal Management Element.

OBJECTIVE:

11.8.9 Public Facilities. Ensure through interlocal cooperation, adequate public facilities are available to accommodate existing and new growth and development in the Coastal Management Planning Area.

POLICIES:

11.8.9.1 The level of service standard for roads in the Coastal Management Planning Area shall be consistent with the Transportation Element, except where expressly modified pursuant to Interlocal Agreement between Volusia County and the individual coastal cities.

11.8.9.2 An Interlocal Agreement shall be adopted between Volusia County and the coastal cities to identify future service areas and purveyors of public water.

- 11.8.9.3 An Interlocal Agreement between Volusia County and the coastal cities shall be adopted to identify future wastewater service areas and collection and treatment responsibility.
- 11.8.9.4 Volusia County and the coastal cities, through Interlocal Agreement, shall establish basin-wide uniform procedures for sizing and designing sewer, water, and drainage facilities to those systems within the same basin which are structurally and functionally compatible.