

EVALUATION OF MAJOR ISSUES

2.1 DISASTER MITIGATION AND RECOVERY

Disaster Mitigation: The County will assess whether provisions of the Comprehensive Plan have been successful in directing growth and development away from hazardous areas.

Disaster Recovery: The County will assess provisions of the Comprehensive Plan regarding restoration of beach/dunes, non-conforming uses, etc.

Please Note: Disaster Preparedness and Response is primarily a function of the Volusia County Emergency Management Division and will not be discussed in this section of the EAR. Also, population figures mentioned in this section of the report are based on 2000 Census as documented by the Florida Department of Community Affairs (FDCA) Volusia County Profile.

INTRODUCTION

A disaster is any occurrence that causes damage, ecological disruption, loss of human lives and deterioration of health and health services on a scale sufficient to warrant extraordinary response from outside the affected community (World Health Organization). Mitigation involves activities aimed at eliminating or reducing the occurrence of a disaster and reducing the effects of unavoidable disasters (FEMA 2001).

Recovery includes activities to return vital life support systems to minimum operating standards and long-term activity designed to return life to normal or improved levels, including some form of economic viability. Recovery measures include, but are not limited to, crisis counseling, damage assessment, debris clearance, decontamination, disaster application centers, disaster insurance payments, disaster loans and grants, disaster unemployment assistance, public information, reassessment of emergency plans, reconstruction, temporary housing, and full-scale business resumption.

During the fall of 2004 Volusia County experienced significant damage from Hurricanes Charley, Francis and Jeanne. In 1999 the County was grazed by hurricanes Floyd and Irene and in 1998 the County experienced wildfires that burned 137,000 acres. The cost of recovery for these, among other disasters, ranges from hundreds of thousands to billions of dollars, significantly taxing local, State and Federal financial sources. It is imperative to try to reduce the cost of natural disasters.

One way to do so is to better integrate the Local Hazard Mitigation Plan (LHMP) into the Comprehensive Plan so that the LHMP can be effective in the decision-making process of growth management. The Comprehensive Plan is the legal basis for all local land use decisions made. If hazard mitigation is to be accomplished beyond the occasional drainage project, these hazards must be addressed in Comprehensive Planning, where development can be limited or regulated in high-risk hazard areas, just as sensitive environments are routinely protected through growth management policies. Mitigation of hazards is considerably easier and less expensive if done when raw land is being converted into development. Retrofitting structures and public facilities after they have been built is significantly more expensive. However, if older neighborhoods or communities are scheduled to be revitalized or redeveloped, hazard mitigation needs to

be an aspect considered and integrated into the project prior to the time of development approval.

The Volusia County LHMP has identified and prioritized hazards County-wide and by individual jurisdiction. Being a large County in terms of land area, 832,000 acres of land and 238 square miles of water, there is diversity among its communities as to what are the most important hazards. Many municipalities are situated along the Atlantic Ocean, so storm surge is a specific hazard of concern. For inland communities like DeBary, Deltona, and Pierson, storm surge is not an issue, but inland flooding can be a potential problem. Based on the LHMP, County-wide the three top hazards are high wind, flooding, and wildfire. Sinkholes were identified as a low risk hazard; however, after the 2004 hurricane season there were more than five sinkholes reported in southwest Volusia County. Emergency Management has stated that sinkholes will continue to increase as a hazard risk because more land will be developed in karst areas susceptible to sink hole activity and rainy weather conditions.

The County should also have a Post-Disaster Redevelopment Plan (PDRP) to manage the aftermath of various disasters. The Comprehensive Plan states that a PDRP will be prepared prior to 2000. The County plans on preparing a Post-Disaster Redevelopment Plan prior to 2010, potentially funded partially through the State of Florida Hazard Mitigation Grant Program.

BACKGROUND

As was previously mentioned, County-wide the three top hazards are high wind, flooding, and wildfire. High winds are the top hazard in Volusia County. The entire County is susceptible to high winds from both tornados and hurricanes. In May 1994, tornadoes caused \$6.7 million of damage to private property. Tornadoes, and other El Nino attributed wind events since 1998, have caused more than \$21 million in individual damage to residents and business, with 165 residences destroyed, 344 receiving major damage, and 413 receiving minor damage. Wind damage also can be caused by hurricanes. Tropical Storm Gordon in November 1994 caused over \$3.4 million in public damage and over \$9.3 million in private property damage. Damage from Hurricane Erin occurred in 1995, and evacuation and activation costs were incurred due to Hurricanes Floyd and Irene in 1999. At the end of the 2004 hurricane season, three consecutive hurricanes caused an estimated total of more than \$560 million in damages in the County.

The second highest ranked hazard is flooding. The County has more than 48 miles of ocean beaches, 39,488 acres of coastal marshland, and 135,808 acres of inland swamps. These low lying areas are highly susceptible to flooding and in many instances have flooded repeatedly. There are 26 repetitively flooded properties in the unincorporated County. All jurisdictions are a part of the National Flood Insurance Program, with the exception of Pierson and Lake Helen.

The third most significant hazard is wildfire. The County has a considerable amount of undeveloped areas with prime fuel sources for fires. In 1998, 137,000 acres burned, attributable in large part to lightning and drought conditions, approximately 29,000 homes were threatened and more than 300 homes and business were damaged or destroyed in various areas around Volusia County. There were additional fires in 2000

and periodic brush fires since. Nearly the whole County is at medium or high risk, with the exception of the coastline.

Existing Mitigation Measures

In Volusia County, there are many different types of mitigation programs implemented by the County, its municipalities and private sector organizations. The County and its municipalities maintain programs in comprehensive planning, zoning, code enforcement, public education, and many other areas that, to varying degrees, promote hazard mitigation. Among these is the cooperative effort by County and municipal agencies, community groups, and private sector organizations to develop and implement a comprehensive LHMP.

Volusia Prepares

The Volusia County Mitigation 2020 Task Force for Hazard Mitigation, also known as, *Volusia Prepares*, is a community-wide effort established in 1999 to identify and recommend projects and programs that will eliminate, minimize, or otherwise mitigate the vulnerability of people, property, environmental resources and economic vitality of the community to the impacts of future disasters. Volusia Prepares functions as the “working group” for the LHMP.

Volusia County LHMP

The Volusia County LHMP was first adopted in 2000. Volusia Prepares continually updates the LHMP consistent with criteria outlined in the Disaster Mitigation Act of 2000. The County’s LHMP includes the following goals:

1. Local government will have the capability to develop, implement, and maintain effective mitigation programs.
2. All sectors of the community will work together to create a disaster-resistant community by the year 2020.
3. The community will have the capability to initiate and sustain emergency response operations during and after a disaster.
4. The continuity of local government operations will not be significantly disrupted by disasters.
5. The threat of disasters to the health, safety, and welfare of the community’s residents and visitors will be minimized.
6. The policies and regulations of local government will support effective hazard mitigation programming throughout the community.
7. Residents of the community will have homes, institutions, and places of employment that are less vulnerable to disaster.
8. The economic vitality of the community will be enhanced by the mitigation strategy, pre- and post-disaster recovery planning.
9. The availability and functioning of the community’s infrastructure will be minimally disrupted by a disaster.
10. Members of the community will understand the hazards threatening local areas and the techniques to minimize vulnerability to those hazards.

National Flood Insurance Program/Community Rating System

With the exception of Lake Helen and Pierson, as of June 2004 all other local governments in Volusia County participate in the National Flood Insurance Program (NFIP). The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community flood plain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance. As of June 2004 the only governments not participating in the Community Rating System Program are DeBary, DeLand, Deltona, Lake Helen, Oak Hill, and Pierson.

Comprehensive Plan

The Comprehensive Plan has many policies considered to be best management practices for mitigating the effects of disasters. See the Comprehensive Plan Review below for a summary of how the major hazards for the County have been addressed.

Existing Recovery Measures

Volusia County Emergency Management Division has recently contracted consultants, Emergency Response Planning & Management, Inc. (ERP&M) with state grant funds, to prepare a Long-term Disaster Recovery Plan for the County. The draft Recovery Plan is to be completed in September 2005, however, this is an on-going document that will be updated as needed.

Comprehensive Emergency Management Plan

The most recent update of the Volusia County Comprehensive Emergency Management Plan (CEMP) was completed in May 2004. Volusia County utilizes the emergency support function concept of operations for management of its emergency response activities. This enables the County to rely on actions taken by its twenty designated Emergency Support Functions (ESFs) to actually initiate many of the operations that are needed to complete necessary disaster recovery functions. The preliminary operations necessary for initiation of the disaster recovery function will be conducted by Volusia County's activated ESFs, conducting operations coordinated from the County Emergency Operations Center (EOC).

According to the CEMP, the Volusia County Growth and Resource Management Department will have the following responsibilities for disaster recovery operations:

1. Assume a lead role in long-term redevelopment decision-making regarding reconstruction decisions for damaged property repair and redevelopment in impacted areas;
2. Provide assistance for the purchase of properties and/or land as necessary for public assistance projects and/or hazard mitigation projects;
3. Provide additional administrative and field staff to support the increased level of permitting and code enforcement necessary for post-event reconstruction in the County;

4. Serve as a technical resource for municipalities, on request, to support their reconstruction and redevelopment activities within their jurisdiction.

Post-Disaster Redevelopment Plan

In the Coastal Management Element, Objective 11.5.4 states:

Post Disaster Redevelopment. Prior to 2000, 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.

This Objective has not been achieved. The County plans on preparing a Post-Disaster Redevelopment Plan prior to 2010, potentially funded partially through the State of Florida Hazard Mitigation Grant Program.

Comprehensive Plan Review

The Coastal High Hazard Area (CHHA) includes the County's barrier islands. There are approximately 49.5 linear miles of coastal, barrier island systems in the County. Of the 49.5 miles, 25.5 miles are incorporated into several coastal municipalities, and the County has no land use jurisdiction over these areas. The remaining 23 miles of coastal, barrier island area is unincorporated. Approximately 12.5 miles of the 23 miles of unincorporated land is in public ownership for natural resource preservation purposes. The conservation areas along the coast can be described as the North Peninsula State Recreation area located in northern coastal Volusia County, and the Canaveral National Seashore located in southern Volusia. The remaining coastal area is made up of three general unincorporated sections: The North Peninsula, Wilbur-by-the-Sea, and Bethune Beach/Silver Sands (See Sec. 3.3 for more information regarding these unincorporated coastal areas).

The Comprehensive Plan has many policies considered to be best management practices for mitigating hurricane and coastal surge impacts in the CHHA. There are policies aimed at preserving natural hazard protection features of the environment, such as beaches, dunes and wetlands. Building upon these policies are policies aimed at acquiring land in the CHHA and preserving these areas for open space and recreation. For those coastal hazard areas that cannot be preserved, the County has policies for limiting development by not allowing increased densities through land use amendments in the hurricane vulnerability zone and by prohibiting building seaward of the Coastal Construction Control Line (CCCL). The Plan also limits public expenditures in the CHHA to issues of providing beach access, resource restoration and passive recreation, and encourages infrastructure and damaged structures to be relocated outside of the CHHA, if feasible. These Policies support Goal 5 of the LHMP regarding minimizing impacts of disasters.

Regarding evacuation, the Coastal Management Element sets a clearance time of 19 hours based on a Level of Service (LOS) "D." Evacuation was also addressed in the Future Land Use Element in more general terms (i.e., "hurricane evacuation times do not

exceed the ability of Volusia County to provide them"). These evacuation Policies support Goal 3 in the LHMP regarding emergency response.

The Comprehensive Plan contains Policies in several Elements directing the location of new fire and law enforcement facilities outside areas susceptible to hurricane and flooding. The School Board is encouraged to locate its future school facilities similarly. Location of public facilities outside hazard areas supports Goal 6 of the LHMP.

The Comprehensive Plan cites that reconstruction shall be consistent with the Recovery Annex of the Comprehensive Emergency Management Plan until such time a Post-Disaster Redevelopment Plan has been adopted. The Comprehensive Plan does not address temporary moratoriums or an expedited building permitting process, but does contain Policies in the Future Land Use and Coastal Management Elements that address rebuilding of damaged structures. Post-disaster redevelopment Policies support Goal 6 of the LHMP.

Flooding is addressed in the Comprehensive Plan in multiple Policies. There are Policies for protecting and acquiring land in flood plains. There also is a Policy to continue to participate in the National Flood Insurance Program; however, there is no policy regarding participation in the Community Rating System (CRS). The Conservation Element promotes flood protection through such actions as public acquisition, land use controls and conservation easements. The Drainage Sub-Element states that the County encourages proper maintenance of stormwater management systems. In this Element, it states that the LOS for stormwater quality and quantity is based on the St. Johns River Water Management District standard 24-hour, 25-year frequency storm.

The Comprehensive Plan contains one Policy in the Future Land Use Element that addresses wildfires. The Policy encourages new development to follow fire safety standards set out in the Florida Division of Forestry publication "Protecting Florida Homes from Wildfire." This Policy supports Goal 5 of the LHMP, which seeks to minimize disaster impacts. The Future Land Use Element contains a Policy that encourages cluster development to preserve environmentally sensitive land; however, this Policy could be expanded to reflect that this development technique also is an appropriate strategy to mitigate wildfire.

One Policy in the Natural Groundwater and Aquifer Recharge Element and another in the Drainage Sub-Element mentions sinkholes. The Natural Groundwater and Aquifer Recharge Policy states that "Future landfills shall not be located within prime (or high) aquifer recharge areas or karst areas prone to sinkhole activity," and the Drainage Policy states, "Volusia County shall develop minimum standards to regulate stormwater discharge into surface waters and primary sinkholes in karst terrain through the use of percolation ponds and other appropriate methods."

POTENTIAL SOCIAL IMPACTS

According to the Federal Emergency Management Agency Flood Insurance Rate Map, 15.4% of the population in Volusia County, or 68,361 people, reside within the 100-year flood zone. Two-thirds of those at risk of flooding are either elderly and/or disabled.

In Volusia County, sinkholes are a risk. According to the MEMPHIS database, over half the population lives within a high- or medium-risk sinkhole zone. There are 10,710 people living within a low-risk sinkhole zone.

Wildfire is also a hazard of major concern to the County, and more people are at risk for wildfire compared to the other high-risk hazard estimates. The smoke from fire contains a number of pollutants, including particulate matter. Exposure to particulate matter can cause significant health problems, especially for people suffering from respiratory illnesses, including aggravated respiratory symptoms, poor lung function, and even premature death. A total of 242,291 people County-wide, or 54.6% of the total population, are at medium- to extreme-risk from wildfire. Twenty-one percent of those at risk are disabled, making a quick evacuation difficult.

A total of 12.2% of the County's population is at risk from hurricane related surge and, therefore, must be evacuated or sheltered. There are 54,233 people potentially in the path of hurricane related surge, and a significant portion of them could be either elderly or disabled. All of the residents at risk from surge would have to evacuate or go to a County shelter.

These hazards may disrupt transportation systems, gas, potable water supplies and electricity. As a result of hazard impacts, people may also suffer physical injuries, emotional and mental health and other health problems related to the loss of electricity. A loss of electricity can lead to a deterioration of health conditions for persons with diabetes, asthma, or cardiovascular disease who cannot properly refrigerate medication or operate necessary health equipment.

POTENTIAL ECONOMIC IMPACTS

While the concern for human life is always highest in preparing for a natural disaster, there also are large economic impacts to local communities, regions, and even the state when property damages are incurred. At the end of the 2004 hurricane season, there was an estimated total of more than \$560 million in damages in the County.

A significant number of structures are situated in areas having a medium to high potential risk for wildfire. Many of the residential structures are single and multi-family homes, 65,137 and 13,641, respectively; however, there are nearly 10,000 mobile homes also at risk. As people continue to move to Volusia County, less and less land along the coast is available for development; therefore, growth is pushed west into areas much more susceptible to wildfire. Some costs associated with wildfires include, but are not limited to, the cost of fire suppression, damage to homes and structures, damage to public recreation facilities, tourism impacts, destruction of cultural and archaeological sites, damage to timber resources and the costs of rehabilitation and restoration. Damages from the 1998 wildfires totaled approximately \$276 million, with \$116 million in firefighting cost. It is important to reduce fire risk, otherwise another situation such as the one that occurred in 1998 is a very real possibility. Unlike some areas of the western United States, in Florida vegetation tends to grow quickly. Therefore, areas that have a low wildfire risk today can become a high risk tomorrow.

Flooding is the second largest risk to property in the County, with nearly 100,000 structures situated within a flood zone. According to MEMPHIS data, 32,518 are

single-family homes, 29,873 are mobile homes and 21,822 are multi-family homes. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are 26 repetitively flooded homes in unincorporated Volusia County that have had flood damage multiple times and received insurance payments (FDCA 2005).

A total of 51.3% of the structures at risk from hurricane related surge are single-family homes and 33.8% are multi-family homes. Typically, structures at risk from hurricane related surge are high-value real estate due to their proximity to the ocean. There are 98,586 structures within low or medium sinkhole risk areas with almost half of those being single-family homes.

There are also potential costs associated with habitat restoration. There is the potential cost of soft engineering techniques, such as using sand resources for beach re-nourishment to restore dune habitat that provides storm protection to the coastal population. There are other potential costs associated with dredging and containing material required to alleviate the environmental impacts of hurricanes and flooding such as sediment build-up and degradation of highly productive and diverse estuarine communities. Additionally, estuaries can be very important to the recreational and tourism industries and serve as important transportation routes (i.e., Intra-Coastal Waterway).

POTENTIAL ENVIRONMENTAL IMPACTS

Hurricanes, wildfires and sinkholes are natural events that have been a significant factor in shaping the Florida landscape since at least the Pleistocene epoch. However, the Florida landscape is very resilient with regard to rebounding from natural disasters.

Environmental concerns associated with hurricanes are often expressed in terms of what is most important for residents affected by disasters. Public health issues can include drinking water quality, sewage disposal, food protection, trash removal and the prevention of epidemics. Environmental impacts associated with hurricanes that effect natural areas tend to represent a magnification of watershed mismanagement or inappropriate coastal development. For example, rain and surge water from hurricanes can become polluted from various anthropogenic sources such as sewer facilities, industrial uses or just hazardous materials that can be found in any household. Eventually, the flood and surge water flows to bays and estuaries where pollutants can become concentrated. Hurricanes can and do impact natural vegetation. Such impacts to natural vegetation can result in the proliferation of exotic plants and animals that are quick to exploit damaged areas. Beach erosion and the destruction of valuable dune habitat is an obvious hurricane impact. However, seawalls, jetties and other man-made structures can interfere with the natural fluctuation of the beach and dune area. Marine turtle habitat can be lost and the recreational values of the beach can be diminished.

While storm surge and freshwater flooding can be devastating for both the natural and developed environments, there can be positive impacts in the form of pollution flushing. While beach erosion can be devastating, some areas may experience accretion and a wider beach. Finally, hurricane winds can clean out dead wood and spur the replacement of a decayed forest with new vibrant growth.

Wildfire is an important element of the Florida ecology. In a natural context, some native vegetative communities burn on cycles as frequent as once every two to three years. However, in the last 100 years the public perception about wildfire or any woodland fire shifted to a position where fire was considered bad and should be extinguished as soon as possible. These perceptions have been created and molded by wildfire experiences in other parts of the country, economic incentives (timber yield maximization) and the “Smokey the Bear” marketing. What this perception has done is enhanced the fuel loads in Florida (and other areas of the country) to levels that can support catastrophic wildfires. From an ecological standpoint wildfires can damage vegetation and can kill individual animals. What was a dense stand of mature trees can be reduced to herbaceous level as a result of wildfire. Wildfire can result in the spread of exotic vegetation as new ground can be opened up to non-endemic vegetation that has a competitive advantage over native vegetation.

Wildfire events can also result in improved habitat for rare wildlife such as scrub jays. Fire can also open up the canopy of forested areas letting in more light to spur the growth of herbaceous understory vegetation. The result of more herbaceous growth is more forage for wildlife, including game animals such as deer and turkey. Finally, fire can result in nutrient cycling that is important to the perpetuation of various vegetation communities and wildlife.

Sinkholes are created when the porous underlying limestone bedrock collapses under the weight of the sand overburden. Sinkholes are typically associated with the ridge areas of the County but can form anywhere. Sinkholes are a rare geological event that can be dramatic, but cause very little ecological damage. However, the main environmental impact associated with sinkholes is groundwater contamination. Sinkholes typically represent a direct conduit to the aquifer and when sinkholes are used for stormwater management, contamination to groundwater resources can occur. In addition, the introduction of hazardous materials to sinkholes can increase the speed and severity of groundwater contamination. Sinkholes allow the rapid migration of contaminants into the aquifer without the filtering effects soil can provide.

OBJECTIVE ANALYSIS

The Objective analysis is provided in Table 2.1 using the recommended matrix format.

Table 2.1: Objective Analysis Regarding Disaster Mitigation & Recovery

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|---|--|--|---|---|
| <p>1.1.2 New development shall be coordinated with the Volusia County Comprehensive Emergency Plan to help ensure new development will not be endangered by hurricanes.</p> | <p>New development coordination with the Comprehensive Emergency Plan.</p> | <p>The County updated the existing Peacetime Emergency Plan, which was also changed to reference the new title, Comprehensive Emergency Plan, and developed a revised emergency evacuation plan.</p> | <p>The most recent update of the Volusia County Comprehensive Emergency Management Plan (CEMP) was completed in May 2004.</p> | <p>The Objective should also reference coordination with the LHMP. The Objective should also reference coordination with the Long-Term Recovery Plan and the Post-Disaster Redevelopment Plan once these plans are adopted. The Objective should reference "disasters" generally or "all hazards" rather than just hurricanes. Plan name should read- Comprehensive Emergency Management Plan (CEMP).</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|--|-------------------------------------|--|---|---|
| <p>5.1.4 Volusia County shall encourage new residential development that promotes energy efficiency and safety and upgrade of efficiency and continued use of existing housing units.</p> | <p>Sustainable Housing.</p> | <p>Community Assistance continues to administer the Low Income Home Energy Assistance Program (LIHEAP) and the Weatherization Assistance Program.</p> | <p>Federal and State funding for weatherization ended in FY 2001/2002. Community Assistance continues to support this Objective and corresponding Policies, and may fund weatherization activities in the future. The County has recently approved a Hurricane Housing Recovery Housing Assistance Plan that will provide about \$2.4 million in funding through Florida Housing Finance for eligible low income households for repair and/or replacement of manufactured, mobile and modular homes that were damaged or destroyed by any of the 2004 hurricanes.</p> | <p>Corresponding Policies under this Objective should reference the LHMP regarding mitigation efforts in new residential development and during revitalization and redevelopment of existing housing.</p> |
| <p>7.1.1 Volusia County shall require that the following policies which establish minimum level of service standards are met when planning capital improvements and reviewing applications for development approval.</p> | <p>Level of Service- Fire Flow.</p> | <p>Volusia County requires the construction of facilities for providing a minimum fire flow as a condition of development approval. Applicable fire flow rates for individual land uses are required as provided for by the Land Development Code.</p> | <p>Directives in Objective are being met. Fire Services reviews development proposals with regard to fire flow.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|--|---|---|---|---|
| <p>8.3.1 Maintain an 8.6 pounds per capita per day disposal capacity at all solid waste facilities combined. The level of service for solid waste capacity shall be a minimum of 5 years of construction life for the County landfill. Any development that results in the landfill falling below this capacity will not be issued a certificate of capacity for concurrency unless the impacts of the developments are mitigated.</p> | <p>Solid Waste Facilities – Capacity.</p> | <p>The Tomoka Farms Landfill complex consists of approximately 3,500 acres- most of which is intended to buffer. The Landfill is restricted 125 feet above sea level. The current cell, around the time of the 1998 EAR, had about 10 more feet of height left before it had to be closed. The County was working on a 38-acre cell that will be open in time for closing of the existing cell. Based on Solid Waste stream projections (including Flagler County trash) the next cell will last until the year 2010.</p> | <p>Directives in Objective are being met. The 38-acre expansion cell is currently being constructed.</p> | <p>No change.</p> |
| <p>8.3.2 Increase the number of hazardous waste collection facilities.</p> | <p>Hazardous Waste Collection Facilities.</p> | <p>The County has a hazardous waste collection facility at the Tomoka Landfill. The hazardous collection program accepts waste from private residences only.</p> | <p>The County receives business waste at the solid waste transfer station and the landfill, but household hazardous waste has drop-off facilities located throughout the County and its municipalities.</p> | <p>Insert the word “household” in front of hazardous waste collection facilities.</p> |
| <p>8.3.3 The County shall assist in the enforcement of those mechanisms regulating the proper accumulation and disposal of hazardous waste (State policies 13.2, 13.4, 13.6 and 13.11 ECFRPC policies 50.4 and 50.5).</p> | <p>Disposal of Hazardous Waste.</p> | <p>Directives in Objective are being met.</p> | <p>Directives in Objective are being met.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|---|--|---|---|---|
| <p>9.1.1 By 1996, Volusia County shall fund and complete comprehensive watershed studies for all areas currently developed, or developing with essentially urban land uses, and areas where the Future Land Use Map has designated essentially urban land uses within the unincorporated County, as part of an overall stormwater Master Plan. The County shall continue to assess other watersheds for flooding and pollution problems and for changes in land use in the event that detailed Watershed Master Plans may be warranted in the future.</p> | <p>Stormwater</p> | <p>Watershed studies were completed.</p> <p>The County encourages proper maintenance of stormwater management systems.</p> <p>The Drainage Sub-Element states that the LOS for stormwater quality and quantity is based on the St. Johns River Water Management District standard 24-hour, 25-year frequency storm.</p> | <p>Flooding has become more prevalent as more development has occurred within certain drainage basins and sub-basins.</p> | <p>May need to change the Objective to reference studying sub-basin drainage dynamics to ensure that areas are developed and drained accordingly.</p> |
| <p>9.1.3 Volusia County shall develop minimum standards to regulate stormwater discharge into surface waters and primary sinkholes in karst terrain through the use of percolation ponds and other appropriate methods.</p> | <p>Stormwater discharge into surface waters and primary sinkholes.</p> | <p>Sinkholes are identified as part of the development review process.</p> <p>Stormwater management systems are directed away from such hazardous areas.</p> | <p>Currently conditions have not changed since 1998.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|---|--|---|--|--------------------|
| <p>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.</p> | <p>Coastal Resources.</p> | <p>The County implements conservation, management, and development review standards through the development review process.</p> | <p>The County Wetland Ordinance is designed to eliminate any net loss of wetlands and to prevent the degradation of their functional value.</p> <p>The Future Land Use Map (FLUM) designates land uses in order to direct growth away from such areas.</p> | <p>No change.</p> |
| <p>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.</p> | <p>Land Use & Coastal Resources.</p> | <p>The FLUM designates land uses in order to direct growth away from significant natural resources.</p> | <p>The County continues to target priority lands for acquisition through the Volusia Forever Program. The County's zoning ordinance has identified special use areas and provides limits on development in those areas.</p> <p>The County continues to implement the FLUM.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|---|--|---|--|---|
| <p>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.</p> | <p>Beach and Dune Systems.</p> | <p>The County adopted a Beaches and Dunes Ordinance to implement Policies contained in the Comprehensive Plan concerning dunes. This Ordinance also ensures that beaches and dune regulations are consistent with DEP requirements. The County continues to operate a native plant nursery that produces plants used in the County's dune restoration projects.</p> | <p>Currently in the process of undergoing dune restoration projects on Volusia beaches in accordance with the Florida Department of Environmental Protection Bureau of Beaches' and Coastal Systems 2004 Hurricane Recovery Plan.</p> | <p>The County may need to clarify dune restoration requirements.</p> |
| <p>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."</p> | <p>Evacuation of Population in the Hurricane Vulnerability Zone.</p> | <p>Planning for hurricane evacuation was conducted during the FLUM density allocation and amendment process when the Plan was originally adopted. Future impacts on hurricane evacuation are to be addressed during the FLUM amendment process.</p> | <p>Currently, evacuation clearance times for Volusia are estimated to be 8 hours for Category 1 and 2 hurricanes, 10 hours for Category 3 hurricanes, and 11 hours for Category 4 and 5 hurricanes (FDCA).</p> | <p>An option to consider in meeting future evacuation clearance recommendations is to encourage the construction of safe rooms.</p> |
| <p>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.</p> | <p>Hurricane Evacuation Shelters for Population in the Hurricane Vulnerability Zone.</p> | <p>The County met shelter space requirements - enough shelter space to accommodate 23% of the population living in the coastal area at 20 sq. ft. per person.</p> | <p>Currently, there is space for 8,826 people in the County's shelters, but there are 21,368 people more than that in need of shelter facilities in the case of a Category 5 hurricane. The County cannot supply enough space currently, and this deficit is expected to increase in the next 4 years to 24,061 people. This is the largest deficit of shelter space in the Central Florida region (FDCA).</p> | <p>An option to consider in meeting shelter capacities is to encourage the construction of safe rooms.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|---|--|---|---|--|
| <p>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.</p> | <p>Mitigation of Property Damage in the Coastal High Hazard Area and Hurricane Vulnerability Zone.</p> | <p>The County established the location of the CHHA and the HVZ.</p> | <p>The Volusia County LHMP was first adopted in 2000, outlining effective mitigation programs.</p> | <p>Objective supports the development of a Post-Disaster Redevelopment Plan.</p> |
| <p>11.5.4 Post-Disaster Redevelopment. Prior to 2000, 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.</p> | <p>Post-Disaster Redevelopment Plan.</p> | <p>This Objective has not been achieved.</p> | <p>This Objective has not been achieved.</p> <p>Volusia County Emergency Management Division has recently contracted consultants, Emergency Response Planning & Management, Inc. (erp&m), with State grant funds, to prepare a Post-Disaster Recovery Plan for the County. The draft Post-Disaster Recovery Plan is to be completed in September 2005; however, this is an on-going document that will be updated as needed. The County plans on preparing a Post-Disaster Redevelopment Plan prior to 2010, potentially funded partially through the State of Florida Hazard Mitigation Grant Program.</p> | <p>Increase inter-governmental coordination regarding this effort.</p> <p>Apply for the Hazard Mitigation Grant for the development of a Post-Disaster Redevelopment Plan.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
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| <p>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 that 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.</p> | <p>Public Access</p> | <p>The County's Beaches and Dunes Ordinance requires walkovers at all new public access points and adjacent to all new multi-family dwelling structures, hotel/motel complexes, and other commercial establishments that allow ingress and egress to the beach, and lack access to existing walkover structures or ramps. Beach and dune walkovers may be constructed for the purpose of maintaining or enhancing pedestrian access to the beach and to minimize habitat impact where there is currently no walkover.</p> | <p>The County continues to implement the Beaches and Dunes Ordinance.</p> <p>The Leisure Services Activity maintains a document called "Status of Beach Access Facilities," which provides information related to the recovery of beach dune walkovers from the 2004 hurricane occurrences.</p> | <p>No change</p> <p>Maintain adequate beach ramps to allow emergency vehicles and personnel to access the beach following an incident.</p> |
| <p>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.</p> | <p>Public Services</p> | <p>The location of new public buildings is reviewed consistent with all applicable County regulation. Hazard mitigation in light of physical constraints is a major element of the review.</p> | <p>The process has not changed since the first EAR process.</p> | <p>Acquire adequate land for constructing necessary public buildings (e.g., fire stations) to serve the growing population. Construction of public buildings should mitigate against the hazards identified in the CEMP and the LHMP.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
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| <p>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.</p> | <p>Intergovernmental Coordination – Beach and Dune Management.</p> | <p>The County's Beaches and Dunes Ordinance (a County-wide minimum standard) requires that armoring shall conform to state department of environmental protection's coastal armoring Policy and additional County criteria as stated in the Comprehensive Plan.</p> | <p>Currently in the process of undergoing dune restoration projects on Volusia beaches in accordance with the Florida Department of Environmental Protection Bureau of Beaches and Coastal Systems 2004 Hurricane Recovery Plan.</p> | <p>No change.</p> |
| <p>12.1.2 To protect and enhance the natural hydrologic functions and wildlife habitat attributes of surface water resources, including estuarine and oceanic waters, as well as waters which flow into estuarine and oceanic water, and the floodplains associated with these waters.</p> | <p>Water Resources</p> | <p>See Current Conditions.</p> | <p>The Indian River Lagoon Overlay District and the Water Wise Ordinance protect water quality through reduction of runoff and retention of native plant species.</p> <p>The County Wetland Ordinance ensures the retention of wetland buffers. The Wetland Ordinance as well as the Beaches and Dunes Ordinance address and restrict vertical sea walls.</p> <p>The County continues to target priority lands for acquisition.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
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| <p>12.2.2 To minimize, and eliminate where reasonably achievable, impacts to ecological communities which degrade their natural physical and biological function as a result of land development activities.</p> | <p>Minimize impacts of land development to ecological communities (e.g., Cluster Developments).</p> | <p>The County has a Policy regarding clustering of dwelling units and/or open space for land development projects which contain environmentally sensitive lands and critical habitats within its project boundaries, in order to preserve these resources.</p> | <p>The Tree Ordinance, Indian River Lagoon Overlay District and the Water Wise Ordinance address the retention of native vegetation. A 7,000-acre cluster development, known as Plum Creek, has been approved. This development preserves 4,500 acres of environmentally sensitive lands that are also in the flood plain.</p> | <p>The Future Land Use Element also contains a Policy that encourages cluster development to preserve environmentally sensitive land; however, this Policy could be expanded to reflect that this development technique is also an appropriate strategy to mitigate wildfire.</p> |
| <p>12.2.3 To eliminate any net loss of wetlands and prevent the functional values of such wetlands to be degraded as a result of land development decisions.</p> | <p>Natural Communities & Wildlife-Wetlands.</p> | <p>The County Wetland Ordinance is designed to eliminate any net loss of wetlands and to prevent the degradation of wetland functional value.</p> | <p>The County Wetland Ordinance is designed to eliminate any net loss of wetlands and to prevent the degradation of functional value.</p> | <p>No change.</p> |
| <p>12.4.2 To incorporate the inherent limitation of existing soils in land planning and development, and minimize impacts which result in soil erosion.</p> | <p>Mineral & Soil Resources- Soil Erosion.</p> | <p>The County analyzes soil characteristics during the development review process.</p> | <p>The County analyzes soil characteristics during the development review process.</p> | <p>No change.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
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| <p>13.1.2 Volusia County shall maintain and continue to improve public access to the coastal beach area through the provision of coastal beach access facilities as provided in the Coastal Management Element, as well as the Beach Management Plan.</p> | <p>Coastal beach access facilities.</p> | <p>The County has successfully maintained coastal beach access according to the subject Objective.</p> | <p>The County has successfully maintained coastal beach access according to the subject Objective. In addition, the Beach Management Plan was updated in Fiscal Year 2004, and the County has successfully implemented the Policies regarding beach access.</p> | <p>Maintain adequate beach ramps to allow emergency vehicles to access the beach following an incident.</p> |
| <p>14.1.1 Volusia County shall continue communication with adjacent cities and counties and federal, state and regional agencies, among others, via effective formal and informal coordination mechanisms to ensure consistency in planning related matters and to coordinate the impacts of development. The formal and informal mechanisms shall include membership in areawide organizations and multi-level staff communication.</p> | <p>Intergovernmental Coordination.</p> | <p>The County has been successful in maintaining communications with local governments through various organizations. Informal communication is fostered by a number of forums sponsored by civic and professional groups. The County periodically hosts “planners luncheons” for local government planners to discuss areas of mutual concern.</p> | <p>The County continues to be successful in maintaining formal and informal communications with local governments through various organizations, forums and “planners luncheons.”</p> | <p>Maintain intergovernmental coordination efforts, especially during the preparation of a Post-Disaster Redevelopment Plan.</p> |

| OBJECTIVE | TARGET | CONDITIONS AT THE 1998 EAR | CURRENT CONDITIONS | COMMENTS / ACTIONS |
|--|--|---|---|--|
| <p>15.1.2 Public expenditures shall be prohibited that will encourage new development in the Coastal High Hazard Area, unless the expenditure is consistent with policies specifically identified in the Coastal Management Element or cross-referenced to another appropriate element and included in the Capital Improvements Element. The prohibition does not include: expenditures associated with redevelopment or development of properties in accordance with previously approved subdivisions or site plans; public access and recreation facilities or resource restoration projects/facilities.</p> | <p>Limiting public expenditures in the Coastal High Hazard Area.</p> | <p>The County has not built any major facilities past the Coastal Construction line and no County facilities have been built in the Coastal High Hazard Area.</p> | <p>The County has not built any major facilities past the Coastal Construction line and no County facilities have been built in the Coastal High Hazard Area.</p> | <p>Update Policies under this Objective to reflect analysis done from the three hurricanes in 2004.</p> |
| <p>15.2.3 Existing deficiencies for public safety facilities (fire/rescue, Sheriff's facilities and emergency medical service facilities) and library building space shall be eliminated by September 30, 1995.</p> | <p>Eliminating deficiencies for public safety facilities.</p> | <p>There were some deficiencies with some associated facilities.</p> | <p>The County has analyzed deficiencies and taken appropriate action to mitigate.</p> | <p>The Objective will be updated to remove the 1995 reference and maintain existing public safety facilities without deficiencies. Most of the changes will be to the Policies under this section.</p> |

RECOMMENDATION

Volusia County has begun the process of integrating hazard mitigation throughout its Comprehensive Plan. The Comprehensive Plan Review summarized how the major hazards for the County have been for the most part well addressed. There is, however, still some disconnection between the LHMP objectives and initiatives and the policies in the Comprehensive Plan. By tightening the connection between these documents, the County will find it easier to implement hazard mitigation, and there will be higher awareness of these issues within more departments of the County government.

1. Require as a condition of approval for development proposed in high-risk wildfire areas that a management plan describing how wildfire risk will be minimized be formulated.
2. Include policy that emphasizes importance of public and private sector cooperation in order to be able to recover from disaster events more quickly. This is achieved through the LHMP Steering Committee, LHMP Goal 8.
3. Economic vitality is the essence of LHMP Goal 9. Draft policy(ies) to support minimizing disruption of economic vitality following a disaster event.
4. The issue of continuity of key public services needs to be addressed. This includes telecommunication, water, sewer and power. This should be accomplished through a recovery plan.
5. Draft a policy emphasizing the importance of maintaining public facilities to ensure they function during and after events such as the hurricanes of 2004.
6. Prohibit or restrict the placement of new manufactured/mobile homes in the Hurricane Vulnerability Zone.
7. In areas outside of the Hurricane Vulnerability Zone, where manufactured housing developments are being proposed, require as a condition of approval that a hardened community center or structure be built to sustain hurricane - and possibly tornado-force winds.
8. Draft a policy that states that Volusia County Emergency Management, working with municipalities and Volusia School Board, will determine annually where temporary debris sites will be located. This should be accomplished prior to the beginning of the annual hurricane season.
9. Prepare a Post-Disaster Redevelopment Plan.
10. Develop a policy for expedited permitting following a disaster event, as long as the permit is in accordance with the Post-Disaster Redevelopment Plan.
11. Working with the LHMP Steering Committee, develop a sustained public awareness program regarding multiple hazards such as flooding, hurricanes and wildfire.

12. The County should have a policy that states it will undertake a study to determine the vulnerability of its designated historic structures and how best to protect each.
13. Add policy that urges the retrofitting of existing housing stock whenever possible.
14. The LHMP and the initiatives within it should be utilized in helping to determine future capital improvements.