

FLAGLER COUNTY

The 2004 hurricane season underscores the importance of better integrating hazard mitigation activities and local comprehensive planning. This past fall, Floridians experienced significant damage from Hurricanes Charley, Frances, Jeanne, and Ivan. In 1992, Hurricane Andrew devastated South Florida. In 1998 and 1999, most counties in Florida experienced wildfires, in some cases the fires created devastating results – the loss of homes. The cost of recovery for these various disasters ranges from hundreds of thousands to billions of dollars, significantly taxing local, state, and federal financial sources. Losses covered through federal funding as a result of the 2004 hurricanes alone could reach as high as \$7 billion. It is imperative to try to reduce the costs of natural disasters. One way is to better integrate hazard mitigation considerations into local comprehensive planning.

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1. County Overview

Geography and the Environment

Flagler County is located along the northeastern coast of Florida. It covers a total of 485 square miles with an average population density of 102.7 people per square mile (U.S. Census Bureau, 2000).

There are five incorporated municipalities within the County: Beverly Beach, Bunnell, Flagler Beach, Marineland, and Palm Coast.



Population and Demographics

Official 2004 population estimates for all jurisdictions within Flagler County, as well as, the percent change from the 2000 U.S. Census are presented in **Table 1.1**. The most current estimated countywide population of Flagler is 69,683 people (University of Florida, Bureau of Economic and Business Research, 2004). A majority of these residents live in the City of Palm Coast, which has been growing rapidly, at a rate of 54.2% in just 4 years. Between 1990 and 2000, Flagler County as a whole had a growth rate of 73.6%, which is three times that of the statewide growth rate of 23.5% in those 10 years.

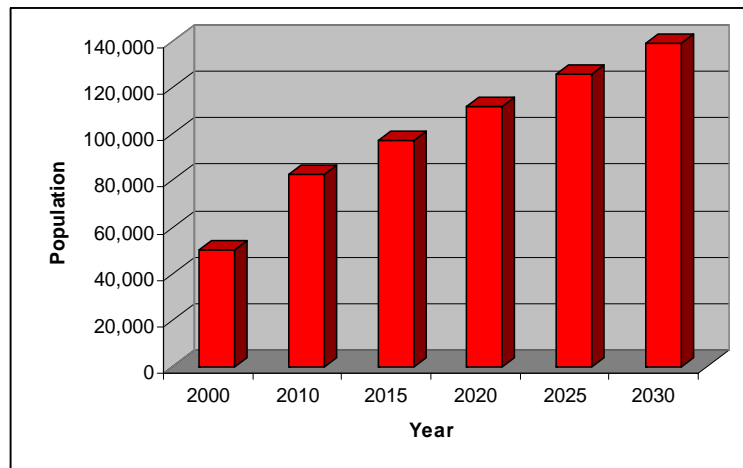
Table 1.1 Population by Jurisdiction

| Jurisdiction | Population, Census 2000 | Population Estimate, 2004 | % Change, 2000-2004 |
|-------------------------|-------------------------|---------------------------|---------------------|
| UNINCORPORATED | 9,547 | 10,983 | 15.0% |
| Beverly Beach | 547 | 557 | 1.8% |
| Bunnell | 2,122 | 2,239 | 5.5% |
| Flagler Beach | 4,878 | 5,411 | 10.9% |
| Marineland | 6 | 9 | 50.0% |
| Palm Coast | 32,732 | 50,484 | 54.2% |
| Countywide Total | 49,832 | 69,683 | 39.8% |

Source: University of Florida, Bureau of Economic and Business Research, 2004.

According to the University of Florida, Bureau of Economic and Business Research (2004), Flagler County's population is projected to continue to grow rapidly, reaching 139,200 people by the year 2030. **Figure 1.1** illustrates medium population projections for Flagler County based on 2004 calculations.

Figure 1.1 Medium Population Projections for Flagler County, 2010-2030



Source: University of Florida, Bureau of Economic and Business Research, 2004.

Of particular concern within Flagler County's population, are those persons with special needs and/or limited resources such as the elderly, disabled, low-income, or language-isolated residents. According to the 2000 U.S. Census, 28.6% of Flagler County residents are listed as 65 years old or over, 20.9% are listed as having a disability, 8.7% are listed as below poverty, and 11.2% live in a home with a primary language other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Flagler County as identified in the County's Local Mitigation Strategy (LMS) are Hurricanes/Coastal Storms, Storm Surge, Wind, Wildfire, Drought/Heat Wave, Hazardous Materials Accident, and Floods. Sinkholes were considered a low risk for the County.

The County has been impacted by nine hurricanes since 1894 and several tropical storms. Hurricanes Floyd and Irene and the 2004 hurricanes have been the most damaging to the County. With these hurricanes, the County has endured damages from related storm surge and winds. In addition, the County had estimated wind damages of \$777,000 from 70 different strong wind events between 1950 and 2004. Flooding associated with the hurricanes and tropical storms has also impacted the County, with 14 significant flood events between 1950 and 2004.

Flagler County also has had serious problems with wildfires. In 1985, 109 fires burned 24,371 acres; in 1993, 115 fires burned 1,232 acres; in 1998, 113 fires burned 95,879 acres; and in 1999, 106 fires burned 2,048 acres. These fires mostly coincided with severe droughts due to La Niña events.

Hazards Analysis

The following analysis looks at four major hazard types: hurricanes and tropical storms (specifically surge), flooding, sinkholes, and wildfire. Most of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS) provided by the Florida Department of Community Affairs' (FDCA) Division of Emergency Management.

Existing Population at Risk

Table 2.1 presents the countywide population at risk from hazards, as well as, a breakdown of the sensitive needs populations at risk. The first column in the table summarizes the residents of Flagler County that live within Federal Emergency Management Agency Flood Insurance Rate Map zones, which signify special flood hazard areas. According to these maps, 16% of the population, or 8,148 people, are within the 100-year flood zone. A majority of those at risk of flooding are either elderly and/or disabled. In Flagler County, sinkholes are not a major risk, and none of the population is within a high- or medium-risk sinkhole zone. There are 10,710 people living within a low-risk sinkhole zone as reported in the second column of the table. Wildfire is a hazard of major concern to the County, and more people are at risk to wildfire compared to the other hazard estimates. Column 3 of the tables shows the amount of people that fall in medium-to high-risk wildfire zones, which is based on many factors, including vegetation and ease of access to the homes. Seventeen thousand, six hundred and forty-one people countywide, or 35.4% of the total population, are at medium- to high-risk from wildfire. Forty percent of those at risk are disabled, making a quick evacuation difficult. The last column represents those people in the County at risk from hurricane-related surge. Twenty-five percent of the countywide population would be at risk from surge due to a Category 3 hurricane. Of that 12,522 potentially in the path of surge, up to 76% 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.

Table 2.1 Countywide and Special Needs Populations at Risk from Hazards

| Population | Flood | Sinkhole (low risk) | Wildfire (med-high risk) | Surge (Cat 3 hurricane) |
|-------------------------|--------------|------------------------|-----------------------------|----------------------------|
| Minority | 271 | 517 | 1,909 | 508 |
| Over 65 | 2,470 | 2,875 | 5,747 | 4,685 |
| Disabled | 3,151 | 4,209 | 7,081 | 4,849 |
| Poverty | 657 | 1,156 | 1,355 | 910 |
| Language-Isolated | 249 | 12 | 324 | 264 |
| Single Parent | 312 | 507 | 658 | 380 |
| Countywide Total | 8,148 | 10,710 | 17,641 | 12,522 |

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Flagler County has been rapid, and this trend is projected to continue. Also, a quarter of the County's population is at risk from hurricane-related surge and therefore must be evacuated or sheltered. As the population increases in the future, the demand for shelter space and the length of time it takes to evacuate the County is only going to increase. Currently, evacuation clearance times for Flagler are estimated to be 7.75 hours for Category 1 and 2 hurricanes and 12 hours for Category 3 through 5 hurricanes (FDCA, 2005b). The Florida Division of Emergency Management recommends that all counties achieve 12 hours or less clearance time for a Category 3 hurricane. This is due to the limited amount of time between the National Hurricane Center issuing a hurricane warning

and when the tropical storm-force winds make landfall. Flagler County has met this standard for now, but with continued growth and the limited road network of the region, it is questionable whether they will be able to maintain 12 hours or less.

Coupled with evacuation, is the need to provide shelters. If adequate space can be provided in safe shelters for Flagler's residents, then this could be a solution to the ever-increasing clearance times for evacuation. Currently, there is space for 4,267 people in the County's shelters, but there are 2,401 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 almost double in the next 4 years to 4,020 people (FDCA, 2004). In comparison to many other counties in the region and state, Flagler County's deficit is fairly small. This only means, however, that residents of neighboring counties may look for sheltering in Flagler County and that there will not be shelter space for Flagler County residents who evacuate to other counties.

Another option for Flagler County to consider in meeting future evacuation clearance time recommendations and shelter capacities is to encourage the construction of safe rooms in new houses that are built outside of flood zones. Residents who are further inland in the County and not at risk for floods could shelter in place if they had a safe room that could withstand hurricane-force winds. This would free up more space in the shelters and on the roads.

Existing Built Environment

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. To be truly sustainable in the face of natural hazards, we must work to protect the residents and also to limit, as much as possible, property losses that slow down a community's ability to bounce back from a disaster. **Table 2.2** presents estimates of the number of buildings in Flagler County by structure type that are at risk from each of the four hazards being analyzed. As seen in the estimated population at risk statistics in **Table 2.1**, wildfire puts the largest amount of structures at risk as well. Regardless of hazard, the structure type most at risk is single-family homes. Flagler County's development consists mainly of large single-family home subdivisions. In recent years, subdivisions have been developed in the inland sections of the County on what used to be timberlands. The vegetation that remains or grows back after these homes have been built allows wildfires to spread from the still rural western side of the County into the subdivisions.

Flooding is the second largest risk to property in the County, with 9,619 structures within a flood zone. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are three homes in unincorporated Flagler County that have had flood damage multiple times and received insurance payments (FDCA, 2005b).

Table 2.2 also shows 5,060 structures within low or medium sinkhole risk areas, with almost half of those being single-family homes. A total of 71.9% of the structures at risk from surge are single-family homes, and 1,181 of the rest are multi-family homes. Typically, structures at risk from surge are high-value real estate due to their proximity to the ocean.

Table 2.2 Countywide Number of Structures at Risk from Hazards

| Structure Type | Flood | Sinkhole (low-med risk) | Wildfire (med-high risk) | Surge |
|---------------------|--------------|-------------------------|--------------------------|--------------|
| Single-Family Homes | 4,046 | 2,269 | 9,596 | 4,601 |
| Mobile Homes | 2,416 | 962 | 1,583 | 305 |
| Multi-Family Homes | 1,208 | 809 | 1,488 | 1,181 |
| Commercial | 405 | 134 | 377 | 190 |
| Agriculture | 1,178 | 66 | 758 | 31 |
| Gov./Institutional | 366 | 820 | 522 | 89 |
| Total | 9,619 | 5,060 | 14,324 | 6,397 |

Source: Florida Department of Community Affairs, 2005a.

Analysis of Current and Future Vulnerability

The previous hazards analysis section discussed population and existing structures at risk from flooding, sinkholes, wildfire, and surge according to MEMPHIS estimates. This section is used to demonstrate the County’s vulnerabilities to these hazards spatially and in relation to existing and future land uses. The FDCA has provided maps of existing land use within hazard areas based on the 2000 Florida Land Use Classification Coverage System developed by the Florida Department of Environmental Protection. This data source was used due to the fact that the County’s property appraiser data have not been fully converted to geographic information system (GIS) format at this time. The Flagler County Future Land Use Map also is not available in GIS format currently, and so a broad statewide future land use coverage developed by Southwest Florida Regional Planning Council in 1994 had to be used instead. The maps and calculations related to the future land use analysis are therefore out of date and should only be used as an example of the kind of data and analysis that the County should work toward generating for its Comprehensive Plan and LMS.

In **Attachment A**, four maps show the existing and future land uses within the coastal hazard zone (Category 1 storm surge zone) and the hurricane vulnerability zone (Category 1 evacuation zone). **Table 2.3** presents the acres of land in the coastal hazard zone and in the hurricane vulnerability zone. A majority of the land in these two categories is currently vacant, 58.8% of the land in coastal hazard zones and 68.4% of the land in hurricane vulnerability zones. This is very positive for the County since steps can be taken to control the type of growth that occurs in these hazard areas, thereby limiting the amount of people needing evacuation or shelter and the amount of property damage that can occur from a hurricane. The next highest percentages of land in these hurricane hazard areas are in parks and recreation. This is a very good use of land in hazard areas since it preserves some of the natural features and keeps the population out of the way of the hurricane’s biggest impacts. **Table 2.4** presents future land use estimates and a breakdown of how currently undeveloped land has been designated for future use. According to the data used, almost the entirety of undeveloped land in a coastal hazard or hurricane vulnerability zone is designated for future agricultural uses. If these undeveloped lands truly do become used for timber or crop production in the future, this will limit the amount of population and structures in the path of a hurricane but also will put part of the County’s economic base at risk.

Table 2.3 Total Unincorporated Acres in Hazard Areas by Existing Land Use Category

| Existing Land Use Category | | Coastal Hazard Zone | Hurricane Vulnerability Zone | Flood | Wildfire Susceptible Areas | Sinkholes |
|---|-------|---------------------|------------------------------|-----------|----------------------------|-----------|
| Agriculture | Acres | 214.2 | 481.8 | 4,702.9 | 2,653.1 | 682.6 |
| | % | 1.2 | 2.0 | 4.6 | 6.4 | 10.1 |
| Attractions, Stadiums, Lodging | Acres | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 |
| | % | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Commercial | Acres | 15.6 | 14.5 | 14.5 | 14.5 | 0.0 |
| | % | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Government, Institutional, Hospitals, Education | Acres | 0.0 | 0.0 | 39.7 | 25.2 | 0.0 |
| | % | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| Industrial | Acres | 0.0 | 0.0 | 13.6 | 19.6 | 0.0 |
| | % | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 |
| Parks, Conservation Areas, Golf Courses | Acres | 4,723.2 | 4,706.1 | 4,785.0 | 715.8 | 1,277.4 |
| | % | 26.5 | 19.6 | 4.6 | 1.7 | 18.9 |
| Residential High-Density | Acres | 200.0 | 200.0 | 23.9 | 40.8 | 0.0 |
| | % | 1.1 | 0.8 | 0.0 | 0.1 | 0.0 |
| Residential Low-Density | Acres | 596.1 | 597.5 | 410.6 | 2,510.0 | 32.8 |
| | % | 3.3 | 2.5 | 0.4 | 6.1 | 0.5 |
| Residential Medium-Density | Acres | 587.4 | 587.6 | 131.3 | 77.8 | 0.0 |
| | % | 3.3 | 2.4 | 0.1 | 0.2 | 0.0 |
| Residential Rural | Acres | 0.0 | 5.1 | 160.1 | 253.3 | 0.0 |
| | % | 0.0 | 0.0 | 0.2 | 0.6 | 0.0 |
| Submerged Land (Water Bodies) | Acres | 828.0 | 828.2 | 4,423.2 | 130.4 | 1,860.8 |
| | % | 4.6 | 3.4 | 4.3 | 0.3 | 27.5 |
| Transportation, Communication, Rights-Of-Way | Acres | 64.4 | 64.7 | 72.2 | 206.2 | 0.0 |
| | % | 0.4 | 0.3 | 0.1 | 0.5 | 0.0 |
| Unknown | Acres | 100.3 | 100.1 | 37.9 | 2.7 | 0.0 |
| | % | 0.6 | 0.4 | 0.0 | 0.0 | 0.0 |
| Utility Plants and Lines, Solid Waste Disposal | Acres | 9.4 | 8.7 | 334.2 | 279.6 | 0.0 |
| | % | 0.1 | 0.0 | 0.3 | 0.7 | 0.0 |
| Vacant | Acres | 10,490.0 | 16,465.2 | 88,300.3 | 34,353.7 | 2,921.7 |
| | % | 58.8 | 68.4 | 85.4 | 83.2 | 43.1 |
| Total | Acres | 17,828.6 | 24,059.3 | 103,449.3 | 41,284.6 | 6,775.3 |
| | % | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Data from: Florida Department of Community Affairs, 2005.

Table 2.4 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category for the Unincorporated County

| Future Land Use Category | Coastal Hazard Zone | | Hurricane Vulnerability Zone | | Flood | | Wildfire Susceptible Areas | | Sinkhole | | |
|---------------------------|---------------------|--------|------------------------------|--------|--------|---------|----------------------------|--------|----------|--------|--------|
| | Total | Undev. | Total | Undev. | Total | Undev. | Total | Undev. | Total | Undev. | |
| Agriculture | Acres | 13,677 | 8,902 | 19,903 | 14,870 | 100,726 | 87,121 | 37,318 | 32,802 | 6,708 | 2,907 |
| | % | 76.7% | 84.9% | 82.7% | 90.3% | 97.4% | 98.7% | 90.4% | 95.5% | 99.0% | 99.5% |
| Commercial | Acres | 24 | 8 | 25 | 8 | 71 | 62 | 101 | 78 | 0 | 0 |
| | % | 0.1% | 0.1% | 0.1% | 0.0% | 0.1% | 0.1% | 0.2% | 0.2% | 0.0% | 0.0% |
| Estate | Acres | 490 | 120 | 492 | 124 | 631 | 439 | 2,469 | 646 | 67 | 15 |
| | % | 2.7% | 1.1% | 2.0% | 0.8% | 0.6% | 0.5% | 6.0% | 1.9% | 1.0% | 0.5% |
| Industrial | Acres | 0 | 0 | 1 | 1 | 374 | 281 | 338 | 212 | 0 | 0 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.3% | 0.8% | 0.6% | 0.0% | 0.0% |
| Multi-Family Residential | Acres | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | % | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Preserve | Acres | 1,024 | 121 | 1,029 | 121 | 1,129 | 120 | 49 | 7 | 0 | 0 |
| | % | 5.7% | 1.1% | 4.3% | 0.7% | 1.1% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| Single-Family Residential | Acres | 2,613 | 1,338 | 2,610 | 1,342 | 518 | 278 | 1,009 | 608 | 0 | 0 |
| | % | 14.7% | 12.8% | 10.8% | 8.1% | 0.5% | 0.3% | 2.4% | 1.8% | 0.0% | 0.0% |
| Total | Acres | 17,829 | 10,490 | 24,059 | 16,465 | 103,449 | 88,300 | 41,285 | 34,354 | 6,775 | 2,922 |
| | % | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

Data from: Florida Department of Community Affairs, 2005.

In **Attachment B**, two maps present the existing and future land uses within a 100-year flood zone. There are large swaths of flood-prone areas scattered across the County; however, a majority of them are west of U.S. Highway 1 where there are many wetlands. The total amount of land in these special flood hazard areas is 103,449 acres countywide. A total of 85.4% of these acres are currently undeveloped. As shown in **Table 2.3**, besides being vacant, most of the flood prone areas are located in agriculture or parks and recreation use areas. **Table 2.4** shows that 98.7% of the undeveloped lands are designated for future agricultural use areas. This looks promising for the County, but the age and accuracy of these data may be misleading. Based on population projections and development trends in Flagler County, it would be inaccurate to assume that these hazard areas, which are currently undeveloped, are going to remain that way. Better analysis once the County's Future Land Use Map has been converted into GIS will be able to determine the true legal future land use allocations within these hazard areas.

In **Attachment C**, maps present the land uses associated with high-risk wildfire zones. These wildfire risk areas are scattered across the County, with most of the larger contiguous areas being west of Interstate-95. A total of 83.2% of the land within these wildfire zones is currently vacant according to the data in **Table 2.3**. Of those 34,354 undeveloped acres, 95.5% is shown to be designated for agricultural uses in the future (**Table 2.4**). As stated before, this may be inaccurate, especially considering the statewide trend of timberlands being converted to residential uses and the known population increases within Flagler County.

Maps showing the sinkhole hazard zones and associated existing and future land uses can be found in **Attachment D**. The only sinkhole hazard zone in Flagler County is surrounding Lake Disston in the southwest corner of the County. **Table 2.3** shows that 43.1% of this area is undeveloped, 27.5% is actually the lake, 18.9% is conserved, 10.1% is in agricultural use, and 0.5% is low-density residential. **Table 2.4** shows that all of this area is designated for future

agricultural or estate use. Ideally, this hazard zone should be restricted from development or at least regulated so that geological testing must be done before structures can be built.

Table 2.5 presents the existing land uses for the acres in Flagler County that are incorporated within one of the five municipalities. A majority of the hazard areas that are incorporated are either in residential use or vacant areas. Also, most vacant acres within the municipalities are probably designated for future residential use. The municipalities therefore have even more reason to make changes to their land use patterns since hazard zones within their boundaries are more likely to be populated than those in the unincorporated County.

Table 2.5 Total Incorporated Acres in Hazard Areas by Existing Land Use Category

| Existing Land Use Category | | Coastal Hazard Zone | Hurricane Vulnerability Zone | Flood | Wildfire Susceptible Areas |
|---|-------|---------------------|------------------------------|-------|----------------------------|
| Agriculture | Acres | 0 | 0 | 4 | 55 |
| | % | 0.0 | 0.0 | 0.1 | 0.7 |
| Commercial | Acres | 240 | 245 | 109 | 81 |
| | % | 5.7 | 5.7 | 1.9 | 1.1 |
| Government, Institutional, Hospitals, Education | Acres | 21 | 21 | 31 | 10 |
| | % | 0.5 | 0.5 | 0.5 | 0.1 |
| Industrial | Acres | 0 | 0 | 17 | 4 |
| | % | 0.0 | 0.0 | 0.3 | 0.1 |
| Parks, Conservation Areas, Golf Courses | Acres | 344 | 343 | 199 | 465 |
| | % | 8.1 | 8.1 | 3.4 | 6.1 |
| Residential High-Density | Acres | 161 | 161 | 95 | 46 |
| | % | 3.8 | 3.8 | 1.7 | 0.6 |
| Residential Low-Density | Acres | 303 | 302 | 290 | 3,160 |
| | % | 7.1 | 7.1 | 5.0 | 41.2 |
| Residential Medium-Density | Acres | 1,144 | 1,143 | 483 | 671 |
| | % | 26.9 | 26.8 | 8.4 | 8.7 |
| Submerged Land (Water Bodies) | Acres | 546 | 548 | 569 | 141 |
| | % | 12.9 | 12.9 | 9.8 | 1.8 |
| Transportation, Communication, Rights-Of-Way | Acres | 8 | 8 | 23 | 146 |
| | % | 0.2 | 0.2 | 0.4 | 1.9 |
| Unknown | Acres | 124 | 126 | 6 | 0 |
| | % | 2.9 | 3.0 | 0.1 | 0.0 |
| Utility Plants and Lines, Solid Waste Disposal | Acres | 3 | 3 | 12 | 120 |
| | % | 0.1 | 0.1 | 0.2 | 1.6 |
| Vacant | Acres | 1,359 | 1,360 | 3,938 | 2,771 |
| | % | 32.0 | 31.9 | 68.2 | 36.1 |
| Total | Acres | 4,253 | 4,260 | 5,777 | 7,671 |
| | % | 100.0 | 100.0 | 100.0 | 100.0 |

Data from: Florida Department of Community Affairs, 2005.

3. Existing Mitigation Measures

Local Mitigation Strategy

Flagler County's LMS includes the following goals and objectives:

1. Protect the citizens of Flagler County from natural and man-made disasters.
 - Identify, in detail, high-risk areas.
 - Improve budget for forestry and local fire-fighting.
2. Provide public services during and after a disaster.
 - Ensure adequate shelter space.
 - Improve communication between agencies.
3. Protect infrastructure from a disaster.
 - Identify vulnerable public infrastructure.
4. Protect public and private property from disasters.
 - Support regulatory agencies and land preservation.
 - Reduce number of vulnerable units.
 - Retrofit old plats to be safer.
 - Extend wildfire ordinance outside of Palm Coast.
 - Manage timberland using Best Management Practices.
5. Protect the public and private resources of the County.
 - Identify potential private resources.
 - Protect the quantity and quality of water resources.
 - Manage runoff to protect quality of water.
 - Encourage and implement water conservation.
6. Promote responsible development of property within the County.
 - Evaluate/enforce coastal building codes.
 - Pass and implement mitigation ordinance.
 - Prioritize code enforcement for fire mitigation.
 - Manage public lands for firebreaks.
7. Promote public information, education, and awareness.
 - Increase public awareness of need to prepare.
 - Educate public about mitigation techniques.

In addition to these goals and objectives, the County's LMS also has a Mitigation Initiatives List, which could be incorporated into the County's Comprehensive Plan. These initiatives can be found in **Table 3.1**.

Table 3.1 Flagler County LMS Initiatives

| LMS Project # | Project Description | Priority Level |
|---------------|--|----------------|
| 1 | Protect the citizens of Flagler County from accidents and spills involving hazardous materials | |
| 1a | Prepare for and mitigate against spills by training emergency responders to better respond to emergencies | High |
| 1b | Develop and implement security strategies to protect public structures and infrastructure | High |
| 2 | Regulation of land uses and creation of land development codes that mitigate against flood damages | |
| 2a | Undertake a stormwater management study for incorporated and unincorporated areas of County | Medium |
| 2b | Mapping of floodprone areas of the County that are not yet included in current maps | Medium |
| 2c | Develop a stormwater drainage management plan | Medium |
| 2d | Acquisition of vacant land in the County and municipalities located in flood prone areas | Medium |
| 2e | Undertake flood improvement projects to improve flood conditions | Medium |
| 2f | Ongoing maintenance program for drainage canals and mosquito control ditches | Medium |
| 2g | Undertake a study to identify repetitive loss structures and propose solutions | Low |
| 2h | Purchase of properties in floodway and floodplains | High |
| 2i | Swale rehabilitation | Medium |
| 3 | Educate the citizens and public officials about the dangers associated with hazards and methods of preparation | |
| 3a | Develop and conduct a public information program | High |
| 3b | Develop and conduct an annual multi-jurisdictional disaster drill | High |
| 3c | Conduct annual seminars for home owners associations and condo associations | High |
| 4 | Assure that all citizens in the County have access to a public shelter facility in case of an emergency | |
| 4a | Conduct a study to determine the need for additional shelters, specifically in Beverly Beach | High |
| 4b | Construct additional shelter facilities or retrofit existing buildings to provide adequate shelters within the County | High |
| 5 | Decrease vulnerability to damages caused by wildfires | |
| 5a | Develop an annual plan to reduce hazards on timber lands using Best Management Practices | High |
| 5b | Expand fire service district funding to include all property in the County | High |
| 5c | Create a map system of general locations where water services could/should be located to protect residential areas from fire hazards and provide facilities to lacking areas | High |
| 6 | Decrease vulnerability of public to hurricane hazards | |
| 6a | Conduct a study of the current audible warning systems serving Beverly Beach and Flagler Beach to improve system | Medium |
| 7 | Provide adequate and updated mapping systems to aid in hazard mitigation and planning | |
| 7a | Establish a countywide GIS department to conduct ongoing data collection needed to update system | Medium |
| 7b | Conduct a base map survey of the County | Medium |
| 7c | Update GIS technology to improve data collection and map creation | Medium |
| 7d | Identify elevation reference marks based on original flood study | Medium |
| 8 | Review and update of existing development codes to reinforce hazard mitigation principles | |
| 8a | Conduct a cost/benefit analysis of adopting an improved building code | Low |
| 8b | Investigate feasibility of a policy to require the use of mobile home tiedowns | Low |
| 8c | Increase number of building/zoning code officers to facilitate code enforcement in high hazard areas | Low |
| 9 | Identify high risk areas of the County and conduct a vulnerability assessment of public infrastructure | |

Table 3.1 Flagler County LMS Initiatives

| LMS Project # | Project Description | Priority Level |
|---------------|--|----------------|
| 9a | Initiate a program to identify storm surge on zoning maps, identify areas of street flooding on zoning maps, and identify public infrastructure on flood/surge zone maps | Low |
| 9b | Conduct a study to estimate the cost to flood proof/wind proof public infrastructure | Low |
| 9c | Flood proof/wind proof public structures and infrastructure | Low |
| 10 | Hazard mitigation and retrofit of existing structures in hazard zones | |
| 10a | Elevate homes in flood zones | Low |
| 10b | Limit density in flood/surge zones by continual enforcement of land development regulations | Low |
| 10c | Retrofit existing EOC office to resist high winds | Low |
| 10d | Acquire land within high hazard areas | Low |
| 10e | Retrofit public buildings to ensure the health and safety of all occupants | High |
| 10f | Dry lake retention | High |
| 11 | Maintain a Continuity of Operations Plan for the County EOC | |
| 11a | Construct or retrofit an alternate facility to serve as the Emergency Management Office in time of emergency | Low |
| 11b | Develop, exercise, and implement Disaster Recovery Plans (including information technology) for the public infrastructure | Low |
| 12 | Improve evacuation efficiency and safety for County residents | |
| 12a | Conduct a study to identify roads that are subject to flooding; identify primary and alternate evacuation routes | Low |
| 12b | Improve egress capabilities from Palm Coast and other areas located west of I-95 and east of Route 1 through a feasibility study | Low |
| 12c | Develop, exercise and implement a special needs evacuation plan for high-rise buildings | High |
| 13 | Improve communications between County and municipal agencies | |
| 13a | Establish and maintain common radio equipment | High |
| 13b | Conduct study of current radio communications system in Beverly Beach and provide needed equipment and capabilities | High |
| 13c | Conduct annual multi-agency emergency response exercise | High |
| 13d | Improve information technology access for public entities during emergencies | Low |
| 14 | Water quality | |
| 14a | Eliminate septic systems on barrier islands | High |
| 14b | Centralize wastewater treatment | High |
| 14c | Reduce effluent discharge into Intracoastal Waterway | High |
| 14d | Support critical systems, emergency power supply, infrastructure improvements, fire hydrants | High |
| 14e | Reduce system failure possibilities | High |

EOC = Emergency Operations Center.

Source: Flagler County Local Mitigation Strategy, Table 5, 2005.

Comprehensive Emergency Management Plan

The Flagler County Comprehensive Emergency Management Plan Annex II, Mitigation Operations, does not contain any specific goals, objectives, or initiatives. It does lay out the process by which the LMS determines these and refers to the State's strategies for rectifying problem areas as a foundation for the LMS strategies.

Post-Disaster Redevelopment Plan

Flagler County currently does not have a Post-Disaster Redevelopment Plan.

National Flood Insurance Program/Community Rating System

Flagler County, as well as its municipalities, are active participants in the National Flood Insurance Program (NFIP) according to the County's LMS. It mentions that Community Rating System (CRS) documents will be reviewed and included in the LMS at a later date.

4. Comprehensive Plan Review

Flagler County's Comprehensive Plan (adopted in 2000) was reviewed in order to see what the County has already done to integrate their LMS policies, and hazard mitigation in general, into their planning process. A list of the goals, objectives, and policies currently in the plan that contribute to hazard mitigation is found in **Attachment E**. The following is a summary of how well the plan addressed the four hazards of this analysis.

Flagler's Comprehensive Plan has many policies considered to be best management practices for mitigating hurricane and coastal surge impacts. There are policies that aim at preserving natural hazard protection features of the environment, such as beaches, dunes, and wetlands. Building upon these policies are also policies that aim at acquiring land in the Coastal High Hazard Area (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. This also corresponds to Goal 6 of the LMS, which promotes responsible development of property. The Plan also limits public expenditures in the CHHA to issues of providing access, resource restoration, and passive recreation and encourages infrastructure and damaged structures to be relocated outside of the CHHA. This is related to Goal 3 of the LMS, to protect infrastructure from disasters. Evacuation for hurricanes is also progressively addressed in the Comprehensive Plan by requiring a developer to pay for needed transportation improvements if they are allowed to increase development densities on their property. The Plan also includes several policies relating to recovery after a hurricane, including temporary moratoriums on building and differentiating between immediate recovery and long-term recovery needs.

Flooding is addressed in the Comprehensive Plan in multiple policies, as well. As with the coastal areas, there are policies for protecting and acquiring land in floodplains. This corresponds with several initiatives in the LMS found in **Table 3.1**. There also is a policy to participate in the NFIP CRS, which would include developing a flooding mitigation plan. This policy had a deadline of 2000 and has not been updated, however. The Plan also addresses issues of water contamination through flooding by requiring new sanitary sewer facilities within the 50-year floodplain be flood proofed and septic tanks be phased out. Also, development within the 100-year floodplain is prohibited unless the structure is adequately elevated; however, the exact elevation requirements are not listed. Stormwater run-off also is regulated to not exceed pre-development run-off.

Since Flagler has experienced some devastating wildfires, it is not surprising that they have several policies to mitigate wildfires through design and through water conservation. The County has included in their Plan that in their next Evaluation and Appraisal Report, they will have identified high-risk wildfire zones and evaluated the mitigation options for these high-risk areas. They also have a requirement to amend their land development code to include building and site design, as well as landscaping, requirements to mitigate wildfires. In addition to this, the Plan also includes policies to conserve water, which will ensure that there is an adequate water supply for fighting future wildfires. These policies need to be reviewed, however, to see if some of these initiatives have been implemented.

No policies were found during this review that related to sinkhole hazards. Since the risk of sinkholes is confined to only one rural area of the County, this is not a major concern and may be addressed in the land development code of the County already.

5. Recommendations

For the LMS to be effective in the decision-making process of growth management, its objectives and policies must be integrated into the Comprehensive Plan. The 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 structure 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.

Flagler County has begun this process of integrating hazard mitigation throughout its Plan's Elements. The prior section summarized how the major hazards for the County have been for the most part well addressed. There is, however, still a disconnection between the LMS 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.

NOTE: The recommendations set out in this section are only suggestions. Through the workshop process and contact with the local governments, the goal of this project is to end up with specific recommendations tailored and acceptable to each county. While the Profile addresses hurricanes, flooding, wildfire, and sinkholes, during the update of the local comprehensive plan, the county should consider other hazards if appropriate such as, tornadoes and soil subsidence.

Comprehensive Plan

The LMS has many objectives and initiatives that relate to identifying hazard areas through data collection and mapping. This should definitely be a first step in planning for hazards, and yet there is only one wildfire mitigation policy that highlights the need to identify these hazard zones. The County is in the process of developing a wildfire mitigation plan, which will include an analysis of risk areas and from which, more detailed mitigation policies can be added to the Comprehensive Plan and implemented through ordinances and the land development code. It is recommended that the County also work to include data and analysis in their Plan that identify geographic areas, like the analysis included in this profile. Once the County has improved their mapping capabilities, they will be able to create more accurate land use analyses for each of the hazards than what was included in this profile. This sort of information can lead to planning policies such as overlay zones that increase building code requirements or require impact fees for only those areas that are at risk from the hazard.

Another issue that was absent from the Comprehensive Plan but that is an objective of the LMS, is hurricane shelters. As discussed in **Section 2** of this profile, there currently is a deficit in shelter capacity for the County. One way to address this in the Comprehensive Plan could be to set an emergency shelter capacity level of service that must be maintained as the County continues to grow. If the County chooses to, they could assess impact fees to keep up with the demand for shelter space. Another way to address shelter capacity could be to encourage residents and developers to include safe rooms in new homes that are located outside of flood

and surge zones. If more residents can shelter in their own home from high-wind storms, then there will be less demand for shelter space and a decrease in evacuation times.

Issues of water access and timberland best management practices were also mentioned in the LMS but not found in the Comprehensive Plan. Since the County is experiencing such rapid development, a policy that sets a level of service for residential areas of water access for fire-fighting could be beneficial. The requirements could be met through installation of central water lines or dry fire hydrants. Also, a policy could be included in relation to wildfire prevention that requires land used for silviculture to use best management practices to correspond with the LMS objective.

While sinkhole hazards are considered a low risk in the LMS, a policy could still be included in the Plan that sets an overlay district for the Lake Disston area, prohibiting development without investigating the stability of the soils first.

There are many other policies that are considered best management practices for hazard mitigation that could be considered by the County as they update their Comprehensive Plan. The final draft of this profile will include more of these options.

Local Mitigation Strategy

The LMS could also be enhanced to include some of the items that the Comprehensive Plan already has or that are recommended for inclusion. For instance, the identification of hazard zones with existing and future land uses overlain could be included in both plans. The CRS is briefly referred to in the text of the LMS as something that is going to be pursued. It also is a policy in the Comprehensive Plan, but this could easily be an objective in the LMS that the County is going to continually participate in the CRS program. Also, the LMS should be updated with more detailed information on the status of the CRS in the County. Also, the objectives in the LMS are broad and could include more detailed policies such as the ones in the Comprehensive Plan. When the LMS refers to supporting land preservation, this could be separated into the types of land acquisition and protection listed in the Comprehensive Plan. Overall, the LMS could be enhanced and further connected with the County Comprehensive Plan.

6. Sources

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Attachment A

**Maps of the Existing and Future Land Uses within the
Coastal Hazard Zone and the Hurricane Vulnerability Zone**

Attachment B

**Maps of the Existing and Future Land Uses
within the 100-year Floodplain**

Attachment C

**Maps of the Existing and Future Land Uses
within the High-Risk Wildfire Zone**

Attachment D

**Maps of the Existing and Future Land Uses
within the High-Risk Sinkhole Zones**

Attachment E

Flagler County Comprehensive Plan Excerpts Related to Hazard Mitigation

Future Land Use Element

- Policy 1.9:** By November 1, 2003, the County shall amend the Land Development Code to include Minor Rural Subdivision provisions applying to minor rural subdivisions, which shall address, at a minimum:
- a) Provision of adequate access to all parcels;
 - b) Deed restrictions and disclaimer requirements acknowledging the government services that will not be provided to the development;
 - c) Wildfire vulnerability prevention requirements, including mitigation measures addressing building design and materials, site design, and landscaping (including defensible space requirements and plant materials).
- Policy 1.1:** The County will continue to enforce land development regulations that contain specific and detailed provisions required to implement the Flagler County Comprehensive Plan and which as a minimum:
- c) Protect the “conservation areas” designated on the Future Land Use Map and in the Conservation Element by prohibiting development, by requiring mitigation efforts, and by the use of Transfer Development Rights and other innovative zoning techniques if appropriate.
 - d) Regulate areas subject to seasonal periodic flooding and provide for drainage and storm water management through a storm water management section of the Land Development Regulations. A requirement for compensatory storage also will be considered as part of this section.
- Policy 1.7:** The County shall continue to administer land development regulations, which protect viable wetlands and sensitive ecological communities identified as “Conservation Areas” on the Future Land Use Map.
- Policy 5.1:** During the review of requests for plan amendments, topography, vegetation, wildlife habitat, flood hazard, the 100-year flood plan [sic] and soils for the areas to be amended will be analyzed and specific findings made as part of the plan amendment process.
- Policy 5.2:** The development and significance of topography, vegetation, wildlife habitat, flood hazard, the 100-year flood plain and soils for specific development sites will be analyzed and their suitability determined as a specific finding during the County Development Review Process.
- Policy 11.2:** The County shall encourage the use of best management practices for soil conservation which minimize erosion and protect those attributes which make the soil productive.
- Policy 15.3:** At a minimum redevelopment plans, activities, and regulations shall:

- 3) Address the impacts of redevelopment activities on the natural systems and historic resources of Flagler County;

Objective 16: Flagler County's hurricane evacuation time for a hurricane shall be in accordance with the times designated by the Northeast Florida Regional Planning Council and the Northeast Florida Hurricane Evacuation Study.

Policy 16.1: Land use plan amendments in the hurricane vulnerability zone shall not be approved unless: the change is made to reflect existing conditions, the requested change is for a lower density, requested change in increasing density is off-set by a decrease in density in another part of the hurricane vulnerability zone, the developer mitigates the additional evacuation problems by paying for off-site transportation improvements necessary to maintain safe evacuation time for a hurricane.

Policy 16.2: All future improvements to roads along the evacuation route shall provide design solutions which provide remedies for flooding problems.

Objective 17: Flagler County shall provide organizational leadership and coordination of hazard mitigation initiatives, including the review of interagency hazard mitigation reports and consideration of elimination or reduction of land uses identified therein as inconsistent.

Policy 17.1: Flagler County shall maintain and update the Local Mitigation Strategy (LMS) and shall involve other local governments and agencies in the annual review of LMS activities.

Objective 18: The next Flagler County Evaluation and Appraisal Report (EAR) and EAR-based amendments will address urban sprawl, the preservation of farm land and rural areas, and wildfire mitigation.

Policy 18.1: The Evaluation and Appraisal Report will include:

- a) A land use needs analysis considering the current allocation of land uses and the impact of infill and annexation;
- b) An assessment of rural development and identification of opportunities for innovative planning of rural communities such as Rural Stewardship Areas, Transfer of Development Rights programs, or Farm compacts;
- c) An analysis of facility plans so development can be maximized efficiently;
- d) An analysis of environmentally sensitive areas, including areas of significant upland habitat;
- e) An analysis of the protection of surface and groundwater, considering additional measures for areas identified with severe vulnerability to surface or groundwater contamination from septic tanks; and
- f) Identification of areas subject to wildfire, and an evaluation of mitigation options.

Coastal Management Element

Policy 2.1.03: The County shall update its Peacetime Emergency Plan annually, showing evacuation routes, hurricane hazards, safety procedures, shelters, and other pertinent information for its citizens.

Objective 2.2: Hazard Mitigation and Coastal High-Hazard Areas. Building and development activities shall be carried out in a manner which addresses the danger to life and property from hurricanes. Development within the coastal high-hazard area shall be reviewed by Flagler County (and other applicable agencies as required). Public funding for new facilities within coastal high-hazard areas shall be limited to public access, resource restoration and passive recreation facilities.

Policy 2.2.01: New sanitary sewer facilities in the hurricane vulnerability zone lower than the 50 year floodplain shall be flood proofed, raw sewage shall not leak from sanitary sewer facilities during flood events, and new septic tanks shall be fitted with back flow preventors [sic].

Policy 2.2.02: The Coastal High-Hazard Area shall coincide with the Category 1 hurricane evacuation zone as determined by the Northeast Florida Regional Planning Council. See Map 6.

Policy 2.2.03: The County's Stormwater Ordinance shall include the building elevations of the Flood Insurance Rate Maps, the building requirements of the National Flood Insurance program, or applicable detention of rain as specified in Chapter 40C of the Florida Administrative Code.

Policy 2.2.04: The hazard mitigation annex of the Local Peacetime Emergency Plan shall be reviewed and updated annually.

Policy 2.2.05: Recommendations of the hazard mitigation annex of the local peacetime emergency plan includes the following task assignments:

The following County Departments will assist in developing and implementing policies regarding hazardous mitigation.

1. County Building Official and Planning Administrator, will assure that zoning requirements and limitations are consistent with anticipated hazards.
2. County Attorney, will stress the importance of proper legal measures employed prior to hazard situations.
3. Division of Emergency Management and Building Official will stress the need of adequate insurance coverage.
4. Red Cross and Director of Emergency Services will review designated evacuation shelters that will be made available for various hazardous situations.
5. The Office of Emergency Services will maintain a check list of resources that are available for various hazard conditions.

6. The Building Official and the Director of Emergency Services will see that informative programs are initiated in stressing hazard mitigation.
7. The Director of Emergency Services will assist in the development of state, regional and local hazardous mitigation policies affecting the several communities within the jurisdiction.
8. The Office of Emergency Services will solicit the assistance of private agencies such as insurance contractors and others in the community who could assist in recognizing hazardous problems.
9. The Planning and Zoning Director will assume the responsibility of bringing to the attention of the policy making officials (Board of County Commissioners) issues and problems affecting local growth and development.
10. The Planning and Zoning Director will encourage appropriate legislation at the local level to reduce the risk of life and property in areas vulnerable to the impact of predictable, recurring hazards.
11. The Director of Emergency Services will maintain a current file of local and past anticipated hazards.
12. The Planning and Zoning Director will request state assistance in matters pertaining to hazard mitigation beyond the capabilities of local government.

Policy 2.2.06: County funded public facilities shall not be built in the coastal high-hazard area, unless the facility is for public access or resource restoration or parks.

Policy 2.2.07: General hazard mitigation t [sic] reduce the exposure of human life and property to natural hazards shall be addressed through implementation of the land development regulations and the DRI review process.

Policy 2.2.08: Septic tanks in the hurricane vulnerability zone shall be used as an interim measure until centralized facilities are available and hookup is required. Connections to centralized wastewater and water systems will be required within one year from the date of notice that these services are available.

Policy 2.2.09: Reconstruction or replacement of existing hard erosion control structures along the oceanfront which are more than 75% destroyed shall be prohibited except for maintenance and care of structures which are needed to protect evacuation routes, public facilities and utilities.

Objective 2.3: Flagler County shall direct population concentrations away from known or predicted coastal high-hazard areas via acquisition of property within these areas and implementation of local and state regulatory measures including the Coastal Construction Setback line rules, Flagler County Land Development Regulations, and Flagler County Future Land use Map.

Policy 2.3.01: The County shall encourage the relocation of threatened and/or damaged structures and infrastructure landward of the coastal high-hazard zone.

Policy 2.3.02: The County may hold a referendum election for the purpose of continued funding of the environmental lands program with the intent of expanding purchases of flood prone natural areas.

Policy 2.3.03: Coastal land and land within the Coastal High Hazard Area shall have a high priority when the County undertakes land acquisition programs for the preservation of natural areas, flood plains, or endangered lands.

Policy 2.3.04: Lands seaward of the Coastal Construction Control Line shall be designated unsafe building areas consistent with Section 4.04.10 of the Land Development Code which shall serve as the line from which applicable setbacks are determined.

Objective 2.4: By 2000, the County shall develop a post-disaster and pre-hazard mitigation plan which addresses all jurisdictions in the County and creates benefits for existing and future property owners.

Policy 2.4.01: The County's post hurricane disaster plan shall consider the following:

- a) land uses and public facilities in the coastal zone area;
- b) areas of known high-hazard;
- c) the effects of hurricanes on the natural resources of coastal areas;
- d) prior arrangements with owners in the CHHA, to facilitate acquisition.

Policy 2.4.02: By 1999, the County shall appoint a Post Disaster Redevelopment Planning Task Force, to prepare and implement a Post Disaster Redevelopment Plan. This Task Force shall include members of County staff, representatives of coastal municipalities, utility providers and business organizations.

Policy 2.4.03: By 2000, the County shall complete the basic application for participation in the Community Rating System program which includes the development and implementation of a flooding mitigation plan.

Policy 2.5.01: After a hurricane but prior to re-entry of the population into evacuated areas, the County Commission shall meet to hear preliminary damage assessments, appoint a Damage Assessment Team, and place a temporary moratorium on building activities not necessary for the public health, safety, and welfare.

Policy 2.5.03: The Damage Assessment Team shall: review and decide upon emergency building permits; coordinate with state and federal officials to prepare disaster assistance applications; analyze and recommend to the County Commission hazard mitigation options including reconstruction or relocation of damaged public facilities; develop a redevelopment plan; and recommend amendments to the comprehensive plan, Local Peacetime Emergency Plan, and other appropriate policies and procedures.

Policy 2.5.04: Immediate repair and cleanup actions needed to protect the public health and safety include repairs to potable water,

wastewater, and power facilities; removal of debris; stabilization or removal of structures about to collapse; and minimal repairs to make dwellings habitable. These actions shall receive first priority in permitting decisions. Long Term redevelopment activities shall be postponed until the Damage Assessment Team has completed its tasks.

- Policy 2.5.05:** If rebuilt, structures which suffer damage in excess of fifty percent of their appraised value shall be rebuilt to meet all current requirements, including those enacted since construction of the structure.
- Policy 2.5.06:** Structures which suffer repeated damage to pilings, foundations, or load bearing walls shall be required to rebuild landward of their current location or to modify the structure to delete the areas most prone to damage.
- Policy 2.5.07:** Areas needing redevelopment shall be evaluated by Flagler County in a review process for appropriate land uses, eliminating unsafe conditions, and restoring coastal resources. The redevelopment activity shall not result in an increase in evacuation times above clearance time as identified in this element.

GOAL 5: Intergovernmental Coordination to Protect Coastal Resources. Coastal resource management will address the natural systems on a system wide basis regardless of political boundaries.

Conservation Element

Objective 3: Through the year 2010, the County shall protect the natural functions of the 100-year floodplain so that the flood-carrying and flood storage capacity are maintained by continuing to implement and enforce floodplain ordinances and reviewing development proposals for the presence of impacts on floodplains.

Policy 3-2: The County shall identify and recommend to the State and the St. Johns River Water Management District environmentally sensitive lands (i.e.: floodplains) that would warrant acquisition under the Conservation and Recreation Lands (CARL) Program, the Save Our Rivers (SOR) Program and the Preservation 2000 (P2000) Program or its successor, "Forever Florida". The County shall also make every effort to secure funds, as available, through the above programs for fixed capital outlay for development and management of facilities associated with such acquisitions.

Policy 3-4: The County shall also continue to pursue acquisitions recommended by the Land Acquisition Plan funded by the Environmentally Sensitive Lands (ESL) program, which finances the acquisition of environmentally sensitive lands, including, but not limited to, water recharge areas and lands for parks and recreation. Such funding may be matched with funding from other acquisition programs.

Objective 4: Through the year 2010, the County's viable wetlands shall be conserved and protected from permanent physical and hydrologic alterations via the Flagler County wetlands protection regulations (Article VI, Land Development Code).

Policy 4-3: The County shall prohibit the permitting of water management and development projects that adversely impact the natural wet and dry cycles or cause functional disruption of wetlands. Violators or responsible parties will be liable for any functional degradation, loss or damages that may occur to the wetlands, and for the restoration thereof. In the event that any state or regional agency takes any action contrary to this ordinance, the County shall appeal or take other approximate legal action to protect the integrity of the County's wetlands.

Objective 6: Per capita water use of potable water shall be decreased to 121 gallons per capita per day by 2010 via water conservation programs, and adoption of improved water conservation techniques and technology.

Policy 6-4: By 2000, the County shall prepare and adopt an emergency water management conservation plan. Interim water conservation measures to be undertaken include but are not limited to: low water use plumbing fixtures, xeriscape landscape techniques, land spreading of treated wastewater effluent, and the dissemination of information to the public.

Policy 6-5: The County may request periodic reports from the various utilities which supply water from within Flagler County updating the effectiveness of their water conservation programs.

Objective 7: Through the year 2010, the County shall strive to reduce the rate of soil erosion caused by agriculture, land development and other human activities by promoting the use of best management practices which control and limit the amount of sediment reaching surface waters.

Policy 7-1: The County shall include topographic, hydrologic and vegetative cover factors of proposed developments and shall incorporate this information in the decision process.

Objective 11: The County shall promote the protection of natural reservations to lessen the adverse effects which adjacent developments might have on the managed conservation areas through implementation of various land development regulations including transfer of development rights, permitting and wetlands protection.

Policy 11-3: Flagler County's environmentally sensitive lands shall include creek, stream or river banks, major drainage ways, beaches, shorelines, viable wetlands, floodplains, poor soil areas not suitable for development, wellhead protection areas, prime groundwater recharge areas, and natural systems that contribute to greenway corridors. The prime groundwater recharge areas are to be determined by the SJRWMD per Chapter 373.0395 (3) Florida Statutes.

Policy 11-4: Through the year 2010, the County shall continue the process of collecting available environmental data, used to establish a data

baseline, including data useful for Geographical Information System (GIS) application.

Infrastructure Element

GOAL 4: Flagler County shall ensure the development, operation and maintenance of a cost-effective and efficient surface water management system which minimizes flood damage and losses, prevents water quality degradation of receiving water bodies and promotes groundwater aquifer recharge.

Objective 4.5: Stormwater drainage regulations shall be included in the County's Land Development Code and shall protect natural drainage features and ensure that future development utilizes stormwater management systems compatible with existing master surface water management plans.

Policy 4.5.2: The County shall continue to enforce land development regulations that prohibit new development within the 100-year floodplain unless the structures use elevated first floors and provide compensating storage.

Policy 4.5.3: Stormwater runoff for development within developed areas and subdivisions must meet the following level of service standards:

- (a) Water Quantity Post-development runoff shall not exceed pre-development runoff rates for the entire development or subdivision.

Objective 4.6: The County's Land Development Code shall be reviewed annually to ensure that it is consistent with the latest available regulations promulgated by the Federal Emergency Management Agency to reduce property damage and loss of life due to flooding.

Policy 4.6.1: The County shall continue to minimize flood damage and related losses by prohibiting new development within the 100-year floodplain unless the structures use elevated first floors and provide compensating storage.

Objective 4.7: Maintain the function of natural drainage features by reducing loss of flood storage capacity, protecting the functional value of wetlands and by reducing the interbasin diversion of waters from the Lower St. Johns River basin into the Upper East Coast basin.

Policy 4.7.1: The County shall continue to enforce regulations specifying limitations on encroachment, alteration and compatible uses of design storm event floodplains.

GOAL 5: Flagler County shall ensure that the natural functions of aquifer recharge areas serving the county will be protected and maintained in order to ensure the greatest available quantity and highest quality of groundwater supply.

Objective 5.2: Develop information to enable a consensus to be reached on the nature and functioning of aquifer recharge areas and identify the maximum safe withdrawal rate from Flagler County's water resources.

Policy 5.2.1: Flagler County shall continue to rely on the SJRWMD to conduct water supply studies and evaluations in advance of development pressure necessary to provide for the orderly and environmentally-compatible development of the county's water resources. These studies should include the identification of recharge areas for all aquifers, safe yield determinations, delineation of optimal wellfield production areas, and evaluation of saline water interface monitoring data from existing wellfields.

Objective 5.3: The County shall continue to maintain communication and staff coordination between SJRWMD, Flagler County and surrounding counties regarding water supply issues by regularly attending meetings of the Water Management District and by designating a county employee as the staff coordinator.

Policy 5.4.6: Flagler County shall promote water conservation through the continued implementation of its Water Conservation Program which includes the implementation of low water use residential landscapes (xeriscapes), efficient irrigation technologies for agriculture, the installation of low water use plumbing fixtures, and the use of reclaimed water on golf courses.

Transportation Element

Policy 2.3.9: The County shall conduct a study of existing evacuation routes by the year 2003. This study shall address existing roadways designated as evacuation routes during natural occurrences such as hurricanes or fires. The study shall also examine the need for the designation of additional evacuation routes in order to assure that adequate roadway capacity exists during times of emergency.

Policy 2.3.10: The County shall coordinate with the owners of the toll facility on Palm Coast Parkway to ensure that the toll is waived during emergency times when a coastal evacuation is required.

Housing Element

Objective 3: All existing dilapidated housing units in the County for which any kind of rehabilitation is considered economically unfeasible, shall be removed from the housing stock by the year 2010.

Intergovernmental Coordination Element

Policy 1.4: Flagler County shall review and update its Hurricane Evacuation Plan on an annual basis and ensure that the plan remains certified by the State Department of Emergency Management.