

Executive Summary

The experiences of the 2004 Hurricane Season epitomize the importance of better integrating hazard mitigation activities into local comprehensive planning. Last fall, residents from all over the state experienced significant damages from Hurricanes Charley, Frances, Jeanne, and Ivan by either winds, tornadoes, surge, or flooding. But this was not the only time that we have experienced natural disaster, nor will it be the last. In 1992, Hurricane Andrew devastated South Florida. In 1998 and 1999, most counties in Florida experienced wildfires. In some cases, despite fire fighters' best efforts, the fires advanced through neighborhoods and homes were lost. Every year in Central Florida, new sinkholes emerge swallowing homes and damaging infrastructure. 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. Worst of all, however, are the many lives that, directly or indirectly, are lost due to natural disasters. It is imperative that we reduce the human and financial costs of natural disasters. Through better integration of natural hazard considerations into local comprehensive planning, we can build safer communities.

This profile of Nassau County has been prepared as part of a statewide effort by the Florida Department of Community Affairs (DCA) to guide local governments on integrating hazard mitigation principles into local comprehensive plans. Through the process outlined in this profile, planners will be able to (1) convey Nassau County's existing and potential risk to identified hazards; (2) assess how well local hazard mitigation principles have been incorporated into the County's Comprehensive Plan; (3) provide recommendations on how hazard mitigation can better be integrated into the Comprehensive Plan; and (4) determine if any enhancements could be made to the LMS to better support comprehensive planning. Best available statewide level data is provided to convey exposure and risk as well as to illustrate the vulnerability assessment component of the integration process.

Summary of Recommendations

Nassau County's Comprehensive Plan has good integration of hazard mitigation principles and its LMS has adequate data and goals to support comprehensive planning. There are goals, objectives, and policies that support risk reduction from hurricanes and floods in the LMS and Comprehensive Plan. However, there are always ways to strengthen such plans, and the following is a summary of options for the County to do so.

Comprehensive Plan Preliminary Recommendations

The following recommendations include hazard mitigation measures through which Nassau County can continue to reduce or eliminate risks to storm surge, flood, and wildfire. These recommendations pertain to the use of vacant lands and/or redevelopment practices. Based on the land use tabulations, most of the vacant acreage is susceptible to storm surge, flood, and wildfire. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be very low. Therefore, Nassau County's Comprehensive Plan elements were not reviewed for policies pertaining to sinkhole hazards. For more information about the methodology and data used for the land use tabulations, please refer to Section 2. Hazard Vulnerability in this hazards profile.

Of the vacant lands, 3,081 acres are susceptible to Category 1 storm surge (CHZ), 6,389 acres are susceptible to Category 1 – 3 storm surge (HVZ), 56,401 are susceptible to 100-year flood, and 1,359 acres are susceptible to wildfire.

Storm Surge

Nearly 39% of the 3,081 vacant acres in the Coastal Hazard Zone and 50% of the 6,389 vacant acres in the Hurricane Vulnerability Zone are to be developed for residential, commercial, industrial uses or public facilities, indicating that these risk reduction strategies should be considered prior to development of this vacant land.

- The Comprehensive Plan should continue to require that the Nassau County Office of Emergency Management continue to coordinate with the Northeast Florida Regional Planning Council to maintain updates of the Northeast Florida Hurricane Evacuation Study, 1998, as it pertains to population versus evacuation times.
- The Comprehensive Plan should continue to require that the County request a re-evaluation of the CCCL by the Florida Department of Environmental Protection at least once every five (5) years following the adoption of the EAR.
- The Comprehensive Plan should continue to require the implementation of road concurrency requirements to ensure evacuation capability inland, in the Coastal High Hazard Area (CHHA), and on barrier islands.
- The Comprehensive Plan should continue to require the County to update its hurricane evacuation plan and disaster preparedness plan every five years.
- The Comprehensive Plan should continue to require that the County continue to implement its Emergency Disaster Preparedness Plan (as amended).
- The Comprehensive Plan should continue to require that the County, in cooperation with the incorporated municipalities of Nassau County, will coordinate the implementation of the Nassau County Local Mitigation Strategy (LMS), with the Coastal Management Element.
- The Comprehensive Plan should continue to require that the County facilitate periodic meetings of the Local Mitigation Strategy Working Group.
- The Comprehensive Plan should continue to require that FEMA., National Weather Service and Regional Planning Council data, which are pertinent to Nassau County hurricane damage mitigation, be incorporated into this element of the Plan.
- The Comprehensive Plan should continue to maintain low density residential development in the CHHA, prohibit new or expanded mobile home or recreational vehicle developments on barrier islands or V-Zones, protect the coastline naturally, and other existing measures to minimize risk.
- The Comprehensive Plan should continue to require that the County will not subsidize public facilities within the CHHA, other than those, which are deemed necessary to maintain existing level-of-service standards, and those which are directly related to public access and/or recreation areas.
- The Comprehensive Plan should continue to require that existing evacuation routes receive high priority for capital improvement expenditures, and evacuation route bridges shall not be drawbridges.
- The Comprehensive Plan should continue to require that off-island school sites be designated as shelters as coordinated by the local government and the Red Cross. The County will also continue to examine retrofitting options for existing shelters.
- The Comprehensive Plan should continue to require that new construction over 10,000 square feet be reviewed by the County to determine its potential for serving as a hurricane shelter.
- The Comprehensive Plan should continue to require that development within the FEMA FIRM V Zone shall be limited through County restrictions regarding the

provision of water/sewer/road facilities to service V Zone areas where infrastructure facilities have been damaged/destroyed by storm forces.

- The Comprehensive Plan should continue to require that new development within the designated CHHA will be limited by LDRs.
- The Comprehensive Plan should continue to require that the issuance of building permits on the Barrier Island be restricted by evacuation clearance times.
- The Comprehensive Plan should continue to require that the County promote compact growth within the barrier island through techniques such as establishment of Municipal Taxing Units or Benefit Units.
- The Comprehensive Plan should continue to require that a statement be included on all new subdivision plats located within areas of potential storm surge inundation regarding surge vulnerability
- The Comprehensive Plan should continue to require that Land Development Regulations specify performance standards for shoreline land uses.
- The Comprehensive Plan should continue to require that the County identify and assess the vulnerability of all infrastructure located within the CHHA. It should also continue to minimize infrastructure improvements in the CHHA
- The County should consider transfer of development rights to from areas within the CHHA to outside the CHHA, as another measure to reduce density in the CHHA.
- The County should consider prohibiting septic tanks in the CHHA.
- The County should consider prohibiting the development of nursing homes, adult congregate living facilities, and hospitals inside the Coastal High Hazard Area and other high-risk developments, similar to how most county funded facilities have been regulated.

Flood

About 32% of the 56,401 vacant acres in the 100-year floodplain are to be developed for residential, commercial, industrial uses or public facilities, indicating that these risk reduction strategies should be considered prior to development of this vacant land.

- The Comprehensive Plan should continue the implementation of policies for stormwater management, repetitive loss repair and modification requirements, transfer of development rights in wetlands, and other measures to reduce the risk from flood.
- The Comprehensive Plan should continue to require that post-development conditions for stormwater run-off shall equal or be less than pre-development run-off conditions.
- The Comprehensive Plan should continue to require a minimum of 1 foot of freeboard above base flood elevation.
- The Comprehensive Plan should continue to require that the County seek grants to establish a grant funded Geographic Information System (GIS) - based inventory of all stormwater management facilities under the county's jurisdiction.
- The Comprehensive Plan should continue require that the LDR's regulate stormwater runoff and encroachments, including fill, new construction, substantial improvements, and other development, within a FEMA designated "special flood hazard area" that would result in any increase in flood levels during the occurrence of a flood discharge.

- The Comprehensive Plan should continue to require that all construction in floodplains and floodways be required to comply with FEMA, Federal Insurance Administration, and County building codes.
- The Comprehensive Plan should continue to require an undisturbed native vegetative buffer from 100-year floodplains.
- The County should consider requiring environmental and energy conservation techniques related to septic systems in the 100-year floodplain.
- The County should consider building shelters and essential public facilities outside of the 100-year floodplain.
- The County should consider requiring areas that have not established base flood elevations to be studied prior to development.
- The County should consider calling for compensating storage calculations in all non-coastal flood hazard areas.

Wildfire

About 52% of the 1,359 vacant acres that are susceptible to wildfire are to be developed for residential, commercial, industrial uses or public facilities, indicating that these risk reduction strategies should be considered prior to development of this vacant land.

- The County should continue to implement practices to reduce risk from wildfire, such as directing developers to manage natural areas around private recreational facilities with Best Management Practices (including prescribed burning), and using a natural resources management plan to acquire sensitive lands for which fire management planning is to occur.
- The County should consider participating in the Firewise Medal Community program to reduce risks within the wildland urban interface.
- Where reasonable, consideration should be made to design structures and sites within the County to minimize potential for loss of life and property (e.g., outdoor sprinkler systems, fire-resistant building materials or treatments, and landscaping and site design practices); review proposals for subdivisions, lot splits, and other developments for fire protection needs during site plan review process; coordinate with fire protection service or agencies to determine guidelines for use and development in wildfire-prone areas.
- The County should consider requirement for all new development to include & implement a wildfire mitigation plan specific to that development, subject to review & approval by the County Fire Rescue Department.
- The County should consider increasing public awareness of prescribed burning and require management plans for conservation easements that address reduction in wildfire fuels.

Sinkhole

Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county. The Comprehensive Plan does not address the sinkhole hazard, therefore preliminary recommendations were not provided for this hazard.

- Sinkhole hazards could be evaluated further in the next update of the hazards analysis of the LMS to determine the risk. However, based on available data, it appears that sinkhole risk is very low.

General

- Include each hazard layer on the existing and future land use maps to determine where risks are possible to target hazard mitigation strategies.
- The Comprehensive Plan should consider including a policy to incorporate recommendations from existing and future interagency hazard mitigation reports into the Comprehensive Plan, and should consider including these recommendations during the Evaluation and Appraisal Report process as determined feasible and appropriate by the Board of County Commissioners.
- The Comprehensive Plan should consider including a policy to incorporate applicable provisions of the Comprehensive Plan into the Comprehensive Emergency Management Plan and the Local Mitigation Strategy.
- Continue educating the public, especially those at high risk from hurricanes, floods and wildfires, and make them aware of proactive steps they can take to mitigate damage.

Local Mitigation Strategy Preliminary Recommendations

The following data and information could be included in an update of the LMS. This information could help convey how and where disasters impact the population and the built environment to support comprehensive planning.

- Include data for population and property exposure to storm surge, flood, or wildfire.
- Include a clear description of geographic areas exposed to each of the hazards that the community is most susceptible to.
- Include hazard maps which include data layers to illustrate population (i.e., density) or property (i.e, value) exposure.
- Include future land use maps that include hazard data layers to illustrate which future land use categories are susceptible to each hazard.
- Include loss estimates by land use.
- Include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities. The LMS Committee is planning on including this information in the future.

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1. County Overview

Geography and Jurisdictions

Nassau County is located along the Atlantic Ocean in northeast Florida. It covers a total of 726 square miles, of which approximately 652 square miles are land and 74 square miles are water. There are three incorporated municipalities within Nassau County, as shown in **Table 1.1**. Fernandina Beach serves as the county seat.



Population and Demographics

According to the April 1, 2004 population estimate by the University of Florida's Bureau of Economic and Business Research (BEBR), population estimates for all jurisdictions within Nassau County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While some residents live in incorporated jurisdictions, approximately 76% live in the county's unincorporated areas. Nassau County has experienced rapid population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Nassau County had a growth rate of 31.2%, which is nearly one third greater than the statewide average of 23.5% for the same time period.

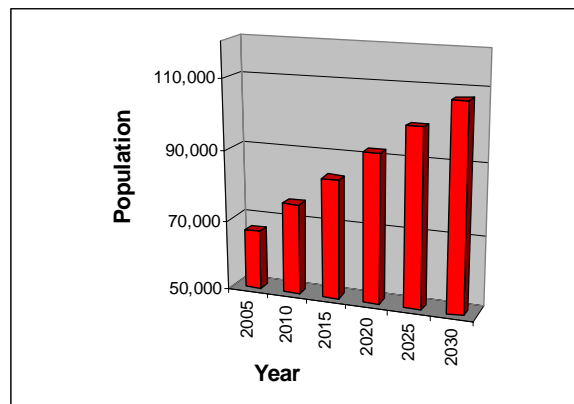
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Unincorporated	43,450	49,481	13.88%	76.11%
Callahan	962	1,141	18.61%	1.75%
Fernandina Beach	10,549	11,541	9.40%	17.75%
Hilliard	2,702	2,853	5.59%	4.39%
Countywide Total	57,663	65,016	12.75%	100.00%

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

According to BEBR (2004), Nassau County's population is projected to grow steadily and reach an estimated 107,500 by the year 2030, increasing the average population density of 272 to 465 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Nassau County based on 2004 calculations.

Figure 1.1 Population Projections for Nassau County, 2005–2030



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

Of particular concern within Nassau County’s population are those persons with special needs or perhaps limited resources such as the elderly, disabled, low-income or language isolated residents. According to the 2000 Census, of the 57,663 persons residing in Nassau County 12.6% are listed as 65 years old or over; 20.7% are listed as having a disability, 9.1% are listed as below poverty, and 3.9% live in a home where the primary language is other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Nassau County as identified in the County’s Local Mitigation Strategy (LMS) are tropical cyclone generated storm surge and high winds, flooding, wildfires, and hazardous materials spills. Sinkholes were discussed in the LMS, but the risk was considered to be very low for the entire county

Hazards Analysis

The following analysis examines four major hazard types: surge from tropical cyclones, flood, and wildfire. All of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). MEMPHIS was designed to provide a variety of hazard related data in support of the Florida Local Mitigation Strategy DMA2K revision project, and was created by Kinetic Analysis Corporation under contract with the Florida Department of Community Affairs (DCA). Estimated exposure values were determined using the Category 3 Maxima Scenario for storm surge; FEMA’s designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH) for flood; and medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9). Storm surge exposure data is a subset of flood exposure; therefore, the storm surge results are also included in the flood results. Because the Nassau County LMS considers sinkholes a very low risk hazard and MEMPHIS data indicates that no persons or structures are exposed to sinkholes, no further analysis was conducted for this hazard. For more details on a particular hazard or an explanation of the MEMPHIS methodology, consult the MEMPHIS Web site (<http://lmsmaps.methaz.org/lmsmaps/index.html>).

Existing Population Exposure

Table 2.1 presents the population currently exposed to each hazard throughout Nassau County. Of the 57,663 (U.S. Census 2000) people that reside in Nassau County, over 16% are exposed to storm surge, nearly 24% are exposed to 100-year flooding, and 11.2% are exposed to wildfire. Of the 14,043 people exposed to flood, nearly 16% are over age 65 and 31.4% are disabled.

Table 2.1 Estimated Number of Persons Exposed to Selected Hazards

Segment of Population	Storm Surge	Flood	Wildfire
Total (all persons)*	9,359	14,043	6,458
Minority	551	1,294	599
Over 65	1,941	2,179	1,152
Disabled	2,228	4,414	2,087
Poverty	517	1,213	490
Language-Isolated	516	1,031	55
Single Parent	187	668	280

Source: Mapping for Emergency Management, Parallel Hazard Information System

*Note: The “Total” amount does not equal the sum of all segments of the population, but indicates the total population at risk to the selected hazards.

**Note: Storm surge related flooding population exposure results are a subset of the flood results.

Evacuation and Shelters

As discussed in the previous sections, population growth in Nassau County has been steady, and the trend is projected to continue. Additionally, storm events requiring evacuation typically impact large areas, often forcing multiple counties to issue evacuation orders simultaneously and placing a greater cumulative number of evacuees on the roadways which may slow evacuation time further. Thus, it is important to not only consider evacuation times for Nassau County, but also for other counties in the region as shown in **Table 2.2**. Also, population that will reside in new housing stock might not be required to evacuate as new construction will be built to higher codes and standards.

Table 2.2 County Clearance Times per Hurricane Category (Hours)
(High Tourist Occupancy, Medium Response)

County	Category 1 Hurricane	Category 2 Hurricane	Category 3 Hurricane	Category 4 Hurricane	Category 5 Hurricane
Baker	12	12	19.5	19.5	19.5
Clay	9	9	11.25	11.25	11.25
Duval	8.5	12	16.75	19.5	19.5
Nassau	10.25	12.25	12.75	13.25	13.25
Putnam	10	12	17.75	18	18
St. Johns	11	14	16	16.75	16.75

Source: DCA, DEM Hurricane Evacuation Study Database, 2005

As the population increases in the future, the demand for shelter space and the length of time to evacuate will increase, unless measures are taken now. Currently, it is expected to take between 10.25 and 13.25 hours to safely evacuate Nassau County depending on the corresponding magnitude of the storm, as shown in **Table 2.2**. This data was derived from eleven regional Hurricane Evacuation Studies that have been produced by FEMA, the United States Army Corps of Engineers and Regional Planning Councils in Florida. The study dates range from 1995 to 2004. These regional studies are updated on a rotating basis with Northeast Florida region scheduled for completion in the fall of 2005.

Similar to most of Florida’s coastal counties, Nassau County currently has a significant shelter deficit. According to Florida’s Statewide Emergency Shelter Plan, Nassau County has an existing shelter capacity of 3,738 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 5,636 people, leaving an existing shelter deficit of 1,258. In 2009, the projected shelter demand is 5,636, leaving an anticipated shelter deficit of 1,898.

Per an objective in the Coastal Element (9J-5.012(3)(b)7.), counties must maintain or reduce hurricane evacuation times. This could be accomplished by using better topographical data to determine the surge risk to populations to evaluate which areas to evacuate, and increasing the ability to shelter in place to decrease the number of evacuees. Nassau County could encourage new homes to be built with saferooms, community centers in mobile home parks or developments to be built to shelter standards (outside of the hurricane vulnerability zones), or require that new schools be built or existing schools be retrofitted to shelter standards; which would be based on FEMA saferoom and American Red Cross shelter standards. Additionally, the County could establish level of service (LOS) standards that are tied to development.

Existing Built Environment Exposure

While the concern for human life is always highest in preparing for a natural disaster, there are also substantial 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 2.3** presents estimates of the number of structures in Nassau County by occupancy type that are exposed to each of the three

hazards being analyzed. Exposure refers to the number of people or structures that are susceptible to loss of life, property damage and economic impact due to a particular hazard. The estimated exposure of Nassau County’s existing structures to the storm surge, flood, and wildfire hazards was determined through MEMPHIS.

Table 2.3 Estimated Number of Structures Exposed to Selected Hazards

Occupancy Type	Storm Surge	Flood	Wildfire
Single Family	2,133	8,314	5,022
Mobile Home	33	4,986	3,248
Multi-Family	618	2,397	1,649
Commercial	211	1,407	856
Agriculture	9	2,918	2,636
Gov. / Institutional	52	984	539
Total	3,056	21,006	13,950

Source: Mapping for Emergency Management, Parallel Hazard Information System

*Note: Storm surge related flooding building exposure results are a subset of the flood results.

There are 38,012 structures exposed to at least one of the three hazards, of which most are single-family homes in subdivisions. Of these structures, approximately 55% are exposed to flood. Over 21,000 structures are located within the 100-year floodplain, of which 14.5% are exposed to storm surge induced flooding. Nearly 70% of the structures exposed to surge are single family homes. Typically, structures at risk from surge are high-value real estate due to their proximity to the ocean or tidally influenced water bodies such as the St. Mary River and the Nassau River. According to the latest National Flood Insurance Program Repetitive Loss Properties list, as of March 2005, there are five repetitive loss properties in unincorporated Nassau County. Under the National Flood Insurance Program (NFIP), repetitive loss properties are defined as “any NFIP-insured property that, since 1978 and regardless of any change(s) of ownership during that period, has experienced: a) four or more paid flood losses; or b) two paid flood losses within a 10-year period that equal or exceed the current value of the insured property; or c) three or more paid losses that equal or exceed the current value of the insured property.”

Nearly 37% or 13,950 structures are exposed to wildfire, of which, 36% are single-family dwellings. Most susceptible areas are generally located at the urban/rural interface in the western portions of Nassau County, especially in areas where subdivisions occur adjacent to large undeveloped areas of forestland (Nassau County LMS, 2004).

In addition to understanding exposure, risk assessment results must also be considered for prioritizing and implementing hazard mitigation measures. The risk assessment takes into account the probability (how often) and severity (e.g., flood depth, storm surge velocity, wildfire duration) of the hazard as it impacts people and property. Risk can be described qualitatively, using terms like high, medium or low; or quantitatively by estimating the losses to be expected from a specific hazard event expressed in dollars of future expected losses. Although people and property are exposed to hazards, losses can be greatly reduced through building practices, land use, and structural hazard mitigation measures. The next section of this report examines the existing and future land use acreage in hazard areas. This information can be useful to consider where to implement risk reducing comprehensive planning measures.

Analysis of Current and Future Vulnerability Based on Land Use

The previous hazards analysis section discussed population and existing structures at risk from surge, flooding, and wildfire according to MEMPHIS estimates. This section is used to demonstrate the County’s vulnerabilities to these hazards in both tabular format and spatially, in relation to existing and future land uses. Existing land use data was acquired from County

Property Appraisers and the Florida Department of Revenue in 2004 for tabulation of the total amount of acres and percentage of land in the identified hazards areas, sorted by their existing land use category according for the unincorporated areas. The total amount of acres and percentage of land in the identified hazards areas was tabulated and sorted by their future land use category according to the local Future Land Use Map (FLUM), as well as the amount of these lands listed as vacant according to existing land use. Nassau County future land use data was acquired in March 1994 and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas are based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Nassau County future land use map dated March 1994. A series of maps were created as part of the analysis and are available as attachments to the county profile. All maps are for general planning purposes only.

For the purposes of this profile, the identified hazard areas include the coastal hazards zone in relation to storm surge, hurricane vulnerability zones in relation to evacuation clearance times, flood zones in relation to the 100-year flood, and wildfire susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within the Coastal Hazards Zone (CHZ), which represents the Category 1 Hurricane Evacuation Zone joined with the Category 1 Storm Surge Zone. The areas that are most susceptible to storm surge are located in the coastal community of Fernandina Beach as well as along the Intracoastal Waterway and regions of the St. Mary River and the Nassau River. The total amount of land in the CHZ is 17,604.1 acres. As shown in **Table 2.4**, 25.3% are used for government, institutional, hospitals or education purposes; 21.7% are parks, conservation areas and golf courses; 17.5% are currently undeveloped; and 13.7% are used for utility plants and lines and solid waste disposal. **Table 2.5** shows that of the 26,805.6 undeveloped acres, 56.6% are designated as preserved lands. The County is taking favorable action in preserving this land to limit population in the CHHA, further eliminating any additional evacuation or shelter demands.

In **Attachment B**, two maps present the existing and future land uses within the Hurricane Vulnerability Zone (HVZ), which represents Category 1 to 3 Hurricane Evacuation Zones. The HVZ is predominantly located along the coast well as along the Intracoastal Waterway and regions of the St. Mary River and the Nassau River. The total amount of land in the HVZ is 26,805.6 acres. As shown in **Table 2.4**, 23.8% are currently undeveloped; 17.6% are used for government, institutional, hospitals or education purposes; 14.2% are parks, conservation areas and golf courses; and 12.8% are used for utility plants and lines and solid waste disposal. **Table 2.5** shows that of the 400,589.4 undeveloped acres, 63.5% are designated for agricultural use. The County is taking positive action in designating a large portion of the acreage as low to medium density to reduce vulnerability and limiting the amount of people who would need to evacuate or be sheltered from a hurricane.

In **Attachment C**, two maps present the existing and future land uses within a 100-year flood zone. There are flood-prone areas scattered across the County. However, a majority of the large swaths surround the many creeks, streams and tidal wetlands including the Intracoastal Waterway and regions of the St. Mary River and the Nassau River. The total amount of land in the special flood hazard area is 400,589.4 acres. As shown in **Table 2.4**, 69.9% are in agricultural use; 14.1% are currently undeveloped; 3.5% are residential single family homes; and 3.3% are used for government, institutional, hospitals or education purposes. **Table 2.5** shows that of the 18,673.1 undeveloped acres, 69.8% are designated for agricultural use. Since a large portion of the acreage is designated agricultural, the County has the opportunity to maintain this land use and low density development to prevent increased vulnerability to flooding. Although stormwater management systems are designed to eliminate flooding, these systems can fail during a storm if debris blocks drainage channels or culverts washout.

In **Attachment D**, two maps present the existing and future land uses within wildfire susceptible areas. These areas are scattered across the county. The total amount of land in the wildfire susceptible areas is 18,673.1 acres. As shown in **Table 2.4**, 83.4% are in agricultural use; 7.3%

are undeveloped lands; and 2.4% are used for residential mobile home or commercial parking lot. **Table 2.5** shows that of the 3,080.5 undeveloped acres, 40.5% are preserved lands; 25.5% are single family residential homes; and 20.8% are used for agriculture. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

Table 2.4 Total Unincorporated Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas
Agriculture	Acres	222.3	1,921.2	280,151.2	15,568.5
	%	1.3	7.2	69.9	83.4
Attractions, Stadiums, Lodging	Acres	20.7	20.7	81.2	1.1
	%	0.1	0.1	0.0	0.0
Places of Worship	Acres	25.2	31.9	579.8	12.0
	%	0.1	0.1	0.1	0.1
Commercial	Acres	260.4	301.9	713.4	2.5
	%	1.5	1.1	0.2	0.0
Government, Institutional, Hospitals, Education	Acres	4,446.1	4,716.5	13,137.0	191.9
	%	25.3	17.6	3.3	1.0
Industrial	Acres	45.9	53.7	390.8	0.5
	%	0.3	0.2	0.1	0.0
Parks, Conservation Areas, Golf Courses	Acres	3,823.3	3,815.2	12,491.4	420.9
	%	21.7	14.2	3.1	2.3
Residential Group Quarters, Nursing Homes	Acres	12.3	12.7	14.3	0.0
	%	0.1	0.1	0.0	0.0
Residential Multi-Family	Acres	384.3	657.2	2,928.9	113.9
	%	2.2	2.5	0.7	0.6
Residential Mobile Home, or Commercial Parking Lot	Acres	209.1	899.8	9,859.8	442.7
	%	1.2	3.4	2.5	2.4
Residential Single-Family	Acres	1,770.3	3,372.0	14,195.1	541.7
	%	10.1	12.6	3.5	2.9
Submerged Land (Water Bodies)	Acres	875.0	1,169.1	2,446.9	0.9
	%	5.0	4.4	0.6	0.0
Transportation, Communication, Rights-Of-Way	Acres	12.7	13.8	122.2	2.5
	%	0.1	0.1	0.0	0.0
Utility Plants and Lines, Solid Waste Disposal	Acres	2,416.1	3,431.1	7,076.7	15.4
	%	13.7	12.8	1.8	0.1
Vacant	Acres	3,080.5	6,388.7	56,400.8	1,358.5
	%	17.5	23.8	14.1	7.3
Total Acres	Acres	17,604.1	26,805.6	400,589.4	18,673.1
	%	100.0	100.0	100.0	100.0

Source: Department of Community Affairs

Table 2.5 Total Unincorporated Acres in Hazard Areas by Future Land Use Category

Future Land Use Category		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Agriculture	Acres	1,136.3	639.8	1,854.6	745.0	254,210.2	32,013.2	13,035.8	618.4
	%	6.5	56.3	6.9	40.2	63.5	12.6	69.8	4.7
Commercial	Acres	564.7	160.3	607.7	175.2	1,890.9	677.0	47.0	32.1
	%	3.2	28.4	2.3	28.8	0.5	35.8	0.3	68.3
Estate	Acres	28.3	10.0	1,334.9	955.5	66,957.7	9,058.3	3,682.4	478.4
	%	0.2	35.4	5.0	71.6	16.7	13.5	19.7	13.0
Industrial	Acres	62.2	5.8	60.6	5.6	821.7	204.7	5.1	0.0
	%	0.4	9.3	0.2	9.2	0.2	24.9	0.0	0.0
Multi-Family	Acres	664.8	231.2	659.0	223.8	659.4	221.4	0.0	0.0
	%	3.8	34.8	2.5	34.0	0.2	33.6	0.0	0.0
Preserve	Acres	12,290.1	1,249.1	15,169.1	2,472.3	33,127.2	6,098.5	381.9	31.9
	%	69.8	10.2	56.6	16.3	8.3	18.4	2.1	8.4
Single Family	Acres	2,857.7	784.3	7,119.7	1,811.3	42,922.3	8,127.8	1,520.8	197.7
	%	16.2	27.4	26.6	25.4	10.7	18.9	8.1	13.0
Total	Acres	17,604.1	3,080.5	26,805.6	6,388.7	400,589.4	56,400.8	18,673.1	1,358.5
	%	100.0	17.5	100.0	23.8	100.0	14.1	100.0	7.3

Source: Department of Community Affairs

The amount of total land and existing vacant land in identified hazard areas was also tabulated by DCA for each of Nassau County's three incorporated municipalities. These amounts are listed in **Table 2.6**. The City of Fernandina Beach has the most amount of total acreage susceptible to all of the hazards listed in **Table 2.6**, as it is the largest municipality in the county. Fernandina Beach has the most vacant acreage in the CHZ, HVZ and flood zones; and Hilliard is the only municipality with acreage in the wildfire susceptible areas. Vacant land is often destined to be developed. It is prudent to conduct further analyses of what the vacant lands will be used for, to determine whether they will be populated, and at what level of intensity/density, to ensure that hazard risks are minimized or eliminated. Each of the municipalities in Nassau County has vacant lands that are in hazard areas. Since hazards cross jurisdictional boundaries, it is important to consider all hazard areas to collaboratively formulate hazard mitigation strategies and policies throughout the county.

Table 2.6 Total Land and Existing Vacant Land in Hazard Areas by Municipal Jurisdiction

Jurisdiction		Coastal Hazard Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Callahan	Acres	0.0	0.0	0.0	0.0	352.5	61.5	0.0	0.0
	%	0.0	0.0	0.0	0.0	14.0	10.9	0.0	0.0
Fernandina Beach	Acres	5,984.6	890.2	5,978.8	885.5	1,976.3	476.6	0.0	0.0
	%	100.0	100.0	100.0	100.0	78.4	84.4	0.0	0.0
Hilliard	Acres	0.0	0.0	0.0	0.0	193.5	26.3	122.2	86.5
	%	0.0	0.0	0.0	0.0	7.7	4.7	100.0	100.0
Total Acres	Acres	5,984.6	890.2	5,978.8	885.5	2,522.2	564.5	122.2	86.5
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Department of Community Affairs\

3. Existing Mitigation Measures

Local Mitigation Strategy (LMS) Assessment

The Local Mitigation Strategy is suited to be a repository for all hazard mitigation analyses (i.e., vulnerability and risk assessment), programs, policies and projects for the county and municipalities. The LMS identifies hazard mitigation needs in a community and alternative structural and nonstructural initiatives that can be employed to reduce community vulnerability to natural hazards. The LMS is multi-jurisdictional and intergovernmental in nature. Communities can reduce their vulnerability to natural hazards by integrating the LMS analyses and mitigation priorities into the local government comprehensive plan.

Per the *DCA's Protecting Florida's Communities* Guide, LMSs prepared pursuant to the state's guidelines (Florida Department of Community Affairs, 1998) have three substantive components:

Hazard Identification and Vulnerability Assessment (HIVA). This section identifies a community's vulnerability to natural hazards. Under Florida rules, the HIVA is required to include, at a minimum, an evaluation of the vulnerability of structures, infrastructure, special risk populations, environmental resources, and the economy to any hazard to which the community is susceptible. According to FEMA, LMSs revised pursuant to the Disaster Mitigation Act of 2000 (DMA 2000) criteria must include maps and descriptions of the areas that would be affected by each hazard to which the jurisdiction is exposed, information on previous events, and estimates of future probabilities. Vulnerability should be assessed for the types and numbers of exposed buildings, infrastructure, and critical facilities with estimates of potential dollar losses. Plan updates will be required to assess the vulnerability of future growth and development.

Guiding Principles. This section lists and assesses the community's existing hazard mitigation policies and programs and their impacts on community vulnerability. This section typically contains a list of existing policies from the community's Comprehensive Plan and local ordinances that govern or are related to hazard mitigation. Coastal counties frequently include policies from their PDRPs.

Mitigation Initiatives. This component identifies and prioritizes structural and non-structural initiatives that can reduce hazards vulnerability. Proposals for amendments to Comprehensive Plans, land development regulations, and building codes are often included. Structural projects typically address public facilities and infrastructure, and buy-outs of private structures that are repetitively damaged by flood. Many of these qualify as capital improvement projects based on the magnitude of their costs and may also be included in the capital improvements elements of the counties' and cities' Comprehensive Plans.

The Nassau County LMS (adopted in 2004) was assessed to determine if the hazard analysis and vulnerability assessment (i.e., surge, flood, and wildfire) data can support comprehensive planning, whether the guiding principles include a comprehensive list of policies for the county and municipalities, and whether the LMS goals and objectives support comprehensive planning goals, objectives, and policies (GOP). Future updates to the assessment will include working with Nassau County to determine if the county's capital improvement projects are included in the LMS hazard mitigation project list.

Hazard Analysis and Vulnerability Assessment (LMS pp. 33-82).

Strengths:

- Provides information about demographic, income, and special needs population
- Provides county property values for occupancy classes.
- Provides a hazards analysis and a qualitative vulnerability assessment.
- Includes maps for each of the hazards.

- Includes a list of types and map of critical facilities.
- Provides a list and map of repetitive losses.
- Includes a qualitative risk assessment for each hazard (Table A-1. Hazards Identification Information Table)

Weaknesses:

- Does not include data for population and property exposure to storm surge, flood, or wildfire.
- Does not provide a clear description of geographic areas exposed to each of the hazards that the community is most susceptible to.
- Hazard maps do not include data layers to illustrate population (i.e., density) or property (i.e, value) exposure.
- Does not include a future land use maps that include hazard data layers to illustrate which future land use categories are susceptible to each hazard.
- Does not include loss estimates by land use.
- Does not include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities. However, the LMS Committee is planning on including this information in the future.

Incorporating land use and population data into the risk assessment of the LMS provides a better source of data for planners to use in policy making and policy evaluation of the local comprehensive plan. The LMS also sets a standard for the quality of data that should be used in determining risk and thereby used to determine mitigation policies.

Guiding Principles

The Nassau County LMS Guiding Principles section contains a list of policies for the county and each municipality. The Guiding Principles Table in the Nassau County LMS includes the objective/policy, source (e.g., comprehensive plan, Northeast Florida Strategic Regional Policy Plan), and notes broken out by category (e.g., floodplain management, storm water management, hurricane evacuation/shelters facilities). The Guiding Principles section is found in most counties' LMSs and is useful in providing the different jurisdictions ideas for enhancing their own plans or providing the LMS committee an analysis of where there may be weaknesses in implementing mitigation strategies.

LMS Goals and Objectives

The Nassau County LMS has goals that support mitigation principles that are found in the comprehensive plan. A full list of the LMS goals and objectives pertaining to comprehensive planning can be found in **Attachment E**. An assessment of whether the LMS goals and objectives are reflected in the comprehensive plan (and vice versa) is provided in **Table 5.1** as part of the preliminary recommendations. Final recommendations will result from a collaborative process between DCA, Nassau County, and PBS&J.

The following is a summary of the LMS goals that support comprehensive plan GOPs: Goal 1 refers to the protection of the lives of the citizens of Nassau County, Goal 2 strives to minimize or eliminate damages to residential structures, Goal 3 emphasizes the protection of existing infrastructure, and Goal 4 highlights the protection of the economic value of property within the county.

Maintaining consistent language for outlining goals and objectives in both the LMS and comprehensive plan presents a united front on decreasing risk in the county. While the LMS may not be able to regulate land use as the comprehensive plan does, having these common goals and objectives increases the likelihood of the jurisdictions of Nassau County adopting and implementing corresponding policies that are legally enforceable.

Comprehensive Emergency Operations Plan (CEMP)

The Nassau County CEMP references the LMS in Annex II: Mitigation. The CEMP notes that all pre-disaster mitigation priorities and projects are generated through the LMS. Post-disaster mitigation priorities consider the LMS analyses and project lists, in addition to damage assessment reports and the County Emergency Management Director's expertise. The CEMP discusses hazard mitigation in the context of standard operating procedures, activities, responsibilities and available programs. This includes the post-disaster implementation of the Hazard Mitigation Grant Program and related disaster mitigation, response and recovery assistance programs, as well as pre-disaster mitigation programs such as the National Flood Insurance Program and Flood Mitigation Assistance Program.

Though the identification of mitigation opportunities lies predominately with the County Emergency Services Director and the LMS working group, the document lists numerous activities and supporting agencies to assist in supporting mitigation in the County. The CEMP indicates that the county planning department and building officials will serve as a primary/secondary support agencies to the Division of Emergency Management. However, the CEMP does not currently outline specific activities for planners to collaborate with emergency managers on (e.g., pre-storm vulnerability assessment, or post-storm damage assessment for mitigation project identification/prioritization).

Post-Disaster Redevelopment Plan (PDRP)

The Nassau County PDRP was not available for review at the time that this profile was developed. If the County has a current PDRP, it will be obtained and reviewed for the final version of this document.

National Flood Insurance Program/Community Rating System

Nassau County (unincorporated areas) and all municipalities participate in the National Flood Insurance Program (NFIP). The municipality of Fernandina Beach participates in the NFIP Community Rating System (CRS) with a rating of seven. Neither Nassau County (unincorporated areas) nor the municipalities of Callahan and Hilliard participate in the CRS.

4. Comprehensive Plan Review

Purpose and Intent

The Nassau County 2000-2010 Comprehensive Plan (Adopted July 2004) was reviewed for the purpose of developing this profile. This review was undertaken in order to determine what steps Nassau County has taken to integrate hazard mitigation initiatives from their Local Mitigation Strategy (LMS), and hazard mitigation initiatives in general, into the local planning process. Each Element of the Plan was evaluated to establish whether principles from the LMS were incorporated into the objectives and policies of the Comprehensive Plan.

Approach

This review includes an assessment of the following hazards: storm surge, flooding, and wildfires. Therefore, the Nassau County Comprehensive Plan elements were not reviewed for policies pertaining to sinkhole hazards. A preliminary list of objectives and policies currently contained in the Plan that pertain to hazard mitigation and any policies related to these hazards is found in **Attachment F**. The following is a discussion of the extent to which the Plan appears to address each of the hazards. Recent policy amendments may not have been available for review, or proposed policies might be in the process of creation, which address these hazards. As a result, this assessment is considered preliminary and subject to input from the local government.

Summary of Findings

The Comprehensive Plan places great emphasis on preserving natural features, and protecting lives and property from natural hazards. Plan components address the challenge of managing growth along the coast and the barrier island, and open the door to intergovernmental coordination with other municipalities and the Northeast Florida Regional Planning Council. The Comprehensive Plan contains a challenge to the County to establish intergovernmental agreements with adjacent counties and municipalities to coordinate efforts to prevent estuarine pollution, control surface water runoff and protect marine resources.

Emergency management precepts appear to be well-integrated into the Comprehensive Plan. This Plan focuses on the use of growth management tools and development controls to protect the County's vulnerable populations and properties. As a first step in the Future Land Use Element, the Nassau County Planning Director is designated as the party responsible for coordinating the CEMP with the County Comprehensive Plan. The Plan also contains elements to address infrastructure concerns, shelters and evacuation times, critical and public facilities, level of service standards, and post-disaster clean-up and redevelopment.

Hurricane Evacuation

Regarding Amelia Island, Nassau County's sole barrier island, the Plan states that the County will use Zoning and Subdivision regulations to manage development in a manner that will reduce vulnerability to hurricane forces. Compact growth will be promoted on the Island, and the policies state that the cost of public facilities and services will be borne by individuals receiving a direct benefit. Options discussed to facilitate this strategy are the establishment of Municipal Taxing Units or Benefit Units. Finally, the issuance of building permits on the barrier island will be restricted by the ability of the road network to serve evacuation at a maximum clearance time.

According to the Coastal Management Element, projects which result in the loss of coastal resources will only be permitted in cases of overriding public benefit. New development within the designated CHHA will be limited to in-fill, PUDs with construction clustered on the upland portion of the site; or a DRI in which site planning addresses the issue of flooding. In order to maintain the maximum evacuation time, the County shall not allow an overall increase in the density of land use that is allowed by the Future Land Use Map (FLUM) within the CHHA.

Pre- and post-disaster planning are both emphasized in the Conservation/Coastal Element to decrease vulnerability of existing and new construction to losses. The Plan requires the County to develop plans and criteria for immediate repair and clean up, in addition to long term repair and redevelopment. These plans must also address removal, modification or relocation of damaged infrastructure and unsafe structures.

Redevelopment within the CHHA must include reduced densities, and minimize public facilities and expenditures to a level no greater than that necessary to support land uses in the affected areas as shown on the FLUM. Consistent with National Flood Insurance Program (NFIP) requirements, structures meeting specific criteria contained in Policy 5.04.06F of the Coastal Management Element shall be required to be elevated a minimum of twelve (12) inches above the base flood elevation (BFE), as depicted on current FIRMs.

According to Florida's Statewide Emergency Shelter Plan, Nassau County had a shelter deficit of 1,258 people in 2004. The opportunity exists to construct new facilities to standards that will allow them to serve as shelters, and to construct future public facilities outside of floodplain and storm surge areas. New construction over 10,000 square feet shall be reviewed by the County to determine its potential for serving as a hurricane shelter based upon its size and location. The County will also evaluate appropriate locations for special needs facilities.

Capital expenditures related to hurricane evacuation routes are addressed in the Coastal Management Element. Critical roadway links causing congestion on evacuation routes for

Category 1 through 3 hurricanes are to receive high priority for capital improvement expenditures. These critical roadway locations/segments are identified by the Northeast Florida Hurricane Evacuation Study.

Proposed development plans will be reviewed by the Emergency Management Department to ensure that infrastructure is located in a manner that provides the least susceptibility to hurricane impact, and when in-place infrastructure is destroyed by hurricane forces, replacement of such facilities shall be engineered to provide least exposure to hurricane forces. Consistent with DCA Rule 9J-5.012(3)(c)(8), the County will assess CHHA infrastructure vulnerability and use benefit-cost analysis consistent with the methodology provided by the LMS to determine whether facilities need to be reconstructed or relocated.

Flooding

Stormwater management and flooding are addressed in the Master Stormwater Management Plan. The County requires that the quantity of stormwater runoff after development be equal or less than that which occurred prior to development. Retrofitting for stormwater control shall also be required when a building permit is issued for existing development that has a direct impact on adjacent wetlands and water bodies, if the cost of the activity is 60% or more of the structure's value. The County is required by 2005, to initiate a master drainage study of the County to identify areas of stormwater run off and recurring drainage problems, and to establish a priority for improving drainage throughout the County. Upon completion and approval of the study, findings were to be incorporated into the Stormwater Management Ordinance in the Comprehensive Plan.

Wildfire

No policies related to wildfire mitigation were found during this review.

5. Data Sources

County Overview:

Florida Statistical Abstract – 2004 (38th Edition). Bureau of Economic and Business Research, Warrington College of Business, University of Florida. Gainesville, Florida.

State and County QuickFacts. U.S. Census Bureau. Data derived from 2000 Census of Population and Housing. . Retrieved in 2005 from <http://quickfacts.census.gov/qfd/index.html>.

Hazard Vulnerability:

Florida Repetitive Loss List March 05. Florida Department of Community Affairs, Division of Emergency Management, Flood Mitigation Assistance Office. March 2005.

Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). Florida Department of Community Affairs, Division of Emergency Management. <http://lmsmaps.methaz.org/lmsmaps/>

Protecting Florida's Communities – Land Use Planning Strategies and Best Development Practices for Minimizing Vulnerability to Flooding and Coastal Storms. Florida Department of Community Affairs, Division of Community Planning and Division of Emergency Management. September 2004.

State of Florida 2004 Statewide Emergency Shelter Plan. Florida Department of Community Affairs, Division of Emergency Management.

GIS Data:

Flood Zone

Source: FEMA FIRM GIS coverages (1996), supplied by University of Florida GeoPlan Center Florida Geographic Data Library Version 3.0.

- Areas with an “A_”, “V_”, “FPQ”, “D”, “100IC”, or “FWIC” value in the “Zone” field in these coverages were considered to be in the 100-year flood zone, and were used in the mapping/analysis.

Hurricane Evacuation Zone/Coastal High-Hazard Area (Category 1 Hurricane Evacuation Zone)

Source: GIS coverage of hurricane zones compiled by Florida Department of Community Affairs/Division of Emergency Management (2003), from GIS data collected from county emergency management agencies in the State of Florida.

- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field “Evac_cat” is equal to “Zone TS”, “Zone A/1”, “Zone B/2”, or “Zone C/3”, in the maps/tables for the Hurricane Vulnerability Zone.
- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field “Evac_cat” is equal to “Zone TS” or “Zone A/1”, in the maps/tables for the Coastal Hazards Zone.

Hurricane Storm Surge Zone GIS Data

Source: GIS coverage of storm surge zones compiled by Florida Department of Community Affairs/Division of Emergency Management (2004), from various storm surge studies performed by regional planning councils and the U.S. Army Corps of Engineers.

- Areas shown/analyzed are those areas in the above-referenced GIS coverage where the value in the field "Category" is equal to "Tropical Storm" or "Category 1".

Wildfire Susceptibility GIS Data

Source: Florida Department of Agriculture and Consumer Services/Division of Forestry, Florida Fire Risk Assessment System (FRAS) data, 2004.

- Areas shown as "wildfire susceptible areas" and that were analyzed are those areas with a "Wildfire Susceptibility Index" value of greater than 10,000 (in north Florida counties) or greater than 0.1 (in south Florida counties)*, based on the FRAS model, and that are also within areas of forest or shrub vegetation or "low impact urban" land cover, based on the Florida Fish and Wildlife Conservation Commission "Florida Vegetation and Land Cover - 2003" GIS data.
- * The rating scale in the "Wildfire Susceptibility Index" GIS coverages has a range of 0 to 100,000 in north Florida counties, and a range of 0 to 1.0 in south Florida counties.

Municipal Boundaries

Source: Boundaries of municipalities were extracted from the U.S. Census 2000 "Places" GIS coverage for the State of Florida.

**ATTACHMENT A
Maps of the Existing and Future Land Uses within Coastal Hazards Zone**

**ATTACHMENT B
Maps of the Existing and Future Land Uses within Hurricane Vulnerability Zone**

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

**ATTACHMENT D
Maps of the Existing and Future Land Uses within Wildfire Susceptible Areas**

ATTACHMENT E
Local Mitigation Strategy
Goals and Objectives Pertaining to Comprehensive Planning

Nassau County's LMS includes the following goals and objectives that are directly related to local comprehensive planning and growth management:

- **Goal 1** – *Protect the lives of the citizens of Nassau County*
- **Goal 2** – *Minimize or eliminate damages to personal residence's in Nassau County*
- **Goal 3** – *Insure protection of existing infrastructure of Nassau County*
- **Goal 4** – *Protect values and associated economic value of property in Nassau County.*

ATTACHMENT F
Nassau County Comprehensive Plan Excerpts Pertaining to Hazard Mitigation

FUTURE LAND USE ELEMENT

OBJECTIVE 1.01 COORDINATE FUTURE LAND USES Upon adoption of the EAR based Plan amendment, the County will correlate future land uses with the appropriate environmental conditions and the availability of supporting infrastructure.

1.01.03 Protect natural resources by working closely with various local, state, and federal agencies in collecting information, coordinating development permitting and reporting violations of laws and regulations, which would have a negative impact on the environment.

1.01.06 Require that post-development conditions for stormwater run-off shall equal or be less than pre-development run-off conditions. These standards will be incorporated into the revised land development code.

1.01.07 This policy addresses development standards within the 100-year floodplain. The land use designation of the 100-year floodplain is Conservation III (as per Policy of this Plan). The Conservation III land use areas (e.g., the 100 year flood plain) may develop as allowed by the underlying land use, unless otherwise restricted by the policies of this Comprehensive Plan and the County's Flood Plain Ordinance. Nassau upon the latest version of the Flood Insurance Rate Maps and model Flood Damage Prevention Ordinance promulgated by FEMA to establish the location of the 100-year floodplain and flood prone areas in Nassau County. The LDRs, then, shall require new construction in these areas to meet FEMA regulations. Our policy will be to control development in flood prone areas to match FEMA requirements to qualify for community rating system. In addition, the following criteria will apply to development in the 100-year floodplain:

Conservation III: All 100 year floodplains as determined by Federal Emergency Management Agency Criteria shall contain an undisturbed native vegetative buffer 50 feet wide with not less than 60 percent of the adjacent developed area to the wetlands, but in no event less than 25 feet wide for 40 percent of said developed area with a balance of width required for 50 feet being added to the 60 percent as it fronts the developed area. This land use designation is an overlay district. As such, the Future Land Use Map shows an underlying land use designation. Density shall be as allowed by the underlying land use. Development shall be protected from flooding as required by the Nassau County floodplain regulations.

LU District

OBJECTIVE 1.04 A PROTECTION OF NATURAL RESOURCES Upon Plan adoption, the county shall take positive action to protect natural resources through implementation of the following policies:

1.04A.04 The County shall require that the quantity of stormwater runoff after development be equal or less than that which occurred prior to development.

OBJECTIVE 1.05 COORDINATE COASTAL AREAS WITH REGIONAL HURRICANE EVACUATION PLAN Upon Plan adoption, the County will coordinate future land uses of the coastal areas to the ability to evacuate coastal areas in a major hurricane event.

1.05.01 The Nassau County Office of Emergency Management will coordinate with the Northeast Florida Regional Planning Council to maintain updates of the Northeast Florida Hurricane Evacuation Study, 1998, as it pertains to population versus evacuation times. The Office of Emergency Management will ensure that population projections and road conditions used to project evacuation times correspond to current conditions.

OBJECTIVE 4.02 CORRECT EXISTING DEFICIENCIES Upon Plan adoption, the County shall correct deficiencies in potable water, solid waste, sanitary sewer and drainage systems for which it is responsible through implementing the following policies:

4.02.02 Unless modified by an amendment to the element, all projects shall be completed in accordance with the schedule provided in the County Capital Improvements 5-year plan as shown below: a. Drainage - Immediate concerns for drainage are maintenance of existing County drainage facilities; coordinating with the state for maintenance of state facilities along state highways and development of a county-wide drainage master plan.

OBJECTIVE 4.05B PROTECT THE FUNCTION OF NATURAL DRAINAGE FEATURES Upon Plan adoption, the County shall protect the function of natural drainage features through implementing the following policies:

4.05B.03 The County shall, by 2005, initiate a master drainage study of the County to identify: 1. the volume, rate, timing and pollutant load of stormwater run off in each planning district; 2. areas of recurring drainage problems; and, 3. establish a priority for improving drainage throughout the County. Upon completion and approval of the study by the Nassau County Board of County Commissioners, the findings of the study shall be incorporated into the Stormwater Management Ordinance and made part of the County's Comprehensive Plan through the Comprehensive Plan amendment process as required by s.163.3184, 163.3187, F.S.

4.05B.05 Adopted sub-division regulations shall ensure that new streets are designed to direct storm drainage in a manner that such water will be filtered through soils and native vegetation before the runoff enters drainage creeks.

4.05B.06 New sub-divisions or individual parcels must be engineered so that post development runoff for the property is no greater than predevelopment runoff.

4.05B.06A Within all new subdivisions, wide backlot and front yard drainage easements, as well as side lot swales to provide for localized runoff routing will be required where centralized retention/detention facilities are not provided. Provisions of 44 CFR 65.12, as amended.

4.05B.06B By 2005, to ensure stormwater management facilities function properly, the County will establish defined levels of maintenance for public and private stormwater management facilities, and will conduct inspections on a routine basis.

4.05B.06D The County will, through its land development regulations, require existing uses undergoing redevelopment to meet the new development requirements for stormwater management.

4.05B.06E By 2005, the County will conduct a comprehensive inventory of all stormwater management facilities in all of the drainage sub-basins under the county's jurisdiction.

4.05B.06F By 2005, the County shall seek grants to establish a grant funded Geographic Information System (G.I.S.) - based inventory of all stormwater management facilities under the county's jurisdiction. Grants will also be sought to fund a stormwater drainage plan and drainage improvement projects as recommended by the plan.

OBJECTIVE 4.05C PROTECT THE FUNCTION OF FLOODPLAINS AND FLOODWAYS Upon Plan adoption, the County shall protect the function of floodplains and floodways through implementing the following policies:

4.05C.01: By 2002, the County shall create LDR's to regulate encroachments, including fill, new construction, substantial improvements, and other development, within a FEMA designated "special flood hazard area" that would result in any increase in flood levels during the occurrence of a flood discharge, unless specifically approved by the Administrator of the Federal Insurance Administration under the provisions of 44 CFR 65.12, as amended.

COASTAL MANAGEMENT ELEMENT

OBJECTIVE 5.02A DUNE PRESERVATION Upon Plan adoption, the County shall protect, conserve and enhance the remaining coastal barrier dunes and establish construction standards to minimize the impact of man-made structures on the dunes and beaches through implementing the following policies:

5.02A.01 The County will seek professional evaluation from DEP's Office of Beaches and Coastal Systems and US Corp of Engineers before permitting any coastal structure proposed for controlling beach erosion.

5.02A.03 The County shall request a re-evaluation of the CCCL by the Florida Department of Environmental Protection at least once every five (5) years following the adoption of the 2000 EAR-based amendments.

5.02A.04 In order to help protect the primary and secondary dunes that require the following system and mitigate the effects of a storm surge, criteria shall be incorporated in the Land Development Regulations within one year of the adoption of the EAR based plan amendment

1. Site plan review shall be required for all new beachfront construction.
2. Vegetated oak hammock and dune interface areas, where they exist, shall be preserved to ensure protection of primary and secondary dune systems. Site plan review and on-site inspections during construction shall require that vegetated areas shall not be destroyed beyond 30 feet outside of the immediate building area.
3. Excavation shall be confined to construction zones containing building pads, drainage structures, parking and drives and recreational uses with maximum efforts made to minimize damage in all areas of the dune system.
4. Any excavation in the primary or secondary dune system shall not reduce existing crest elevations below twenty-six feet (26') mean sea level.
5. Any breaches or blowouts in the primary dune system shall be indicated on the site plan and shall be filled and revegetated per permits obtained through DEP.
6. Excavation of primary and secondary dunes shall be prohibited, unless there no other development alternatives on site.
7. In the event of unpermitted destruction or damage to dunes, the developer shall reconstruct or repair the damage to pre-construction conditions.

5.02A.04A The County shall continue to recognize the Florida Department of Environmental Protection (DEP) Coastal Construction Control Line (CCCL), as established by Chapter 161.053, F.S. Construction encroachment, except for the following, shall be prohibited oceanward of the CCCL.

OBJECTIVE 5.03 HURRICANE EVACUATION AND EMERGENCY MANAGEMENT The County shall make every reasonable effort to ensure the public safety, health and welfare from the effects of natural and technological hazards. It will participate with all applicable state and federal agencies to ensure public safety by keeping disaster preparedness plans current and coordinated within the region and with adjacent jurisdictions.

5.03.01 Within one year of adopting the EAR based plan amendment; the County will revise its land development regulations to further reduce the vulnerability of future development in the 100 year flood plain. Such revisions shall include: a. Implementation of road concurrency requirements to ensure evacuation capability; b. Adoption of policies regarding the siting of infrastructure facilities in hazardous areas; and c. Alerting potential purchasers of property in hazard areas of the potential consequences of construction in such areas.

5.03.02 The County, by reference, incorporates the Nassau County Comprehensive Emergency Management Plan into the Coastal Management Element. Responsibility for coordination of the Comprehensive Emergency Management Plan with the County Comprehensive Plan shall be designated to the County Planning Director.

5.03.03 The County shall not subsidize public facilities within the CHHA, other than those, which are deemed necessary to maintain existing level-of-service standards, and those which are directly related to public access and/or recreation areas.

OBJECTIVE 5.04 POST DISASTER REDEVELOPMENT Upon Plan adoption, the County shall review annually, and where possible revise its Comprehensive Emergency Management Plan to ensure continued safety for its residents during the post-disaster reconstruction/rehabilitation period.

5.04.01 The Nassau County Comprehensive Emergency Management Plan shall be used as the operational guide in preparing for, responding to, and recovering from natural and technological hazards requiring emergency actions by local government officials.

5.04.03 The County shall coordinate the development and maintenance of Post Disaster plans and programs among the relevant local, regional and state governments, districts or agencies.

5.04.04 The County shall update its hurricane evacuation plan and disaster preparedness plan, based on the recommendations of the NEFRPC's Northeast Florida Hurricane Evacuation Study, 1998. In addition, the County shall update its hurricane evacuation plan and disaster preparedness plan every five years thereafter. Also, the County will re-evaluate the effectiveness of hurricane evacuation plan and disaster preparedness plan immediately after a major disaster event to recommend appropriate improvements.

5.04.05 The County shall update its hurricane evacuation plan showing evacuation routes, hurricane hazards, safety procedures, shelters, and other pertinent information for its citizens.

5.04.06 The County will continue to implement its Emergency Disaster Preparedness Plan (as amended). The county Emergency Services Director shall be responsible for coordinating post disaster activities with fire, law enforcement, medical and support services through scheduled quarterly meetings.

5.04.06B The County, in cooperation with the incorporated municipalities of Nassau County, will coordinate the implementation of the Nassau County Local Mitigation Strategy (LMS), with this Coastal Management Element so as to reduce potential damage from natural disasters.

5.04.06C The County shall facilitate periodic meetings of the Local Mitigation Strategy Working Group for the purpose of coordinating and implementing LMS strategies.

5.04.06D The Local Mitigation Strategy Working Group will be charged with making recommendations related to implementing, updating, revising and coordinating local mitigation strategies and initiatives. Major issues of the LMS Working Group will be concerned with include:

1. Maintaining a uniform list of mitigation goals and objectives and initiatives to address hazard mitigation;
2. coordination between the county and the three municipalities;
3. identifying sources and disbursement of state and federal recovery funds;
4. pre-identifying potential post-disaster mitigation projects; and
5. relocating of infrastructure.

5.04.06E Structures located seaward of the Coastal Construction Control Line (CCCL) exhibiting damage from a naturally occurring storm event, greater than 50 percent of its tax assessed market value, shall be required to obtain all applicable permits and comply with all applicable building codes coastal construction prior to reconstruction.

5.04.06F Consistent with National Flood Insurance Program (NFIP) requirements, any structure predating 1989 FEMA Flood Insurance Rate Maps (FIRMs) and located within a flood hazard area that sustains "substantial damage" due to a natural disaster (i.e. repair costs that exceed 50% or more of the building's value) shall be required to be elevated a minimum of twelve (12) inches above the base flood elevation (BFE), as depicted on current FIRMs.

OBJECTIVE 5.04A POST DISASTER EXPENDITURES Upon Plan adoption, the County shall manage post disaster expenditures to improve the survival of required infrastructure.

5.04A.01 In accordance with rule 9J-5.003(17), F.A.C., the county hereby designates the Coastal High-Hazard Area (CHHA) as identified as a Category 1 Evacuation Zone as defined in Chapter 9J-5 F.A.C.

5.04A.03 Roadway segments located within low lying areas that are used as hurricane evacuation routes shall be elevated or rerouted during post-hazard construction.

5.04A.04 In the event that sanitary sewer and potable water facilities are damaged hurricane activity, the facilities shall be subject to post disaster redevelopment policies and regulations that require damaged structures and facilities to be reconstructed at an elevated height or otherwise flood proofed in accordance with existing building and development regulations.

5.04A.05 F.E.M.A., National Weather Service and Regional Planning Council data, which are pertinent to Nassau County hurricane damage mitigation, shall be incorporated into this element of the Plan through the amendment process specified in s 163.3187 F.S.

5.04A.06 The County shall require, through land development regulations, that redevelopment plans within the CHHA include reduced densities and the minimization of public facilities and expenditures to a level no greater than that necessary to support land uses in the effected areas as shown on the Future Land Use Map.

5.04A.07 The County shall develop plans and criteria for immediate repair and clean up in addition to long term repair and redevelopment. These plans shall also address removal, modification or relocation of damaged infrastructure and unsafe structures. The level of reconstruction that will be permitted in an area of damage in terms of intensity and density of use shall be consistent with the Goals, Objectives and Policies expressed in this Plan.

5.04.A.08 Following a storm event, the Engineering Services Department shall assess all county facilities damaged from storm activity in the CHHA, and shall make recommendations to reduce future expenditures and potential damage risks.

OBJECTIVE 5.05 HURRICANE EVACUATION TIME Upon Plan adoption, the County shall develop a maximum evacuation time based upon the Northeast Florida Hurricane Evacuation Study of 1998, and shall implement a plan within 6 months of the date of adoption of this ordinance.

5.05.01 Existing evacuation routes shall be given special consideration for improvement over other transportation facilities.

5.05.02 Critical roadway links causing congestion or evacuation routes for Category 1 through 3 hurricanes shall receive high priority for capital improvement expenditures.

5.05.03 New or replacement bridges on evacuation routes spanning major or marked navigable waterways shall not be draw bridges.

5.05.04 Roadway segments located within low lying areas that are utilized for hurricane evacuation routes shall be considered for elevation increases during construction or reconstruction.

5.05.05 Adopt requirements in the Land Development Regulations establishing minimum crown elevations for new road construction for roads constructed within Special Flood Hazard Areas and areas subject to flooding from a Class I hurricane, as depicted in the Hurricane Storm Surge Atlas developed by the NEFRPC.

5.05.06 All new construction within the Coastal High Hazard Area will be required to meet the County Concurrency Management Plan and 9J-5.0055(2)(c) F.A.C. for concurrency.

5.05.06A To maintain the maximum evacuation time, the County shall not allow an overall increase in the density of land use that is allowed by the Future Land Use Map within the Coastal High Hazard Area (CHHA).

OBJECTIVE 5.06 EVACUATION SHELTERING Upon Plan adoption, the County Office of Emergency Services will continue to strive to provide required levels of emergency sheltering for County residents through implementing the following policies:

5.06.01 Off-Island school sites will be designated as shelters as coordinated by the local government and the Red Cross.

5.06.02 New construction over 10,000 square feet shall be reviewed by the County to determine its potential for serving as a hurricane shelter based upon its size and location.

5.06.02A By 2005, the County will conduct a survey of schools, municipally owned, and county-owned buildings to identify those buildings that are appropriately designed and located to serve as hurricane evacuation shelters. Once this survey is completed, the county will solicit state funding from the Florida Division of Emergency Management to decrease the deficit of "safe" shelter capacity by retrofitting existing primary shelter facilities.

5.06.02B Within one year of adoption of the EAR based plan amendment, the Engineering Services Department shall assist Emergency Management in assessing the vulnerability of public infrastructure within the CHHA.

OBJECTIVE 5.07 PROTECT POPULATION FROM HIGH HAZARD Upon Plan adoption, the County, through its Future Land Use Map and Development Orders shall direct population concentrations away from known or predicted high hazard areas. As identified by the time of EAR based plan adoption, the county shall utilize the procedures County's Emergency Management Plan for assisting the special needs population in an emergency, as amended.

5.07.01A In accordance with rule 9J-5.003(17), F.A.C., and consistent with Policy 5.04.A.01, the County hereby designates the "Coastal High-Hazard Area" (CHHA) as identified as a Category 1 Evacuation Zone as defined in Chapter 9J-5 F.A.C. 5.07.01B Development within the F.E.M.A. FIRM V Zone shall be limited through County restrictions regarding the provision of water/sewer/road facilities to service V Zone areas where infrastructure facilities have been damaged/destroyed by storm forces.

5.07.01C New development within the designated Coastal High Hazard Area will be limited to:

1. in-fill (following the policies set forth in this plan for development in flood prone areas);
2. PUDs with construction clustered on the upland portion of the site; or,
3. development under a DRI in which site planning addresses the issue of flooding.

5.07.02 The issuance of building permits on the Barrier Island shall be restricted by the ability of the road network to serve evacuation at a maximum clearance to be implemented in a plan within 6 months of the date of adoption of this ordinance.

5.07.03 A statement shall be included on all new subdivision plats located within areas of potential storm surge inundation that ("The area as depicted hereon is subject to storm surge inundation during a Category 1, 2, 3, 4, and 5 hurricane").

5.07.03A The County shall evaluate and determine the appropriateness of the location of new adult congregate living facilities, nursing homes, and other similar medical facilities that serve the county's special needs population within the CHHA.

5.07.03B Within the CHHA, the county will not make infrastructure improvements to accommodate development more density or intensity than allowed by the comprehensive plan map.

5.08.04 By 2002, Land Development Regulations shall specify performance standards for shoreline land uses. The LDRs will address at a minimum:

- a. Set back based upon calculated levels of storm surge;
- b. Building height based upon potential wind loading and aesthetic considerations;
- c. Requirements for central potable water and sewer service;
- d. Area of permitted parcel coverage;
- e. Requirements for protecting dunes and beaches; and
- f. Landscaping and internal circulation.

OBJECTIVE 5.09 COASTAL PRESERVATION Upon Plan adoption, the County will cooperate with federal and state agencies (i.e., Corps of Engineers, DEP) in the protection, enhancement, and restoration of the environmental quality of the coastal area through implementing the following policies:

5.09.04 Projects which result in the loss of coastal resources will only be permitted in cases of overriding public benefit.

5.09.08 The County shall establish coordinating procedures with adjacent counties and municipalities to establish intergovernmental agreements for coordinating efforts in preventing estuarine pollution, controlling surface water runoff and protecting living marine resources.

OBJECTIVE 5.12 LIMITING PUBLIC EXPENDITURE Upon Plan adoption, the County shall limit public expenditures that subsidize development permitted in coastal high hazard areas except for the restoration or enhancement of natural resources.

5.12.01 The County shall promote compact growth within the barrier island whereby the cost of providing public facilities and services that benefit development is borne by those individuals who receive direct benefit. For example, the establishment of Municipal Taxing Units or Benefit Units.

5.12.02 The County shall review its Zoning Code and Subdivision regulations and make required revisions to control development on the barrier island in a manner that will reduce vulnerability to hurricane forces.

5.12.03 The Emergency Management Department shall review proposed development plans to ensure that infrastructure (water, sewer, roads) is located in a manner that provides least susceptibility to hurricane impact. Where in-place infrastructure is destroyed by hurricane forces, replacement of such facilities shall be engineered to provide least exposure to hurricane forces.

5.12.04 Consistent with DCA Rule 9J-5.012(3)(c)(8), the County shall identify and assess all infrastructure located within the CHHA to determine its vulnerability. This vulnerability assessment will be based on data from FIRMs, The Arbiter of Storms (TAOS) computer model, and other data and analysis contained in the adopted Local Mitigation Strategy. Any decision to abandon or relocate infrastructure outside the CHHA following a natural disaster will be based on a benefit-cost analysis of vulnerable infrastructure consistent with the methodology provided for in the Local Mitigation Strategy.

CONSERVATION ELEMENT

OBJECTIVE 6.01.04 Within one year after the adoption of the EAR based amendment, the County's Land Development Regulations (LDRs) shall be revised to include criteria, such as reduced densities and reduced impervious surfaces, to protect the functions of natural drainage systems and natural groundwater aquifer recharge areas, as identified by the St. Johns River Water Management District.

6.02.05 All construction in floodplains and floodways shall be required to comply with FEMA, Federal Insurance Administration, and County building codes.

6.04.01 The adopted LDR's shall ensure adequate retention/detention of stormwater runoff to maintain surface water quality, to ensure percolation and reduce adverse impacts to drainage canals, surface water, and groundwater.

CAPITAL IMPROVEMENTS ELEMENT

OBJECTIVE 9.04 The County shall continue to limit the expenditure of public funds that subsidize development in coastal high hazard areas (CHHA).

9.04.01 Public expenditures in high hazard coastal areas shall be limited to the maintenance of existing infrastructure and those improvements included in the Coastal Management Element.