

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 Duval 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 Duval 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

Duval 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 many 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 Duval 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, Duval 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 3,748 acres are susceptible to Category 1 storm surge (CHZ), 13,408 acres are susceptible to Category 1 – 3 storm surge (HVZ), 10,574 are susceptible to 100-year flood, and 1,569 acres are susceptible to wildfire.

Storm Surge

Nearly 83% of the 3,748 vacant acres in the Coastal Hazard Zone and 92% of the 13,408 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 maintain low density residential development in the Coastal High Hazard Area (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 prohibit activities which may result in man-induced erosion or threaten the stability of the beach/dune system.
- The Comprehensive Plan should continue to prohibit construction seaward of the State's Coastal Construction Control Line, and continue to require that no new shore hardening structures are permitted.
- The Comprehensive Plan should continue to require that the Emergency Preparedness Division maintain a formalized intergovernmental strategy for regional emergency planning efforts with adjacent counties and municipalities within the County.
- The Comprehensive Plan should continue to require that the Comprehensive Planning and Emergency Preparedness Divisions maintain procedures and guidelines for assessing the impact of new development and redevelopment on hurricane evacuation times.
- The Comprehensive Plan should continue to require that all new development and redevelopment within Hurricane Evacuation Zones be consistent with hurricane evacuation times and the Future Land Use Element of the 2010 Comprehensive Plan.
- The Comprehensive Plan should continue to require that the City utilize hurricane evacuation times and Level of Service standards, in determining the timing and priority of roadway improvements as contained within the Transportation Element.
- The Comprehensive Plan should continue to require that the City, acting as Duval County, increase its shelter capacity. All new or retrofit school projects shall be evaluated for sheltering of special needs as well as general populations.
- The Comprehensive Plan should continue to identify the special needs population of Duval County for sheltering and evacuation purposes, and plan for appropriate facilities and services through the Duval County Health Department, with the assistance of such government and quasi-government agencies as the Northeast Florida American Red Cross, the First Coast Disaster Council, and other similar agencies.
- The Comprehensive Plan should continue to require that the Chief of Emergency Preparedness, with assistance from State and regional agencies, establish the target shelter demand, and make recommendations on additional policies and strategies.
- The Comprehensive Plan should continue to require that all new development located in the CHHA in land use categories that permit residential density greater than Low Density Residential shall contribute to the cost of emergency shelter space in existing school sites.
- The Comprehensive Plan should continue to require that shoreline development in the CHHA is protected by vegetation, setbacks, and/or restoration, rather than by seawalls or coastal protection structures which contribute to erosion.

- The Comprehensive Plan should continue to require that the City limit the expenditure of public funds in CHHA to the restoration or enhancement of natural resources and to the replacement and renewal of existing public facilities.
- The Comprehensive Plan should continue to require that established hurricane evacuation times and route capacities within Coastal High Hazard Areas are not exceeded.
- The County should continue coordinating evacuation roadway improvements with the Metropolitan Planning Organization, Duval County Sheriff's Department, Florida Department of Transportation, and Florida Division of Emergency Management
- The Comprehensive Plan should continue to require that the City continue its current joint actions with surrounding cities and State agencies.
- The Comprehensive Plan should continue to require that the City direct future residential density away from the CHHA and mitigate the impacts of existing residential development rights through traditional and innovative planning tools including but not limited to Preservation Project land purchases and emergency shelter deficit reduction through mitigation assessments.
- The Comprehensive Plan should continue to require that all land development applications within the CHHA be reviewed by the Planning and Development Department, Emergency Preparedness Division and Public Works Department.
- The Comprehensive Plan should continue to limit the intensity of new industrial development within V (Velocity) Zones, as identified on the FEMA Flood Insurance Rate Map, and areas seaward of the Florida Department of Environmental Protection Coastal Construction Control Line.
- The Comprehensive Plan should continue to require that the City promote clustering and TDRs within and outside of the CHHA.
- The Comprehensive Plan should continue to prohibit the siting of new adult congregate living facilities, community residential homes, group homes, homes for the aged, hospitals, mobile home parks and nursing homes, as defined in the Land Development Regulations, within the CHHA.
- The County should consider prohibiting septic tanks and floodproof existing water and wastewater facilities in the CHHA. .
- The County should consider prohibiting new schools in the CHHA and retrofitting new schools as shelters outside the HVZ, where possible.
- The County should consider only allowing new on-site shelters outside the HVZ, where possible.
- The County should consider not allowing solid waste and commercial hazardous waste management facilities in the HVZ.
- The County should consider prohibiting the construction of new or expansion of existing bridges linking the mainland to any island unless shown on the Future Traffic Circulation Map.
- The Count should consider not constructing new or replacement bridges on evacuation routes spanning major or marked navigable waterways as draw bridges.

Flood

About 74% of the 10,574 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 the City's Floodplain Management and Stormwater Ordinance comply with the minimum building elevations of the FEMA Flood Insurance Rate Maps and the building requirements of the National Flood Insurance Program. The Ordinance must be in full compliance with guidelines established by the St. Johns River Water Management District, and specifically restrict discharge of rainwater that may flood evacuation routes.
- The Comprehensive Plan should continue to require that no development orders be approved for any projects until the requirements of the City's flood hazard area ordinance have been met or until a copy of any permit from any other local, regional, state or federal agency having jurisdiction over development in the City has been provided.
- The Comprehensive Plan should continue to require that all development within the 100 year flood plain be in strict conformance with all applicable federal, state, regional and local development regulations, including NFIP.
- The Comprehensive Plan should continue to require that the City should continue to define the surface hydrology of the area to determine flood plain vulnerability and sensitivity, and will determine appropriate protection measures.
- The Comprehensive Plan should continue to require that a land acquisition program for appropriate flood plain areas to be purchased continue.
- The Comprehensive Plan should continue to require that the City protect appropriate floodplain areas for the public benefit and restore degraded floodplain areas by: A. land acquisition, regulation, or incentives, including tax benefits and transfer of development rights.
- The Comprehensive Plan should continue to require that new construction or substantial improvements will be constructed by methods and practices that minimize flood damage.
- The Comprehensive Plan should continue to require that new and replacement water supply systems be designed to minimize or eliminate infiltration of flood waters into the system.
- The Comprehensive Plan should continue to require that where possible, no new development containing conservation-restricted wetlands will be approved unless the proposed development has sufficient non-wetland uplands to contain the proposed development.
- The Comprehensive Plan should continue to require that development of existing residential lots of record be required to comply with the minimum flood elevation requirements and the placement of fill in these areas must be limited to the amount necessary for vehicular access and the building pad.
- The Comprehensive Plan should continue to require that development of conservation-restricted lands adjacent to conservation-protected wetlands provide a 50 foot buffer to reduce the extent of development impacting those areas.
- The County should consider the requirement for the installation of back-flow preventers on new septic tanks in the 100-year floodplain to mitigate impacts from flood, or create incentives and disincentives to reduce the desirability of septic installation within the 100-year floodplain.

- The Comprehensive Plan should continue ensuring that no wetlands are impacted in at least 65% of development projects containing wetlands; prohibiting the removal, alteration, or encroachment within wetlands to minimize development impacts except in cases where no other practical alternative exists; and requiring that all fill within the 100-year floodplain be compensated by creation of storage of an equal or greater volume.
- The County should consider building shelters and essential public facilities outside of the 100-year floodplain.
- The County should consider implementing policies for stormwater management that protect natural features and prevent flooding, prohibiting development of interim wastewater treatment plants in areas that flood except if special approval is granted, requiring stormwater management planning and construction of capital improvements to coincide with stormwater drainage requirements to adequately address growth and development, ensuring private stormwater systems are privately funded and maintained, requiring new development to bear the cost of stormwater management so it is not paid for by county taxpayers, and coordinating local stormwater programs with Northeast Florida Water Management District programs and permit requirements.
- The County should consider requiring that all structures built in the 100-year floodplain include at least 1 foot freeboard
- The County should consider requiring areas that have not established base flood elevations to be studied prior to development.

Wildfire

About 80% of the 1,569 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 multi-hazards.
- 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

Duval County is located along the Atlantic Ocean in northeast Florida. It covers a total of 918.2 square miles, of which 773.7 square miles are land and 144.6 square miles are water. There are five incorporated municipalities within Duval County, as shown in **Table 1.1**. The City of Jacksonville 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 Duval County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While all residents live in incorporated jurisdictions, nearly 95% live in the City of Jacksonville. Duval County has experienced significant population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Duval County had a growth rate of 15.7%, which was one third less than the statewide average of 23.5% for the same time period.

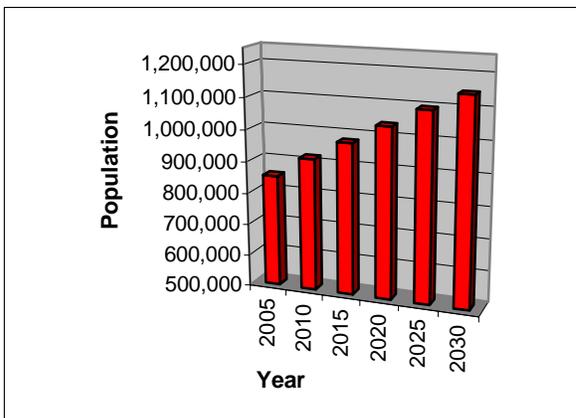
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Atlantic Beach	13,368	14,064	5.21%	1.67%
Baldwin	1,634	1,641	0.43%	0.20%
Jacksonville	735,617	795,985	8.21%	94.71%
Jacksonville Beach	20,990	21,544	2.64%	2.56%
Neptune Beach	7,270	7,240	-0.41%	0.86%
Countywide Total	778,879	840,474	7.91%	100.00%

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

According to BEBR (2004), Duval County's population is projected to grow steadily and reach an estimated 1,147,200 by the year 2030, increasing the average population density of 1,086 to 1,482 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Duval County based on 2004 calculations.

Figure 1.1 Population Projections for Duval County, 2005–2030



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

Of particular concern within Duval 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 778,879 persons residing in Duval County 10.5% are listed as 65 years old or over, 19.2% are listed as having a disability, 11.9% are listed as below poverty, and 9.5% live in a home where the primary language is other than English.

2. Hazard Vulnerability

Hazards Identification

The highest risk hazards for Duval County as identified in the County’s Local Mitigation Strategy (LMS) are tropical cyclone generated storm surge and high winds, floods, terrorism, hazardous materials spills, wildfires in the urban/wildland interface, and tornadoes spawned from thunderstorms. 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 hazard types: surge from tropical cyclones, flood, wildfire and sinkholes. 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 DMA 2K project, and was created by Kinetic Analysis Corporation (KAC) 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 (i.e., A, AE, V, VE, AO, 100 IC, IN, AH) for flood; all medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9); and the combined high, very high, extreme and adjacent zones for sinkhole based on the KAC analysis. Storm surge exposure data is a subset of flood exposure; therefore, the storm surge results are also included in the flood results. 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

Approximately 95% of Duval County’s existing population resides in the City of Jacksonville. Therefore, population and structure exposure will consist of data for the City. **Table 2.1** presents the population currently exposed to each hazard in Jacksonville). Of the 778,879 (U.S. Census 2000) people that reside in the City of Jacksonville, 6.5% are exposed to storm surge, 8.7% are exposed to 100-year flooding, 12.4% are exposed to wildfire, and 0.3% is exposed to sinkholes. Of the 68,432 people exposed to flood, 27.5% are minorities and 29% are disabled.

Table 2.1 Estimated Number of Persons Exposed to Selected Hazards

Segment of Population	Storm Surge**	Flood	Wildfire	Sinkhole
Total (all persons)*	51,068	68,432	96,619	2,870
Minority	9,831	18,845	24,816	204
Over 65	5,024	6,521	8,364	390
Disabled	12,622	19,912	27,428	1,165
Poverty	3,874	4,858	8,210	189
Language Isolated	372	861	535	63
Single Parent	2,866	4,200	5,967	153

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 Duval 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 Duval 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 8.5 and 19.5 hours to safely evacuate Duval 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, Duval County currently has a significant shelter deficit. According to Florida’s Statewide Emergency Shelter Plan, Duval County has an existing shelter capacity of 12,481 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 32,739 people, leaving an existing shelter deficit of 20,258. In 2009, the projected shelter demand is 35,059, leaving an anticipated shelter deficit of 22,578.

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. Duval 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 Duval County by occupancy type that are exposed to each of the four 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 Duval County’s existing structures to the storm surge, flood, wildfire, and sinkhole hazards was determined through MEMPHIS.

Table 2.3 Estimated Number of Structures Exposed to Selected Hazards

Occupancy Type	Storm Surge*	Flood	Wildfire	Sinkhole
Single Family	11,221	35,750	25,422	1,109
Mobile Home	223	24,048	6,979	28
Multi-Family	2,850	23,072	6,791	90
Commercial	1,173	8,515	2,904	137
Agriculture	28	3,015	1,608	51
Gov. / Institutional	324	421	457	17
Total	15,819	94,821	44,161	1,432

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 140,414 structures exposed to at least one of the four hazards, of which most are single-family homes in subdivisions. Of these structures, 67% are exposed to flood. Over 94,000 structures are located within the 100-year floodplain, of which 16% are exposed to storm surge induced flooding. Slightly more than 70% of the structures exposed to surge are single-family homes, and 18% are multi-family homes. Typically, structures exposed to surge are high-value real estate due to their proximity to the ocean or tidally influenced water bodies such as the St. Johns River. According to the latest National Flood Insurance Program Repetitive Loss Properties list, as of March 2005, there are 160 repetitive loss properties in the City of Jacksonville. 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.”

Slightly over 31%, or 44,161 structures exposed to wildfire, of which 57.5% are single-family homes. In recent years, development has extended mainly east and southeast along major roadways. The development pattern has been uneven, leaving many rural and open spaces (Duval County LMS, 2004). The vegetation that remains or grows back after these homes have been built could allow wildfires to spread from the rural parcels into the subdivisions. Only 1% or 1,432 structures are located within sinkholes susceptible areas, of which 77% are single-family homes.

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 exposed to surge, flood, sinkholes, 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. DCA tabulated the total amount of acres and percentage of land in identified hazard exposure areas, sorted by existing land use category for the unincorporated areas. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004. DCA also tabulated the total amount of acres and percentage of land in the identified hazards areas 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. Duval County future land use data was acquired in May 2004 and might not reflect changes per recent future land use amendments. DCA has provided maps of existing land use within hazard areas based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Duval County future land use map dated May 2004. 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 both the Coastal High Hazard Area (CHHA) and 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, wildfire susceptible areas, and sinkhole susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within the CHHA, which is the Category 1 Hurricane Evacuation Zone. Two additional 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, to fully demonstrate all areas that are prone to storm surge. The areas that are most susceptible to storm surge are located in the coastal communities of Atlantic Beach, Neptune Beach, and Jacksonville Beach, along the Intracoastal Waterway and regions of the St. Johns River, and in the Northeast part of the county.

The total amount of land in the CHHA is 54,050 acres. As shown in **Table 2.4** 59.6% are parks, conservation areas and golf courses; 11.2% are used for government, institutional, hospitals or education purposes; 7.7% are used for residential single-family homes; and 6.9% are currently undeveloped. **Table 2.5** shows that of the 3,748 undeveloped acres, 32.6% are designated for residential development with seven dwelling units per acre. The County has taken favorable action in designating 32.6% of vacant acreage in the CHHA for low dwelling density.

The total amount of land in the CHZ is 59,723.2 acres. As shown in **Table 2.4**, 57.6% are parks, conservation areas and golf courses; 12.1% are used for government, institutional, hospitals or education purposes; 7.3% are used for residential single-family homes; and 6.9% are currently undeveloped. **Table 2.5** shows that of the 4,132.2 undeveloped acres, 29.6% are designated for residential development with seven dwelling units per acre. The County has taken favorable action in designating 29.6% of vacant acreage in the CHZ for low dwelling density.

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 in the coastal communities of Atlantic Beach, Neptune Beach, and Jacksonville Beach, but are also found along the Intracoastal Waterway, along some regions of the St. Johns River and in the Northeast part of the county. The total amount of land in the HVZ is 129,195.5 acres. As shown in **Table 2.4**, 34.7% are parks, conservation areas and golf courses; 14.7% are used for residential single-family homes; 12.2% are in agricultural use; and 10.4% are currently undeveloped. **Table 2.5** shows that of the 13,407.9 undeveloped acres, 37.5% are designated for residential development with seven dwelling units per acre. The County has taken favorable action in designating 37.5% of vacant acreage in the HVZ for low dwelling density.

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 St. Johns River, the largest navigable waterway in Florida; along some areas of the Intracoastal Waterway; and along the coastline. The total amount of land in the special flood hazard area is 104,974 acres. As shown in **Table 2.4**, 36.9% are parks, conservation areas and golf courses; 28.6% are in agricultural use; 10.1% are currently undeveloped; and 7.8% are used for government, institutional, hospitals or education purposes. **Table 2.5** shows that of the 10,574.2 undeveloped acres, 34.7% are designated for residential development with seven dwelling units per acre. The County has taken favorable action in designating 34.7% of vacant acreage in the 100-year flood zone for low dwelling density.

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 16,206.6 acres. As shown in **Table 2.4**, 40% are in agricultural use; 19.4% are used for government, institutional, hospitals or education purposes; 18.8% are parks, conservation areas and golf courses; and 9.7% are currently undeveloped. **Table 2.5** shows that of the 1,568.8 undeveloped acres, 33.8% are designated for residential development with seven dwelling units per acre. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

In **Attachment E**, two maps present the existing and future land uses within sinkhole susceptible areas. These areas are located in Northern Atlantic Beach, and above the Northeast and along the Central regions of the St. Johns River. The total amount of land in the sinkhole susceptible areas is 1,168 acres. As shown in **Table 2.4**, 32.2% are areas that have utility plants and lines and solid waste disposal, 29.4% are used for government, institutional, hospitals or education purposes, 24.6% are used for residential single-family homes, and 5.3% are currently undeveloped. **Table 2.5** shows that of the 61.8 undeveloped acres, 44.4% are designated for heavy industrial use. The County might want to conduct additional research to determine the level of risk associated with developing the 27.4 acres for industrial use, so that mitigation measures can be implemented if warranted.

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

Existing Land Use Category		Coastal Hazard Zone	Coastal High Hazard Area	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas	Sinkhole Susceptible Areas
Agriculture	Acres	3,667.0	3,000.4	15,716.6	30,045.8	6,488.8	0.0
	%	6.1	5.6	12.2	28.6	40.0	0.0
Attractions, Lodging, Stadiums,	Acres	3.8	3.6	94.8	91.4	4.5	0.0
	%	0.0	0.0	0.1	0.1	0.0	0.0
Places of Worship	Acres	21.6	22.1	706.5	181.5	64.2	3.6
	%	0.0	0.0	0.6	0.2	0.4	0.3
Commercial	Acres	276.9	252.8	2,830.5	941.9	51.3	11.6
	%	0.5	0.5	2.2	0.9	0.3	1.0
Government, Institutional, Hospitals, Education	Acres	7,253.3	6,068.2	14,404.4	8,160.4	3,140.2	343.3
	%	12.1	11.2	11.2	7.8	19.4	29.4
Industrial	Acres	2,109.1	1,425.2	6,545.2	1,657.9	28.5	7.8
	%	3.5	2.6	5.1	1.6	0.2	0.7
Parks, Conservation Areas, Golf Courses	Acres	34,420.0	32,231.2	44,788.6	38,682.6	3,051.5	69.6
	%	57.6	59.6	34.7	36.9	18.8	6.0
Residential Group Quarters, Nursing Homes	Acres	0.9	1.1	131.8	18.7	0.0	0.0
	%	0.0	0.0	0.1	0.0	0.0	0.0
Residential Multi-Family	Acres	148.3	148.5	1,159.7	428.5	11.6	0.2
	%	0.3	0.3	0.9	0.4	0.1	0.0
Residential Mobile Home, or Commercial Parking Lot	Acres	1,124.2	842.9	3,969.7	1,596.0	510.1	4.2
	%	1.9	1.6	3.1	1.5	3.2	0.4
Residential Single-Family	Acres	4,345.6	4,153.0	19,028.4	6,160.2	759.8	287.6
	%	7.3	7.7	14.7	5.9	4.7	24.6
Submerged Land (Water Bodies)	Acres	34.3	33.7	62.2	142.2	0.0	0.0
	%	0.1	0.1	0.1	0.1	0.0	0.0
Transportation, Communication, Rights-Of-Way	Acres	105.2	108.6	263.7	190.2	11.4	2.0
	%	0.2	0.2	0.2	0.2	0.1	0.2
Utility Plants and Lines, Solid Waste Disposal	Acres	2,080.8	2,011.3	6,085.5	6,102.5	516.1	376.3
	%	3.5	3.7	4.7	5.8	3.2	32.2
Vacant	Acres	4,132.2	3,747.9	13,407.9	10,574.2	1,568.8	61.8
	%	6.9	6.9	10.4	10.1	9.7	5.3
Total Acres	Acres	59,723.2	54,050.5	129,195.5	104,974.0	16,206.6	1,168.0
	%	100.0	100.0	100.0	100.0	100.0	100.0

Source: Department of Community Affairs

INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN
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Table 2.5 Total Unincorporated Acres in Hazard Areas by Future Land Use Category

Future Land Use Category	Acres	Coastal Hazard Zone		Coastal High Hazard Area		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Agriculture-I, du/100 ac	1	2,176.5	0.0	1,909.2	0.0	4,988.5	0.0	6,823.4	0.0	917.1	0.9	0.0	0.0
	%	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.0	100.0	0.1	0.0	0.0
Agriculture-II, du/40 ac	1	12,815.6	34.3	12,341.4	29.4	15,841.4	68.9	21,955.7	62.9	2,455.1	71.8	0.0	0.0
	%	100.0	0.8	100.0	0.2	100.0	0.5	100.0	0.6	100.0	4.6	0.0	0.0
Agriculture-III, du/10 ac	1	6,722.5	226.3	6,004.2	221.6	12,988.8	484.0	17,293.1	804.1	2,236.2	56.6	0.0	0.0
	%	100.0	5.5	100.0	3.7	100.0	3.6	100.0	7.6	100.0	3.6	0.0	0.0
Agriculture-IV, du/2.5 ac	1	2,807.8	185.5	2,369.5	185.0	3,879.9	285.6	3,016.2	363.6	792.1	90.3	0.0	0.0
	%	100.0	4.5	100.0	7.8	100.0	2.1	100.0	3.4	100.0	5.8	0.0	0.0
Business Park		0.0	0.0	0.0	0.0	608.2	268.6	911.3	279.3	62.9	18.1	0.0	0.0
	%	0.0	0.0	0.0	0.0	100.0	2.0	100.0	2.6	100.0	1.2	0.0	0.0
Central Business District		0.0	0.0	0.0	0.0	906.2	113.7	439.6	54.2	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	100.0	0.8	100.0	0.5	0.0	0.0	0.0	0.0
Community/ General Commercial		347.8	108.8	309.2	82.7	2,592.5	549.1	1,408.3	431.8	175.9	66.0	23.6	3.6
	%	100.0	2.6	100.0	26.7	100.0	4.1	100.0	4.1	100.0	4.2	100.0	5.8
Conservation		11,424.1	182.6	10,601.2	181.5	12,093.5	187.7	14,326.6	624.2	441.6	39.7	0.7	0.0
	%	100.0	4.4	100.0	1.7	100.0	1.4	100.0	5.9	100.0	2.5	100.0	0.0
Heavy Industrial		558.0	187.3	558.9	187.3	4,365.6	1,556.1	1,455.7	561.3	142.0	51.1	31.4	27.4
	%	100.0	4.5	100.0	33.5	100.0	11.6	100.0	5.3	100.0	3.3	100.0	44.4
High Density Residential, du/ac	20-60	4.5	3.6	4.7	3.8	37.9	9.8	25.9	11.8	0.0	0.0	0.0	0.0
	%	100.0	0.1	100.0	81.0	100.0	0.1	100.0	0.1	0.0	0.0	0.0	0.0
Light Industrial		180.6	1.6	179.7	1.6	3,141.5	531.0	2,234.9	653.0	453.2	71.8	0.0	0.0
	%	100.0	0.0	100.0	0.9	100.0	4.0	100.0	6.2	100.0	4.6	0.0	0.0
Low Density Residential, du/acre	7	5,632.8	1,222.3	5,633.2	1,223.4	27,892.3	5,031.1	15,510.1	3,671.0	2,929.1	529.7	307.0	13.6
	%	100.0	29.6	100.0	21.7	100.0	37.5	100.0	34.7	100.0	33.8	100.0	22.0
Medium Density Residential, du/ac	20	488.4	156.1	490.0	156.7	3,889.2	911.6	2,104.9	619.1	232.3	99.2	0.0	0.0
	%	100.0	3.8	100.0	32.0	100.0	6.8	100.0	5.9	100.0	6.3	0.0	0.0
Multi-Use		28.3	27.9	27.6	27.2	32.6	26.8	1,169.3	426.9	2,759.9	339.5	0.0	0.0
	%	100.0	0.7	100.0	98.4	100.0	0.2	100.0	4.0	100.0	21.6	0.0	0.0
Neighborhood Commercial		3.6	0.9	2.9	0.4	56.0	25.0	16.1	7.6	4.0	1.8	0.0	0.0
	%	100.0	0.0	100.0	15.4	100.0	0.2	100.0	0.1	100.0	0.1	0.0	0.0
No Data		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.4	10.3	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.7	0.0	0.0
Public Buildings and Facilities		3,625.7	4.2	3,631.3	4.7	9,407.7	103.9	4,789.4	19.8	1,655.3	5.4	769.8	1.3
	%	100.0	0.1	100.0	0.1	100.0	0.8	100.0	0.2	100.0	0.3	100.0	2.2
Recreation and Open Space		1,154.6	0.0	1,151.0	0.0	2,482.3	19.2	2,173.6	299.0	398.4	44.1	0.0	0.0
	%	100.0	0.0	100.0	0.0	100.0	0.1	100.0	2.8	100.0	2.8	0.0	0.0
Regional Commercial		8.0	0.7	8.7	0.2	31.7	0.2	7.6	0.7	0.9	0.9	0.0	0.0
	%	100.0	0.0	100.0	2.6	100.0	0.0	100.0	0.0	100.0	0.1	0.0	0.0
Residential-Professional-Institutional		41.2	27.4	42.1	27.9	1,771.9	210.9	1,109.5	136.9	156.3	12.3	3.8	0.7
	%	100.0	0.7	100.0	66.1	100.0	1.6	100.0	1.3	100.0	0.8	100.0	1.1
Rural Residential, du/ac	2	5,596.7	1,150.1	4,558.7	900.6	12,492.1	2,064.8	4,120.9	583.4	344.2	58.9	0.0	0.0
	%	100.0	27.8	100.0	19.8	100.0	15.4	100.0	5.5	100.0	3.8	0.0	0.0
Water		178.6	18.3	165.0	16.9	1,009.9	67.6	1,446.6	619.5	0.9	0.5	2.7	0.0
	%	100.0	0.4	100.0	10.3	100.0	0.5	100.0	5.9	100.0	0.0	100.0	0.0
Water Dependent-Water Related		5,928.2	594.6	4,061.8	496.9	8,686.0	892.6	2,635.3	344.2	6.9	0.2	29.0	15.2
	%	100.0	14.4	100.0	12.2	100.0	6.7	10 0.0	3.3	100.0	0.0	100.0	24.5
Total Acres		59,723.2	4,132.2	54,050.3	3,747.9	129,195.5	13,407.9	104,974.0	10,574.2	16,206.6	1,568.8	1,168.0	61.8
	%	100.0	100.0	100.0	6.9	100.0	100.0	100.0	100.0	100.0	100.0	100.0	5.3

Source: Department of Community Affairs

The amount of total land and existing vacant land in identified hazard areas was also tabulated for each of Duval County’s five incorporated municipalities. These amounts are listed in **Table 2.6**. The intent of this table is to show the vacant acreage in hazard zones in each municipality, and to show the percentage of vacant acreage in each hazard zone for each municipality. In the total column for each hazard, the percentage for each municipality is the hazard zone acreage as a percent of total hazard acreage for all municipalities. In the vacant column for each hazard, the percentage for each municipality is the percent of area in the hazard zone for the respective municipality. The total municipal percent of vacant acreage is the percent of acreage in the hazard zones for all municipalities.

The City of Jacksonville has the most vacant acres in the CHHA but Jacksonville Beach has the largest proportion of CHHA acres out of its vacant land area. Jacksonville Beach has the most vacant acres in the Coastal Hazards Zone, as well as the largest proportion of surge prone acres out of its vacant land area. The City of Jacksonville has the most acres in the HVZ but Jacksonville Beach has the largest proportion of HVZ acres out of its vacant land area. The City of Jacksonville has the most acres in the flood zone but Jacksonville Beach has the largest proportion of flood zone acres out of its vacant land area. The City of Jacksonville has the most acres in the wildfire susceptible areas, but Baldwin has the largest proportion of wildfire susceptible acres out of its vacant land area. The City of Jacksonville has the most acres in sinkhole susceptible areas, as well as the largest proportion of sinkhole susceptible acres out of its vacant land area.

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 Duval 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		Coastal High Hazard Area		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas		Sinkhole Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Atlantic Beach	Acres	537.5	50.8	531.2	47.0	1,836.7	195.5	550.0	49.9	3.3	0.2	0.0	0.0
	%	100.0	9.5	100.0	8.9	100.0	10.6	100.0	9.1	100.0	6.7	0.0	0.0
Baldwin	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0	10.7	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	23.8	0.0	0.0
Jacksonville	Acres	59,694.6	4,139.4	0.0	0.0	116,608.7	12,208.5	104,641.8	10,608.1	16,261.2	1,566.3	1,168.0	61.8
	%	100.0	6.9	0.0	0.0	100.0	10.5	100.0	10.1	100.0	9.6	100.0	5.3
Jacksonville Beach	Acres	1,795.9	311.2	1,812.4	311.2	3,855.4	494.7	1,830.7	286.7	150.0	18.7	0.0	0.0
	%	100.0	17.3	100.0	17.2	100.0	12.8	100.0	15.7	100.0	12.5	0.0	0.0
Neptune Beach	Acres	407.1	13.6	401.1	9.6	1,220.5	65.1	465.7	20.3	0.0	0.0	0.0	0.0
	%	100.0	3.3	100.0	2.4	100.0	5.3	100.0	4.4	0.0	0.0	0.0	0.0
Total Municipal Acres	Acres	62,435.1	4,515.0	2,744.7	367.8	123,521.3	12,963.8	107,488.2	10,965.0	16,459.6	1,596.0	1,168.0	61.8
	%	100.0	7.2	100.0	13.4	100.0	10.5	100.0	10.2	100.0	9.7	100.0	5.3

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.

As noted in DCA's *Protecting Florida's Communities* Guide, one significant strategy for reducing community vulnerability is to manage the development and redevelopment of land exposed to natural hazards. Where vacant land is exposed to hazard forces, local government decisions about allowable land uses, and the provision of public facilities and infrastructure to support those uses, can have major impacts on the extent to which the community makes itself vulnerable to natural hazards. Where communities are already established and land is predominately "built out," local governments can take initiatives to reduce existing levels of vulnerability by altering current land uses both in the aftermath of disasters, when opportunities for redevelopment may arise, and under "blue sky" conditions as part of planned redevelopment initiatives.

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

Hazard Identification and Vulnerability Assessment. 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, LMSes 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 Duval County LMS (adopted in 2005) was assessed to determine if the hazard analysis and vulnerability assessment (i.e., surge, flood, wildfire, and sinkhole) 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 Duval County to determine if the capital improvement projects are included in the LMS hazard mitigation project list.

Hazard Analysis and Vulnerability Assessment (LMS, Page 40-77).

The strengths and weaknesses of the Hazard Analysis and Vulnerability Assessment are as follows:

Strengths:

- Provides information about demographic, income, and special needs population.
- Provides population exposure to surge.
- Provides property exposure based on information from the Hurricane Catastrophe Fund data as well as from the Duval County Property Appraiser.
- Provides county property values for occupancy classes.
- Provides a hazards analysis and a qualitative vulnerability assessment.
- Provides a clear description of geographic areas exposed to each of the hazards.
- Includes maps for each of the hazards.
- Includes a qualitative risk assessment for each hazard (Table A-1. Hazards Identification Information Table).
- Includes a future land use map.

Weaknesses:

- Does not include data for population and property exposure to flood or wildfire.
- 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 Duval County LMS Guiding Principles section contains a list of policies for the county and each municipality. **Table 1.1** in the Duval County LMS includes the category (e.g., reduce risk, land use/zoning/development controls/incentives), policies and objectives, source (e.g., comprehensive plan GOP), and notes (e.g., status of initiative, impact on vulnerability reduction). The Guiding Principles section is found in most counties' LMSes 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 Duval County LMS has goals and objectives that support mitigation principles that are found in the comprehensive plan. A list of the LMS goals and objectives pertaining to comprehensive planning can be found in **Attachment F**. 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, Duval County, and PBS&J. The following is a summary of the LMS goals and objectives that support comprehensive plan GOPs.

Goal 1 refers to the prevention of future losses to people and property. Objectives include that the protection of people and property shall be consistent with LMS standards and other planning documents, and encourage higher stormwater maintenance standards and monitoring cumulative development impacts.

Goal 2 emphasizes pre- and post-disaster planning to decrease vulnerability of existing and future construction. Objectives include the identification of vulnerable properties using wind vulnerability maps, a review of evacuation time estimates that consider the impacts of railroad and bridge opening on travel times, the encouragement to retrofit low-to-moderate income housing for wind and flood, the support of land acquisition, the identification of post-storm redevelopment options in vulnerable coastal areas, and the identification of public and private critical facilities for pre-disaster retrofit.

Goal 3 refers to the prevention of flood loss through regulation and education. Objectives include the development and support of retrofit, relocation or acquisition projects of repetitive loss properties, the requirement of systematic maintenance programs for stormwater management, and the allowance of only low-density residential development in repetitive loss flood areas otherwise suitable for residential development.

Goal 4 includes the strengthening and utilization of land use guides, zoning codes, development controls and incentives to protect property in vulnerable areas. Objectives include monitoring and enforcement of floodplain regulations; the support of incentive programs for retrofits, restriction of variances and exceptions in flood hazard areas (per Flood Insurance Rate Maps, storm surge and historical flooding), enforcement of the Florida Building Code and elevating new structures in the 100-year floodplain to the Base Flood Elevation, enactment of development standards in the wildland urban interface, strengthening existing land use regulations and policies, consideration of policies to limit impervious surfaces, incentives to encourage higher standards of protection to structures and facilities from hazards; and pre-storm planning, identification, and implementation of a system to rebuild and protect the dune system with crossovers, restoration and revegetation.

Goal 6 refers to the promotion of personal awareness and responsibility with an emphasis on education and training for property owners, families, and individuals. Objectives include the identification and leverage of multiple funding sources to support hazard mitigation awareness and training; and educating and promoting the economic, safety benefits of designing mitigation features into new construction to elected officials, builders and potential homeowners.

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 Duval County adopting and implementing corresponding policies that are legally enforceable.

Comprehensive Emergency Operations Plan (CEMP)

The Duval County CEMP references the LMS in Annex B: 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 Preparedness 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, Community Rating System 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 capital improvement projects can accomplish mitigation. It notes that several elements of the City of Jacksonville's 2010 Comprehensive Plan address mitigation issues, and includes a list of the mitigation issues. All municipal planning departments are responsible to support pre- and post-disaster mitigation. Duval Prepares, the entity responsible for developing and maintaining the LMS, maintains a dialogue with the planning department regarding development trends, structural mitigation, zoning, and land development regulations. Following a disaster, municipal planning and development departments participate in post-disaster mitigation assessments. The Jacksonville Building Department and other municipal building departments support the Emergency Preparedness Division in identifying mitigation activities to reduce structural vulnerability.

As such, the CEMP is a good tool for planners, which includes collaborative procedures for working with emergency managers to reduce vulnerability from hazards.

Post-Disaster Redevelopment Plan (PDRP)

The Duval County PDRP was not available for review at the time that this profile was developed.

National Flood Insurance Program/Community Rating System

There are no unincorporated areas in Duval County. All municipalities participate in the National Flood Insurance Program (NFIP). The following municipalities participate in the NFIP Community Rating System (CRS) with ratings as follows: Jacksonville (7), Jacksonville Beach (8), and Neptune Beach (8). Atlantic Beach and Baldwin do not currently participate in the CRS.

4. Comprehensive Plan Review

Purpose and Intent

The City of Jacksonville 2010 Comprehensive Plan (adopted in November 2004) was reviewed for the purpose of developing this profile. This review was undertaken to determine what steps the City of Jacksonville has taken to integrate hazard mitigation initiatives from the Local Mitigation Strategy (LMS), and hazard mitigation in general, into the planning process. Each Element of the Plan was evaluated to establish whether the principles in the LMS were incorporated into the policies of the Comprehensive Plan.

Approach

This review includes an assessment of the following hazards: storm surge, flooding, and wildfires. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be very low for the entire county. Therefore, the City of Jacksonville 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 G**. 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 Plan focuses on preserving natural features and protecting the population from hazards through intergovernmental coordination, environmental regulation, land use designations, development regulations, and transfer of development rights. Heavy emphasis was placed on regional coordination related to the protection of natural resources and hazard mitigation. There were provisions designed to maintain communication between the City of Jacksonville and other jurisdictions, and between the City and the Northeast Florida Regional Planning Council. The Plan opens the door to strengthening intergovernmental coordination and utilizes land use guides, development controls, and incentives to protect vulnerable populations and properties.

The Plan contains policies related to incentivizing growth in existing urbanized areas to protect ecologically vulnerable areas, and areas vulnerable to hazards. The Plan also focused on limiting development in the coastal high hazard areas, preventing the contamination of natural resources, and protecting the function of natural systems. The Comprehensive Plan also has many policies considered to be best management practices related to the protection of natural drainage features, wetlands, and floodplains.

Flooding

Stormwater management and flooding are addressed in the Master Stormwater Management Plan. Flood mitigation is further addressed through policies aimed at protecting the natural environment to minimize flooding impacts. There were also policies that require proper identification of flood zones and analysis of stormwater system needs.

Hurricane Evacuation

The Plan contains detailed policies related to limiting development density and intensity within the Coastal High Hazard Area (CHHA), directing it development outside of the CHHA, and mitigating the impact of natural hazards in the area. The Plan also details extensive redevelopment procedures to be followed after a natural disaster. Both the CEMP and the PDRP are referenced in the Conservation/Coastal Element of the Plan.

Pre- and post-disaster planning is emphasized to decrease vulnerability of existing and new construction to losses. According to Florida's Statewide Emergency Shelter Plan, Duval County had a shelter deficit of 374,320 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. In Policy 7.1.1 of the Conservation/Coastal Element, the City establishes 23 hours as the maximum acceptable hurricane evacuation time standard for a Category 3 storm event, recognizing that the clearance time to evacuate for a category 3 hurricane with "average public urgency" will be 16.75 hours.

Wildfire

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

5. Municipal Case Study – City of Jacksonville Beach

As part of this study, a similar analysis was completed for a statewide sample of 14 Florida municipalities, including Jacksonville Beach in Duval County. The results of this analysis are provided within this section.

Hazards Analysis

The following analysis examines four major hazard types: surge from tropical cyclones, flood, wildfire and sinkholes. All of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS).

Existing Population Exposure

Table 6.1 presents the population of Jacksonville Beach that is exposed to each hazard, as well as a breakdown of the sensitive needs population exposure.

[Editorial note: MEMPHIS data is currently not available (N/A) for flood, wildfire, and sinkhole for Jacksonville Beach. However, the following paragraphs have been included so that data can be added when available.]

Of the 20,990 (U.S. Census 2000) people that reside in the City of Jacksonville Beach, x% are exposed to storm surge, x% are exposed to 100-year flooding, x% are exposed to wildfire, and x% are exposed to sinkholes. Of the xxxx people exposed to surge, x% are xxxx and x% are xxxx. Of the xxxx people exposed to flood, x% are xxxx and x% are xxxx. Of the xxxx people exposed to wildfire, x% are xxxx and x% are xxxx. Of the xxxx people exposed to sinkhole, x% are xxxx and x% are xxxx.

Table 6.1 Estimated Number of Persons Exposed to Hazards in Jacksonville Beach

Segment of Population	Storm Surge**	Flood	Wildfire	Sinkhole
Total (all persons)*	11,908	N/A	N/A	N/A
Minority	1,086	Not Available		
Over 65	1,567	Not Available		
Disabled	3,837	Not Available		
Poverty	1,075	Not Available		
Language-Isolated	43	Not Available		
Single Parent	685	Not Available		

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.

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 6.2** presents estimates of the number of structures in Jacksonville Beach by occupancy type that are exposed to each of the four hazards being analyzed. The estimated exposure of Jacksonville Beach existing structures to the storm surge, flood, wildfire, and sinkhole hazards was determined through MEMPHIS.

There are xxx structures exposed to at least one of the four hazards, of which most are single-family homes in subdivisions. Of these structures, xx% are exposed to flood. Over xxx structures are located within the 100-year floodplain, of which xx% are exposed to storm surge induced flooding. As of March 2005, there are 16 repetitive loss properties in Jacksonville Beach.

Table 6.2 also indicates that there are xxx structures exposed to wildfire, of which xx% are single-family homes. There are xxx structures exposed to sinkhole, of which xx% are single-family homes. Not available on MEMPHIS.

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.

Table 6.2 Estimated Number of Structures Exposed to Hazards in Jacksonville Beach

Occupancy Type	Storm Surge*	Flood	Wildfire	Sinkhole
Single Family	3,361	Not Available		
Mobile Home	14	Not Available		
Multi-Family	1,198	Not Available		
Commercial	505	Not Available		
Agriculture	1	Not Available		
Gov. / Institutional	142	Not Available		
Total	5,221	Not Available		

Source: Mapping for Emergency Management, Parallel Hazard Information System

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

Analysis of Current and Future Vulnerability Based on Land Use

The previous hazards analysis section discussed population and existing structures exposed to surge, flood, sinkholes, and wildfire according to MEMPHIS estimates. This section is used to demonstrate the City’s vulnerabilities to these hazards in both tabular format and spatially, in relation to existing and future land uses. DCA tabulated the total amount of acres and percentage of land in identified hazard exposure areas, sorted by existing land use category for the unincorporated areas. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004. DCA also tabulated the total amount of acres and percentage of land in the identified hazards areas 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. Duval County future land use data was acquired in May 2004 and might not reflect changes per recent future land use amendments. DCA has provided maps of existing land use within hazard areas based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Duval County future land use map dated June 2005. 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, wildfire susceptible areas, and sinkhole 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 along the Atlantic coastline and the Intracoastal Waterway. The total amount of land in the CHZ is 1,800.2 acres. As shown in **Table 6.2**, 49.5% are used for utility plants and lines and solid waste disposal; 17.5% are currently undeveloped; 11% are used for residential single-family homes; and 9.1% are used for government, institutional, hospitals or education purposes. **Table 6.3** shows that of the 315.2 undeveloped acres, 53.5% are designated for conservation estuarine wetlands. The City has taken favorable action in designating 53.5% of vacant acreage in the CHZ for conservation estuarine wetlands.

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. Nearly the entire City of Jacksonville Beach is located within the HVZ. The total amount of land in the HVZ is 3,849.3 acres. As shown in **Table 6.2**, 33.3% are used for residential single-family homes; 23.3% are used for utility plants and lines and solid waste disposal; 13.9% are used for government, institutional, hospitals or education purposes; and 13.2% are currently undeveloped. **Table 6.3** shows that of the 506.5 undeveloped acres, 32.6% are designated for conservation estuarine wetlands. The City has taken favorable action in designating 32.6% of vacant acreage in the HVZ for conservation estuarine wetlands.

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 City. However, a majority of the large swaths surround the many creeks, streams and tidal wetlands along the Intracoastal Waterway; and along the coastline. The total amount of land in the special flood hazard area is 1,727.7 acres. As shown in **Table 6.2**, 52.8% are used for utility plants and lines and solid waste disposal; 16.9% are currently undeveloped; 11.7% are used for residential single-family homes; and 11% are used for government, institutional, hospitals or education purposes. **Table 6.3** shows that of the 291.4 undeveloped acres, 58.1% are designated for conservation estuarine wetlands. The City has taken favorable action in designating 58.1% of vacant acreage in the 100-year flood zone for conservation estuarine wetlands.

In **Attachment D**, two maps present the existing and future land uses within wildfire susceptible areas. These areas are scattered across the City. The total amount of land in the wildfire susceptible areas is 154.3 acres. As shown in **Table 6.2**, 62.2% are used for government, institutional, hospitals or education purposes; 13% are parks, conservation areas and golf courses; 12% are currently undeveloped; and 11.1% are used for residential single-family homes. **Table 6.3** shows that of the 18.5 undeveloped acres, 60% are designated for low density residential. The City has taken favorable action in designating 60% of vacant acreage in the wildfire susceptible areas for low density residential.

According to the land use analysis, no acreage was identified as being within a sinkhole susceptible area.

Table 6.2 Total Incorporated Jacksonville Beach Acres in Hazard Areas by Existing Land Use Category

Existing Land Use Category		Coastal Hazard Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas
Attractions, Stadiums, Lodging	Acres	22.1	29.0	12.0	0.0
	%	1.2	0.8	0.7	0.0
Places of Worship	Acres	0.7	23.0	0.0	0.0
	%	0.0	0.6	0.0	0.0
Commercial	Acres	74.2	295.4	19.8	0.0
	%	4.1	7.7	1.1	0.0
Government, Institutional, Hospitals, Education	Acres	163.6	535.9	190.2	95.9
	%	9.1	13.9	11.0	62.2
Industrial	Acres	4.5	21.9	0.0	0.2
	%	0.3	0.6	0.0	0.1
Parks, Conservation Areas, Golf Courses	Acres	32.1	64.0	35.2	20.1
	%	1.8	1.7	2.0	13.0
Residential Group Quarters, Nursing Homes	Acres	5.4	8.5	3.1	0.0
	%	0.3	0.2	0.2	0.0
Residential Multi-Family	Acres	69.3	112.4	35.4	0.0
	%	3.9	2.9	2.0	0.0
Residential Mobile Home, or Commercial Parking Lot	Acres	8.9	42.4	1.1	0.0
	%	0.5	1.1	0.1	0.0
Residential Single-Family	Acres	197.5	1,282.5	202.9	17.2
	%	11.0	33.3	11.7	11.1
Transportation, Communication, Rights-Of-Way	Acres	19.4	29.7	25.0	0.2
	%	1.1	0.8	1.4	0.1
Utility Plants and Lines, Solid Waste Disposal	Acres	887.3	898.4	911.6	2.2
	%	49.3	23.3	52.8	1.5
Vacant	Acres	315.2	506.5	291.4	18.5
	%	17.5	13.2	16.9	12.0
Total Acres	Acres	1,800.2	3,849.3	1,727.7	154.3
	%	100.0	100.0	100.0	100.0

Source: Department of Community Affairs

Table 6.3 Total Incorporated Jacksonville Beach 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
CBD Commercial	Acres	43.9	3.3	43.9	3.1	16.7	2.2	0.0	0.0
	%	2.4	1.0	1.1	0.6	1.0	0.8	0.0	0.0
Central Business District	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Commercial Community	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Commercial Limited	Acres	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0
Community Commercial	Acres	17.4	2.2	82.7	4.7	8.7	0.0	0.0	0.0
	%	1.0	0.7	2.1	0.9	0.5	0.0	0.0	0.0
Conservation Beach	Acres	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conservation Estuarine Wetlands	Acres	1,059.6	168.5	1,061.8	165.0	1,084.1	169.2	4.5	0.9
	%	58.9	53.5	27.6	32.6	62.7	58.1	2.9	4.9
CPD Commercial	Acres	0.0	0.0	2.7	0.4	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
High Density Residential	Acres	119.7	29.4	179.5	40.4	65.3	24.5	0.0	0.0
	%	6.6	9.3	4.7	8.0	3.8	8.4	0.0	0.0
Industrial	Acres	21.6	2.2	87.8	12.5	16.3	2.7	0.2	0.0
	%	1.2	0.7	2.3	2.5	0.9	0.9	0.1	0.0
Limited Commercial	Acres	53.5	3.6	153.2	17.2	10.3	2.2	0.0	0.0
	%	3.0	1.1	4.0	3.4	0.6	0.8	0.0	0.0
Low Density Residential	Acres	353.8	103.0	1,189.6	152.0	364.5	87.8	25.4	11.1
	%	19.7	32.7	30.9	30.0	21.1	30.1	16.5	60.0
Medium Density Residential	Acres	6.7	0.0	278.7	24.3	20.5	1.3	0.0	0.0
	%	0.4	0.0	7.2	4.8	1.2	0.4	0.0	0.0
Public / Institutional	Acres	0.9	0.0	165.4	4.7	6.2	0.0	1.6	0.0
	%	0.0	0.0	4.3	0.9	0.4	0.0	1.0	0.0
Recreation / Open Space	Acres	123.1	2.9	283.8	5.6	135.1	1.3	113.5	2.0
	%	6.8	0.9	7.4	1.1	7.8	0.4	73.6	10.8
Residential High Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Residential Low Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Residential Medium Density	Acres	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Service Commercial	Acres	0.0	0.0	15.4	2.7	0.0	0.0	0.0	0.0
	%	0.0	0.0	0.4	0.5	0.0	0.0	0.0	0.0
South Beach District	Acres	0.0	0.0	304.5	74.0	0.0	0.0	6.9	4.5
	%	0.0	0.0	7.9	14.6	0.0	0.0	4.5	24.3
Total Acres	Acres	1,800.2	315.2	3,849.3	506.5	1,727.7	291.4	154.3	18.5
	%	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Department of Community Affairs

Municipal Hazard Mitigation Goals and Objectives Related to Comprehensive Planning

The Duval County LMS contains a list of “Current Mitigation Initiatives” that pertain directly to the City of Jacksonville Beach. Each of these initiatives also references the countywide goals and/or objectives that each suffices. The mitigation initiatives specifically mentioned for the City of Jacksonville Beach include establishing a procedure for a mitigation category in the capital improvements element; establishing development requirements to ensure defensible space around homes/subdivisions from wildfires; establishing a discount program on property insurance for mitigation construction/retrofit features; a pre-disaster plan for post-disaster underground utility placement; implementation of stormwater management plans/maintenance of drainage infrastructure; a beach renourishment program to mitigate storm damage; procedures to require public safety review of new development in identified hazard areas and impact on hurricane evacuation; mandatory water/wind mitigation requirement for new construction within the Coastal Construction Control Line; residential, critical facilities, and utility retrofits; drainage ditch maintenance; a variety of outreach/education measures regarding hazard mitigation, flood insurance, building standards, wildfire prevention, hurricane sheltering and evacuation, and impacts caused by filling wetlands to homes and businesses.

Comprehensive Plan Review

Purpose and Intent

The Jacksonville Beach Comprehensive Plan (Adopted August 1999) was reviewed for the purpose of developing this profile. This review was undertaken in order to assess what steps the City of Jacksonville Beach 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 the extent to which the principles from the LMS were incorporated into the objectives and policies of the existing Comprehensive Plan.

Approach

This review includes an assessment storm surge, flooding, and wildfire hazards. Sinkholes were discussed in the LMS, but the potential for occurrence was considered to be very low for the entire city. Therefore, the City of Jacksonville Beach 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 H**. 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

Emergency management precepts appear to be well-integrated into the Comprehensive Plan. The Plan places emphasis on preserving natural features, and protecting lives and property from the impacts of natural hazards. Policy 3.1.5 of the Coastal Management Element states that the hazard mitigation annex of the Local Peacetime Emergency Plan will be updated on a five-year basis. In that update, the City Manager will identify specific actions that could be implemented to reduce exposure to natural hazards.

Plan components address the challenge of managing growth along the coast and emphasize intergovernmental coordination with adjacent municipalities, Duval and St. Johns Counties, the Northeast Florida Regional Planning Council (NEFRPC), and the St. Johns River Water Management District (SJRWMD). The Plan focuses on the use of growth management tools and land development regulations to protect vulnerable populations and properties. Emergency

Management issues addressed include infrastructure concerns, shelters and evacuation clearance times, critical and public facilities, level of service standards, and post-disaster clean-up and redevelopment. Policies are included to provide for adequate stormwater management, regulate areas subject to seasonal and periodic flooding, and protect aquifer recharge areas.

The Plan extensively addresses opportunities for coordination with adjacent coastal communities, and with Duval and St. Johns Counties. Policies require that the City develop or continue joint planning and management programs with these entities to facilitate beach renourishment, hurricane evacuation, and the provision of infrastructure and stormwater controls.

Hurricane Evacuation

Plan policies mandate that the City review the comprehensive plans of adjacent coastal communities, and Duval and St. Johns Counties, in order to determine whether coastal resources are being managed in a consistent manner. On a development review level, the Plan provides for the City to coordinate development in the coastal zone with all adjacent communities and coastal counties which may be impacted by such development. The City is also required to assist the Northeast Florida Regional Planning Council in the protection of regionally significant coastal resources.

As part of the intergovernmental coordination effort, policies task the City with establishing a mechanism to develop a county-wide beach and dune management plan to demonstrate a commitment to regional beach resources. The City must also support beach renourishment and use berm stabilization techniques and elevated walkways to prevent dune traffic and protect the beaches.

The City was required to assist the City of Jacksonville and Duval County in the development of an LMS for Duval County. Upon LMS adoption, policies mandated that the City amend the Comprehensive Plan to include appropriate mitigation initiatives identified in the LMS. The City was also required to request membership on the LMS working committee that developed the LMS.

The CHHA portion of Jacksonville Beach consists of Category 1 evacuation areas, as determined by the NEFRPC Hurricane Evacuation Study. This CHHA is required by the Comprehensive Plan to be shown on City zoning maps. When considering the approval of higher densities in a location, the City will consider whether the project is located in the CHHA, and also consider hurricane evacuation times established in the Coastal Management Element. According to the Plan, Comprehensive Plan Amendments will not be approved within designated Category 3 Hurricane Vulnerability Zones unless an Amendment request meets conditions specified in Policy CM.3.2.3.

Undeveloped lands within the CHHA must be designated "conservation-protected" on the Future Land Use Map. The City established a policy stating that no development will be permitted within 50 feet of an area designated in this manner. Protected areas include estuarine wetlands and beaches seaward of the bulkhead. Policies also state that the City in cooperation with Duval County, will request that the CCCL be re-established every five years, and construction seaward of the CCCL is "strongly discouraged".

Hurricane evacuation and post-disaster recovery are both discussed at length in the Comprehensive Plan. Objective 3.2 of the Coastal Management Element states "the City's hurricane evacuation time for a Category 3 storm shall be less than 12 hours." In order to foster public awareness of this evacuation time, the Plan requires the City to notify every residential household of evacuation procedures prior to each hurricane season. In addition, policies dictate the manner in which evacuation procedures will be posted and distributed to rental units, motels/hotels and new residential units. In order to further facilitate smooth evacuation, the Plan states that future improvements to emergency evacuation routes will include remedies to reduce or eliminate potential hindrances likely to result from flooding.

The Comprehensive Plan specifically addresses the potential problems that can arise when mobile homes are located in vulnerable areas. There are detailed policies governing both the placement and building specifications for mobile homes, in order to protect them from the hazards of flooding and storm surge.

According to Florida's Statewide Emergency Shelter Plan, Duval County had a shelter deficit of 20,258 people in 2004. This shelter deficit includes the vulnerable population in Jacksonville Beach. 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. The deficit for this County is significant and will need attention as future policies are developed and implemented.

The Plan contains numerous policies to deal with post-disaster recovery, designed to ensure public health, safety and welfare. The Local Peacetime Emergency Plan is required to be kept in compliance with post-disaster policies and objectives. Post-disaster policies include provisions to appoint a Recovery Task Force, designate its members, and also enumerate the responsibilities of the Task Force. These policies include assessment provisions and require the maintenance of a contingency fund to cover the local government's match for disaster assistance grants, including hazard mitigation.

Flooding

The Plan addresses the hazard of flood in a number of ways. The City's Floodplain Management and Stormwater Ordinance is required to comply with the minimum building elevations of the FEMA Flood Insurance Rate maps and building requirements of the National Flood Insurance Program. The Plan requires this Ordinance to be in full compliance with SJRWMD, and to specifically restrict the discharge of rainwater into ditches that may flood evacuation routes. No public funds are to be expended for infrastructure to facilitate development of remaining undeveloped areas within designated A-zones.

Stormwater management and flooding are addressed through the Master Stormwater Management Plan. There is a policy stating that storm drainage will be approached on a city-wide basis and that a user-based financing mechanism should be established to fund the improvements contained in the Stormwater Management Sub-Element of the Public Facilities Element. Flood-proofing is also required for new potable water lines, new sanitary sewer facilities, and the storm drainage improvements enumerated in the Public Facilities Element.

Wildfire

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

Summary of Recommendations

The City of Jacksonville Beach Comprehensive Plan has a good integration of hazard mitigation principles and its LMS has adequate data and goals to support comprehensive planning. 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 the City of Jacksonville Beach 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, the City of Jacksonville Beach Comprehensive Plan elements were not reviewed for policies pertaining to sinkhole hazards. No acres were

determined to be in sinkhole susceptible areas. For more information about the methodology and data used for the land use tabulations, please refer to the “Analysis of Current and Future Vulnerability Based on Land Use” section of the Municipal Case Study in this hazards profile.

Of the vacant lands, 315 acres are susceptible to Category 1 storm surge (CHZ), 507 acres are susceptible to Category 1 – 3 storm surge (HVZ), 291 are susceptible to 100-year flood, and 19 acres are susceptible to wildfire.

Storm Surge

About 46% of the 315 vacant acres in the Coastal Hazard Zone and 66% of the 507 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 direct densities away from the Coastal High Hazard Area (CHHA), limit many types of development in the CHHA, restrict mobile homes in the CHHA discourage construction seaward of the CCCL, and other existing measures to minimize risk.
- The City should continue to include a City of Jacksonville Beach representative on the County LMS advisory committee.
- The Comprehensive Plan should continue to require that the hazard mitigation annex of the Local Peacetime Emergency Plan be reviewed and updated on a five-year basis,
- The Comprehensive Plan should continue its public notification process prior to each hurricane season. Procedures include notification of each resident of evacuation procedures, and posting of these procedures in hotels, motels, and timeshare condominiums.
- The Comprehensive Plan should continue to require that land use plan amendments shall not be approved within all designated Category 3 Hurricane Vulnerability Zones unless the change is made to reflect existing conditions, the requested change is for a lower density, a requested increase in density is offset by a decrease in density in another part of the Category 3 Hurricane Vulnerability Zone, or the developer mitigates the added evacuation route loading by paying an impact fee for additional roadway improvements.
- The Comprehensive Plan should continue to require that future improvements to emergency evacuation route roads shall include remedies to reduce or eliminate hindrances likely to result from flooding.
- The Comprehensive Plan should continue to include policies requiring beach renourishment and berm stabilization techniques.
- The Comprehensive Plan should continue to include policies for intergovernmental coordination with Duval County, in order to update their Comprehensive Plan policies, in accordance with County LMS updates.
- The City should continue flood proofing water and sewer facilities in the CHHA.
- The Comprehensive Plan 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.
- Comprehensive Plan policies should consider retrofitting essential public facilities that exist in the CHHA to mitigate impacts from surge.

- The City should consider coordinating with Duval County to only allow new shelters (including on-site shelters) outside of the HVZ.
- The City should consider prohibiting septic tanks in the CHHA except in cases of excessive hardship where (1) no reasonable alternative exists, (2) a discharge from a septic tank will not adversely affect public health and will not degrade surface or ground water and (3) where the Health Department determines that soil conditions, water table elevation and setback provisions are adequate to meet state requirements.
- The City should consider including a Comprehensive Plan policy to maintain or reduce the hurricane evacuation clearance time published in the FDEM Hurricane Evacuation Study, institute a level of service (LOS) standard that is tied to levels of development or population and/or institute an impact fee in the CHHA or HVZ to help pay for additional road capacity, retrofits required for evacuations, and shelter space.
- The City should consider coordinating evacuation roadway improvements with the Metropolitan Planning Organization, Duval County Sheriff's Department, Florida Department of Transportation, and Florida Division of Emergency Management.
- The City should consider prohibiting new septic tanks in the CHHA.
- The City should consider not allowing solid waste and commercial hazardous waste management facilities in the HVZ.
- The City should consider requiring that the deeds for the sale of land or structures in hurricane vulnerable zones contain a hurricane hazard disclosure statement.
- The City should consider prohibiting new schools in the CHHA and retrofitting new schools as shelters outside the HVZ, where possible.
- The City should consider coordinating with other local governments and the School District to enhancing public awareness of evacuation zones and shelter locations.
- The City should consider acquiring data from police and fire departments regarding transit dependent evacuation needs of residents.
- The City should consider prohibiting the siting of new adult congregate living facilities, community residential homes, group homes, homes for the aged, hospitals, mobile home parks and nursing homes, as defined in the Land Development Regulations, within the CHHA.

Flood

About 41% of the 291 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 City should continue the implementation of policies for stormwater management, repetitive loss repair and modification requirements, and other measures to reduce the risk from flood.
- The City should continue to take mitigation measures to minimize flooding on potential evacuation routes.
- The Comprehensive Plan should continue to require compliance with minimum FIRM elevations and consider increasing these standards.
- 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 City should consider the requirement for the installation of back-flow preventers on new septic tanks in the 100-year floodplain to mitigate impacts from flood, or create incentives and disincentives to reduce the desirability of septic installation within the 100-year floodplain.
- The City should consider requiring areas that have not established base flood elevations to be studied prior to development.
- The City should consider calling for compensating storage calculations in all non-coastal flood hazard areas.
- The City should consider coordinating with Duval County to build shelters and essential public facilities outside of the 100-year floodplain.
- The City should consider requiring that all structures built in the 100-year floodplain include at least 1 foot freeboard. Many post-disaster building performance/damage assessments have shown that it is advisable to include freeboard to reduce future flood damages. Okaloosa and Brevard Counties, City of Jacksonville and the Santa Rosa Island Authority are example communities that have adopted freeboard requirements.
- The City should consider the option of encouraging transfer of development rights to facilitate the transfer of densities out of the 100-year floodplain,
- The City should consider including a policy to not approve variances to required flood elevations.
- The City should consider including a policy for reducing repetitive (flood) loss properties such as at risk property acquisition or elevation.

Wildfire

About 84% of the 19 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 City 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 City 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 City should consider requirement for all new development to include & implement a wildfire mitigation plan specific to that development, subject to review & approval by the Local Fire Rescue Department.
- The City 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. Therefore, the City of Jacksonville Beach Comprehensive Plan elements were not reviewed for policies pertaining to sinkhole hazards.

General

- Include each hazard layer on the existing and future land use maps to determine where risks are possible to target hazard mitigation strategies.
- Continue educating the public, especially those at high risk from hurricanes, floods, and wildfires, and inform them of proactive steps they can take to mitigate damage.
- 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 City Commission.

6. 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.

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.

State of Florida. 2005 Hurricane Evacuation Study Database. 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".

Sinkhole Hazard GIS Data

Source: Kinetic Analysis Corporation (2005)

- Areas shown/analyzed are those areas in the "Rawsink1.shp" GIS coverage supplied by KAC, where the value in the field "Gridcode" is 3 to 6, representing "High", or Very High", "Extremely High", or "Adjacent", based on the classification system used in the sinkhole hazard maps available at:

http://lmsmaps.methaz.org/lmsmaps/final_cty/

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
Maps of the Existing and Future Land Uses within the Sinkhole Susceptible Areas**

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

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

- **Goal 1** – *Minimize future losses from all disasters by reducing the risk to people and property*
 - 1.1 Protection of populations and properties in Duval County susceptible to economic or physical loss from natural and man-made disasters shall be consistent with the standards established in the Local Mitigation Strategy and other planning documents.
 - 1.2 Encourage higher standards of maintenance to existing drainage systems and retention ponds and monitor cumulative development impacts with a macroscopic view.
- **Goal 2** – *Emphasize pre- and post-disaster planning to decrease vulnerability of existing and new construction to loss.*
 - 2.1 Identify vulnerable properties such as mobile homes, substandard housing, etc., by using wind vulnerability maps.
 - 2.2 Review evacuation time estimates taking into consideration the impact of railroad and bridge openings on travel times.
 - 2.3 Rehabilitate low-to-moderate income housing by retrofitting for flood and windstorm vulnerability.
 - 2.4 Where feasible, purchase land in known vulnerable areas to prevent placing people and infrastructure in harms way.
 - 2.5 Identify post-storm development options in vulnerable coastal areas, taking into consideration short and long-term environmental, economic, and structural issues.
 - 2.6 Identify vulnerable existing public and private critical facilities and encourage pre-disaster retrofit.
- **Goal 3** – *Prevent flood-related repetitive losses from natural disasters through regulation and education.*
 - 3.1 Develop and support public and private projects and programs to retrofit, relocate or acquire properties susceptible to repetitive flooding.
 - 3.2 Require systematic maintenance programs for stormwater management systems.
 - 3.3 Allow only low-density residential development in repetitive flood loss areas otherwise suitable for residential development.

- **Goal 4** – *Strengthen and utilize land use guides, zoning codes, development controls, and incentives to protect vulnerable properties and vulnerable areas.*

4.1 Monitor floodplain regulations and enforcement at all levels to assess effectiveness

4.2 Develop and support economic incentive programs for both public and private sectors promoting benefits of structural retrofitting.

4.3 Restrict variances and exceptions in flood hazard areas as identified by Flood Insurance Rate Maps, storm surge and historical flooding.

4.4 Enforce the Florida Building Code standards requiring new developments and construction to meet applicable wind load standards for proximity to coast.

4.5 Enforce regulations for new structures in 100-year flood areas to be elevated to the Base Flood Elevation.

4.7 Enact development standards in urban/wildland interface areas, such as setbacks, forest maintenance, access of response vehicles and construction materials.

4.8 Strengthen existing land use regulations and policies through enhancement of review procedures, and enforcement.

4.9 Review and consider policies to assure more permeable area in development, by limiting construction of paved surfaces and decreasing runoff.

4.10 By pre-storm planning, identify and implement a system to rebuild and protect the dunes system, with crossovers, restoration and vegetation.

- **Goal 6** – *Hazard mitigation should promote personal awareness and responsibility, with and emphasis on education and training for property owners, families and individuals, which should be communicated to the public in a simple, easy to understand format.*

6.3 Develop and implement public information programs for hazard mitigation, emphasizing its direct benefit to citizens, including public officials and private businesses.

6.6 Educate and promote elected officials, builders and potential homeowners, the economic and safety benefits of designing mitigation features into new construction.

ATTACHMENT G

Duval County (City of Jacksonville) Comprehensive Plan Excerpts Pertaining to Hazard Mitigation

FUTURE LAND USE ELEMENT

Objective 1.4 Protect areas of unique natural beauty by including consideration of the natural features and physical characteristics of the City, such as soils, topography, vegetation etc., in all development orders.

Policy 1.4.4 The City shall require all development within the 100 year flood plain to be in strict conformance with all applicable federal, State, regional and local development regulations.

Objective 1.5 Maintain, enhance and conserve natural and environmental resources, especially coastal resources, and ensure that all development and redevelopment within the coastal area is consistent with the Conservation/Coastal Management Element, including the Hurricane Evacuation Plan, and Aquifer Recharge Sub-Element.

Objective 4.1 Maintain and enforce citywide Land Development Regulations that are consistent with the 2010 Comprehensive Plan.

Policy 4.1.4 The City shall revise existing Land Development Regulations and site plan review procedures to include the following: 1. Consideration of natural features in the development review process; 2. Regulation of the type and density/intensity of development in coastal high hazard areas in order to protect the public health, safety and welfare, and the natural environment.

Policy 4.1.5 Continue enforcement of existing Land Development Regulations in the City, which are consistent with this plan, including: Zoning Code; Code of Subdivision Regulations; Flood Plain Regulations; Landscape and Tree Protection Regulations; Housing Safety Code; Unsafe Buildings and Structures Code; Community Redevelopment Programs; and Building Code.

INTERGOVERNMENTAL COORDINATION

Objective 1.3 Initiate cooperative inter-jurisdictional planning and management of major natural resources which fall under the jurisdiction of more than one entity.

Policy 1.3.2 The City shall, through the Northeast Florida Regional Planning Council address issues dealing with natural resources which extend beyond the City's boundaries.

Policy 1.3.4 The City shall coordinate with Nassau and St. Johns Counties in the management of marine resources by participating in existing cooperative programs established by the St. Johns River Water Management District and the Northeast Florida Regional Planning Council such as the SWIM Plan.

CONSERVATION AND COASTAL ELEMENTS

Objective 2.8 The City shall protect the hydrological and ecological benefits of flood plain areas, such as water quality, fish and wildlife habitat, and prevention of downstream flooding.

Policy 2.8.1 The City shall continue to define the surface hydrology of the area to determine flood plain vulnerability and sensitivity, and will determine appropriate protection measures. City of Jacksonville 2010 Comprehensive Plan.

Policy 2.8.2 A land acquisition program for appropriate flood plain areas to be purchased shall continue to be included in the City's Special Management Areas Program, with funding provided through The Preservation Project Jacksonville.

Policy 2.8.3 The City shall protect appropriate floodplain areas for the public benefit and restore degraded floodplain areas. by: A. Land acquisition or conservation easement acquisition; B. Regulation, including setbacks, buffer zones, designated wildlife corridors, low density zoning, performance standards and open space requirements; and C. Incentives, including tax benefits and transfer of development rights.

Objective 4.1 **The City shall protect and conserve the natural functions of its existing wetlands, including estuarine marshes. In order to achieve this objective and its associated policies, the City shall continue to work with the applicable regional, state and federal agencies charged with these regulatory responsibilities.**

Policy 4.1.1 The permitted land uses within Salt Water Marshes, Riverine/Estuarine Wetlands and All Other Wetlands as depicted on Map C-3 (same as the adopted Map L-5 of the Future Land Use Element) shall be limited to the following land uses and associated standards, provided such use is consistent with the Future Land Use Map series (FLUMs).

A) Within Salt Water Marshes, the following land uses are permitted:...c) Floodplain protection - Buildings are built at an elevation of sufficient height to meet the designated flood zone standards as set forth by the Federal Emergency Management Agency. The design must be in conformance with Chapter 652 (Floodplain Regulations) of the Ordinance Code;

Objective 6.1 **The ocean fronting beaches and dunes within the City's jurisdiction shall be maintained predominantly in their natural state for conservation and recreational uses.**

Policy 6.1.1 All activities which may result in man-induced erosion or would threaten the stability of the beach/dune system are prohibited.

Policy 6.1.2 Construction seaward of the State's Coastal Construction Control Line is prohibited. An exception shall be for passive recreation and access structures.

Policy 6.1.3 No new shore hardening structures shall be permitted, pursuant to Chapter 161, F.S. Reconstruction of existing erosion control structures is prohibited except for public navigation and emergency transportation corridors.

Policy 6.1.4 The beach and dune systems within the City of Jacksonville, including native vegetation, shall be protected and preserved.

Policy 6.1.5 Native vegetation shall be required as vegetation, shall be protected and preserved.

Objective 7.1 **The City, acting as Duval County, shall reduce excessive hurricane evacuation times where they exist within specific areas of designated Hurricane Evacuation Zones and maintain all other evacuation times within the acceptable standard.**

Policy 7.1.1 The City establishes 23 hours as the maximum acceptable hurricane evacuation time standard for a Category 3 storm event, based upon the following criteria: A. The evacuation should be complete prior to the arrival of gale force winds. B. That the clearance time to evacuate for a category 3 hurricane with average public urgency will be 16 ¾ hours. C. Provides six hours for evacuation message to reach all of those affected. D. Recognizes that all hurricane evacuation situations are unique, with numerous factors that may contribute to longer required evacuation periods.

Policy 7.1.2 The City, acting as Duval County, will develop and implement provisions for increasing the rate of evacuee mobilization including the expansion of its comprehensive awareness program, to ensure that Duval County residents and visitors are informed regarding evacuation zones, clearance times, shelter locations and capacities, and evacuation routes. The Emergency Preparedness Division shall develop for general public distribution, a Duval County "All Hazards Guide," that will include the following: Family Disaster Planning; Disaster Supply Kits; Home Protection; Hurricane Evacuation Zones, Routes & Shelters; Flooding, Thunderstorms & Lightning; Tornadoes & Waterspouts; Hazardous Materials; What to Expect After the Disaster; Advice for Senior Citizens, Home-bound Patients and Special Need Populations; Pets; Business Protection; and Emergency Phone Numbers....

Policy 7.1.3 The City, acting as Duval County, shall review, and update as necessary, items related to hurricane evacuation in the Comprehensive Emergency Management Plan (CEMP) prior to June 1 of each year. The latest versions of, or changes to, all State and regional emergency plans shall be incorporated into the CEMP to ensure intergovernmental plan consistency.

Policy 7.1.4 The Emergency Preparedness Division, acting as the City of Jacksonville and Duval County, shall maintain a formalized intergovernmental strategy for hurricane evacuation planning and regional emergency planning efforts with adjacent counties and municipalities within the County.

Policy 7.1.5 The Comprehensive Planning Division of the Planning and Development Department and the Emergency Preparedness Division shall maintain procedures and guidelines for assessing the impact of a new development and redevelopment on hurricane evacuation times. Such procedures and guidelines shall be adopted and implemented in a manner consistent with the requirements of Section 163.3202(1), F.S., and therefore shall be formalized and integrated into the City's Land Development Regulations.

Policy 7.1.6 The City shall not amend the Future Land Use Element or the Future Land Use Map series unless; the requested change can be determined to not exceed the established hurricane evacuation times; the requested change is for a lower density; or the requested change for increased density provides adequate remedies to reduce impacts on hurricane evacuation times which exceed the acceptable standard.

Policy 7.1.7 All new development and redevelopment within Hurricane Evacuation Zones shall be consistent with hurricane evacuation times and the Future Land Use Element of the 2010 Comprehensive Plan. In conjunction with the Emergency Preparedness Division, the City shall develop procedures for evaluating the impact of new development and redevelopment on hurricane evacuation time

Policy 7.1.8 The Emergency Preparedness Division shall review all development orders for projects located within Hurricane Evacuation Zones and recommend development conditions where necessary. The City shall develop a process to allow the adequate review of impacts of development orders by the Emergency Preparedness Division.

Policy 7.1.9 The cumulative impact of development orders or permits shall not exceed the established hurricane evacuation time.

Policy 7.1.10 The City Traffic Engineer and Chief of Emergency Preparedness shall review at least annually evacuation route road needs to ensure that the necessary improvements are incorporated within the Capital Improvements Element and Transportation Element.

Policy 7.1.11 The City shall utilize hurricane evacuation times, as well as Level of Service standards, in determining the timing and priority of roadway improvements as contained within the Transportation Element. Existing evacuation route deficiencies shall be included in the five year schedule of capital improvements.

Objective 7.2 Adequate shelter space shall continue to be available for the population in the Hurricane Evacuation Zones at risk under a Category 3 storm event. The City, acting as Duval County, shall have a mechanism in place to assist in providing shelter and transportation for people with special needs during an emergency.

Policy 7.2.1 The City, acting as Duval County, shall increase its shelter capacity. All new or retrofit school projects shall be evaluated for sheltering of special needs as well as general populations.

Policy 7.2.2 The Chief of Emergency Preparedness, with assistance from State and regional agencies, shall establish the target shelter demand, and make recommendations on additional policies and strategies to ensure, if needed, the availability of additional shelter space.

Policy 7.2.3 In the event that the Chief of Emergency Preparedness determines that the shortage of shelter space requires mitigation, then policies 7.2.5, 7.2.6 and 7.2.7 shall apply.

Policy 7.2.4 The Emergency Preparedness Division shall, for evacuation purposes, continue to identify the special needs population of Duval County, and plan for appropriate facilities and services through the Duval County Health Department, with the assistance of such government and quasi-government agencies as the Northeast Florida American Red Cross, the First Coast Disaster Council, and other similar agencies.

Policy 7.2.5 The City shall require that all new development located in the Coastal High Hazard Area in land use categories that permit residential density greater than Low Density Residential shall contribute to the cost of emergency shelter space in existing school sites.

Policy 7.2.6 For purposes of determining an owner's assessment for the cost of emergency shelter space in existing school sites, the City shall use a quantitative formula where: A equals the total number of residential units proposed; B equals number of persons per household; and C equals average cost to retrofit one shelter space; D owners assessment $A \times B \times C = D$ Owner's Assessment

Policy 7.2.7 The City shall use the most recent U.S. Census data related to average household size, population in households and households. In calculating the assessment owed, the City shall use the full unit count of the proposed development, the county-wide average household size from the U. S. Census, and the average shelter retrofit cost as provided by the City's Emergency Preparedness Division in consultation with the Duval County School District Facilities Services Division. The City shall not allow a reduction of the shelter space required based on assumptions of smaller household sizes than the county-wide census data or reduced uses of public shelters for certain developments. These factors shall be updated as warranted by the City to ensure accuracy of costs and population factors.

Objective 7.3 Limit public expenditures that subsidize growth by ensuring that building and development activities are carried out in a manner which minimizes danger to life and property from natural disasters and restricting the intensity of development within designated Coastal High Hazard Areas consistent with public safety needs.

Policy 7.3.1 The City shall designate the Coastal High Hazard Areas (CHHA) as those areas designated as the evacuation zone for a category 1 hurricane as established by the 1998 Northeast Florida Hurricane Evacuation Study or the most current study.

Policy 7.3.2 The City shall continue to participate in the National Flood Insurance Program.

Policy 7.3.3 The City shall maintain requirements for wind resistance, as stated in the latest edition of the Statewide Florida Building Code.

Policy 7.3.4 Shoreline development in Coastal High Hazard Areas shall be protected by vegetation, setbacks, and/or restoration, rather than by seawalls or other coastal protection structures which contribute to erosion. Exception may be made for navigation and emergency transportation purposes.

Policy 7.3.5 The City shall limit the expenditure of public funds in Coastal High Hazard Areas to the restoration or enhancement of natural resources and to the replacement and renewal of existing public facilities which may be expanded and improved.

Policy 7.3.6 Established hurricane evacuation times and route capacities within Coastal High Hazard Areas shall not be exceeded.

Policy 7.3.7 All public lands within Coastal High Hazard Areas shall be designated for conservation purposes consistent with the Future Land Use Element's Conservation land use classification.

Policy 7.3.8 All Land Development Regulations shall be reviewed and revised to reduce the vulnerability of any existing development within Coastal High Hazard Areas.

Policy 7.3.9 The City shall identify areas within the CHHA that are considered blighted, and propose programs that will eliminate unsafe conditions and encourage economic redevelopment.

Policy 7.3.10 The City shall use Preservation Project monies as one of the sources of funds available to purchase lands in the Coastal High Hazard Areas – (CHHA). These land purchases shall reduce the development potential in the CHHA which, in turn, assists in reduction of evacuation times, number of persons living in these areas, and property loss damages. At least 25% of the total lands (67,573 acres) within the Coastal High Hazard Area shall be acquired through the Preservation Project to maintain or reduce hurricane evacuation times by removing the potential for residential development on these lands.

Policy 7.3.11 The City shall continue its current joint actions with surrounding cities, the State Department of Community Affairs (DCA) Division of Emergency Management Office, St. Johns River Water Management District and the Federal Emergency Management Administration (FEMA) to secure monies for purchase by a public agency of privately held lands. These purchases shall be for the purpose of reducing development potential in the CHHA and thus serve as one of the remedies pursuant to Policy 7.1.6.

Policy 7.3.12 The City shall direct future residential density away from the Coastal High Hazard Area and shall mitigate the impacts of existing residential development rights through traditional and innovative planning tools including but not limited to Preservation Project land purchases and emergency shelter deficit reduction through mitigation assessments.

Objective 7.4 Limit development density and intensity within the Coastal High Hazard Area (CHHA) and direct it outside of the CHHA, and mitigate the impact of natural hazards in the area.

Policy 7.4.1 The City shall require that all land development applications within the Coastal High Hazard Area be planned and obtain approval pursuant to a site plan review process, to ensure that development is compatible with site characteristics.

Policy 7.4.2 Upon adoption of the 2010 Comprehensive Plan, all land development applications within the Coastal High Hazard Area (CHHA) shall be reviewed by the Planning and Development Department, Emergency Preparedness Division and Public Works Department for verification of consistency with the goals, objectives and policies of the 2010 Comprehensive Plan and all Land Development Regulations, including but not limited to, pertinent sections of the National Flood Insurance Program and all applicable flood control regulations.

Policy 7.4.3 Following a hurricane, the City shall identify those areas within the CHHA which have or can be reasonably expected to sustain recurring hurricane related damage, and prohibit development within those areas.

Policy 7.4.4 The City shall limit the density of new residential development within those areas within the Federal Emergency Management Agency V (Velocity) Zones and areas seaward of the Florida Department of Environmental Protection Coastal Construction Control Line to a maximum of three dwelling units per net acre or the maximum density shown on the Future Land Use Map series for the area within those areas, whichever is less. Maximum density/intensity of new non-residential development within those areas shall be limited to the density/intensity for those areas as indicated on the Future Land Use Map series. Furthermore, during the review of a single project on a site that is located partially within those areas, any reduction in residential development potential within those areas resulting from the limit of 3 dwelling units per net acre within that area may be recaptured on the subject site within areas not in those areas, where such recapture is consistent with other provisions of the 2010 Comprehensive Plan.

Policy 7.4.5 The City shall require that non-industrial redevelopment activities within those areas within the Federal Emergency Management Agency V (Velocity) Zones and areas seaward of the Florida Department of Environmental Protection Coastal Construction Control Line be limited to the density/intensity in existence for the development site prior to the effective date of the 2010 Comprehensive Plan or be limited to three dwelling units per net acre, whichever is lower.

Policy 7.4.6 The City shall limit the intensity of new industrial development within those areas within the Federal Emergency Management Agency V (Velocity) Zones and areas seaward of the Florida Department of Environmental Protection Coastal Construction Control Line to the maximum intensity threshold associated with the Light Industrial or Water-Dependent/Water-Related land use category, or to the maximum intensity allowed by any other categories permitting industrial development, whichever is lower.

Policy 7.4.7 The City shall require that the intensity of industrial redevelopment activities within those areas within the Federal Emergency Management Agency V (Velocity) Zones and areas seaward of the Florida Department of Environmental Protection Coastal Construction Control Line be limited to the intensity in effect for the development site prior to the effective date of the 2010 Comprehensive Plan, or the maximum intensity associated with the future land use designation on the project site, whichever is lower.

Policy 7.4.8 The City shall promote, in instances where a proposed project is located within the CHHA, the clustering of uses. Such clustering will be used to limit the acreage within the CHHA that will be affected by the proposed development, and will serve to limit the amount of infrastructure provided within the CHHA. To demonstrate compliance with the clustering concept identified in this policy, proposed site plans may be required to include conditions that restrict future development on any other portion of the site within the CHHA and /or place a conservation easement on any remaining wetlands within the CHHA not already proposed for impacts.

Policy 7.4.9 The City shall prohibit the siting of new adult congregate living facilities, community residential homes, group homes, homes for the aged, hospitals, mobile home parks and nursing homes, as defined in the Land Development Regulations, within the Coastal High Hazard Area. Such facilities already existing within the CHHA shall be discouraged from expanding.

Policy 7.4.10 The City shall utilize the definition of CHHA, as contained in the definition section of Chapter 9J-5 of the Florida Administrative Codes, in the application of all policies related to the CHHA.

Policy 7.4.11 Those regulations relating to development activity in the CHHA will be incorporated into the Land Development Regulations, consistent with Section 163.3202, F.S.

Policy 7.4.12 Consistency with Objective 7.4 requires consistency with all Goals, Objectives, and Policies within the Conservation/Coastal Management Element, including, but not limited to Objectives 7.1, 7.2, 7.3, and 7.5 and all Policies within those Objectives.

Objective 7.5 Within 60 days of the occurrence of a major destructive storm or similar disaster, the City shall prepare a post-disaster redevelopment plan designed to reduce or eliminate the exposure of human life and property to natural hazards.

Policy 7.5.1 The Comprehensive Emergency Management Plan CEMP shall include guidance for post-disaster recovery operations. Post disaster recovery efforts and development shall include implementation of hazard mitigation programs that result in the reduction or elimination of future losses from similar events.

Policy 7.5.2 After a hurricane has severely impacted Jacksonville, the Mayor of the Consolidated City, and other local officials as designated by the Mayor, shall meet to review preliminary damage assessments as collected by the Emergency Preparedness division. The Mayor may take such actions as deemed necessary to restore the City to post storm conditions. Life safety issues, such as search and rescue activities shall receive first priority. Following life safety, recovery efforts shall be focused on damage assessment and human needs assessment, re-establishment of the public infrastructure. The Emergency Management Organization, as established by the CEMP, shall remain in operation until recovery efforts can be continued under normal governmental operations.

Policy 7.5.3 The Executive Group of the City's Emergency Management Organization shall oversee recovery actions and provide policy guidance for recovery operations.

Policy 7.5.4 The Emergency Management Organization shall implement the existing recovery policies and procedures of the CEMP and any policies or procedures issued or endorsed by the Executive Group. These policies shall include, but not be limited to, the issuance of emergency building permits, coordination with State and federal officials, authorization of mitigation options in the replacement of damaged or destroyed public property and infrastructure; approval of a post-disaster redevelopment plan, and amendments to the Comprehensive Plan and the CEMP.

Policy 7.5.5 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

Policy 7.5.6 As part of its Local Mitigation Strategy, the City shall adopt prior to October 1, 1999 a formal decision making process to evaluate redevelopment options, considering such factors as cost to construct, cost to maintain, repetitive damage, impacts on land use, impacts on the environment, and public safety.

Policy 7.5.7 The Emergency Management Organization shall propose amendments to the 2010 Comprehensive Plan which reflect the recommendations in any interagency hazard mitigation reports or other reports prepared pursuant to Section 406 of the Disaster Relief Act of 1974 (PL 93-288).

Policy 7.5.8 If rebuilt, structures which suffer damage in excess of fifty percent of their appraised value shall be rebuilt to meet all current building and code requirements, including those enacted since original construction of the structure.

Policy 7.5.9 Structures which suffer substantial damage to pilings, foundations, or loadbearing 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 7.5.10 Following a disaster, the City shall identify any existing non-public structures in the Coastal High Hazard Area (CHHA), inventory their assessed value, judge the utility of the land for public access or resource protection, and make recommendations for acquisition during post-disaster recovery.

Policy 7.5.11 The City shall consider and implement where appropriate the recommendations of the hazard mitigation annex of the local Comprehensive Emergency Management Plan.

CAPITAL IMPROVEMENT ELEMENT

Objective 1.4 The City shall limit public expenditures in Coastal High Hazard Areas, as defined in the Conservation/Coastal Management Element, to those improvements which restore or enhance natural resources or which maintain existing public facilities and services at their existing levels, except for public recreational facilities, which may be expanded and improved.

Policy 1.4.1 The City shall include in its review process for infrastructure planning an assessment of appropriateness based upon the identified Coastal High Hazard Areas (CHHA).

Policy 1.4.2 The City shall limit the expenditure of public funds in Coastal High Hazard Areas to the restoration or enhancement of natural resources and to the replacement and renewal of existing public facilities, except for public recreational facilities, which may be expanded and improved.

Policy 1.4.3 The City shall limit the expenditure of public funds to maintain existing public facilities and services at their existing levels in the CHHA, except for public recreational facilities, which may be expanded and improved.

ATTACHMENT H

City of Jacksonville Beach Comprehensive Plan Excerpts Related to Hazard Mitigation

FUTURE LAND USE ELEMENT

Objective LU.1.1 Future growth and development will be managed through the preparation, adoption, implementation, and enforcement of land development regulations in accordance with Chapter 163.3202, Florida Statutes by April 1, 1991.

Policy LU.1.1.1 Adopt (or revise existing) land development regulations that will contain the specific provisions required to implement the adopted Comprehensive Plan Elements, and which as a minimum: (2) Regulate the use of land and water consistent with this Future Land Use Element and ensure the compatibility of adjacent land uses and provide for open space; (3) Regulate areas designated as being subject to seasonal and periodic flooding and provide for adequate stormwater management;

Objective LU.1.3 It is the intent of the City to continue to carry out community redevelopment projects in areas which meet the criteria for designation as blighted in accordance with Chapter 163, Part III, Florida Statutes, with the principal focus to remain in carrying out the adopted plans for redevelopment in the Downtown and South Beach Community Redevelopment Areas by 2000.

Policy LU.1.3.2 Future redevelopment activities shall be consistent with sound planning principles; limitations of the natural environment including sensitivity to problems posed by topographic and soil conditions, conservation-protected lands such as estuarine wetlands and the beach, and conservation-restricted lands such as palustrine wetlands and flood prone areas including the coastal zones; as well as the desired community character and the goals, objectives, and policies relating to the development of the land embodied in the other Elements of this Plan.

Objective LU.1.4 Future land development activities shall be directed to appropriate areas as described in this Future Land Use Element or as depicted on the Future Land Use Map. All future land use shall be consistent with sound planning principles and the limitations of the natural environment including sensitivity to problems posed by topographic and soil conditions, conservation-protected lands such as estuarine wetlands and the beach, and conservation-restricted lands such as palustrine wetlands and flood prone areas including the coastal zones. Future land development activities shall be considerate of the need to preserve and protect historic resources;

Policy LU.1.4.11 After April 1, 1991, it shall be the policy of the City that no development will be permitted in areas designated as Conservation-Protected or located within 50 feet of an area so designated. These areas will include the estuarine wetlands and beach seaward of the bulkhead

Policy LU.1.4.12 After April 1, 1991, it shall be the policy of the City that Conservation-Restricted lands (floodplains when located upland from the estuarine wetlands and palustrine wetlands) may be developed for a designated land use provided that the intensity of development shall not to exceed the lowest residential densities set forth in Policy LU.1.2.1 or the most restrictive floor area ratio for non-residential uses as set forth in Policy LU.1.2.8. The following additional standards shall apply: (1) No development orders shall be approved for any projects until the requirements of the City's flood hazard area ordinance have been met or until a copy of any permit from any other local, regional, state or federal agency having jurisdiction over development in the City has been provided. (2) No development orders shall be approved for developments in conservation-restricted floodplains unless the proposed development conforms to the following standards: a. New construction and substantial improvements shall be anchored to prevent flotation, collapse or lateral movement of the structure; b. Mobile or manufactured homes shall be anchored to prevent

flotation, collapse, or lateral movement. c. New construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage; d. New construction or substantial improvements shall be constructed by methods and practices that minimize flood damage; e. Electrical, heating, ventilation, plumbing, air conditioning equipment, and other service facilities shall be designed and/or located to prevent water from entering or accumulating within the components during conditions of flooding; f. New and replacement water supply systems shall be designed to minimize or eliminate infiltration of flood waters into the system; g. New and replacement sanitary sewage systems shall be designed to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters; h. Any alteration, repair, reconstruction or improvements to a structure that is in compliance with the provisions of this policy, shall meet the requirements of "new construction." (3) No development orders shall be approved for developments in conservation-restricted wetlands unless the proposed development conforms to the following standards: a. Where possible, no new development containing conservation-restricted wetlands shall be approved unless the proposed development has sufficient non-wetland uplands to contain the proposed development. Development proposals that cannot be carried out in manner to preserve the conservation-restricted area in its entirety shall provide a mitigation plan for approval along with the application for a development order. Whenever feasible, all mitigation shall be provided on the same site as the affected conservation restricted lands b. The development shall be designed in manner that recognizes the presence of features such as ponds, streams, wetlands, and native vegetation and will preserve and incorporate such features through imaginative site planning. c. The development shall not substantially reduce the natural retention storage capacity of any water course, thereby increasing the magnitude and volume of flooding at other locations d. Development of existing residential lots of record shall be required to comply with the minimum flood elevation requirements and the placement of fill in these areas shall be limited to the amount that is necessary for vehicular access and the building pad. e. Development of conservation-restricted lands adjacent to conservation-protected wetlands shall provide a 50 foot buffer to reduce the extent of development impacting those areas.

HOUSING ELEMENT

Policy HO.1.2.3: The City shall review and amend the land development regulations where feasible to facilitate the development of low-cost housing at reasonable densities in appropriate and selected areas. When considering the approval of higher densities, the City shall consider the impacts the development may cause, including: h. Hurricane evacuation times established in the Coastal Management element; i. The City's adopted level of service standards for sanitary sewer, potable water, storm water, solid waste, recreation and open space, and transportation facilities; and c. Whether or not the project is located within the coastal high hazard.

Policy HO.1.2.4: Mobile home sites shall be directed away from those areas identified as being in the coastal high hazard area (CHHA).

COASTAL MANAGEMENT ELEMENT

Objective CM.1.3: By April 1, 1991, the City shall act to protect, conserve, restore, and enhance its beach and dune systems by adopting management practices and construction standards which will complement the Beach Renourishment Project and enhance its performance in accordance with the standards set forth in Policies CM.1.3.1, CM.1.3.2, CM.1.3.3, CM.1.3.4, CM.1.3.5, CM.1.3.6, and CM.1.3.7.

Policy CM.1.3.1: Construction seaward of the Coastal Construction Control Line (CCCL) shall be strongly discouraged. Any development which does occur, including construction of coastal or shore protection structures, shall be carried out in strict compliance with existing regulations.

Policy CM.1.3.3: Responsibilities of the City may include, but not be limited to, providing irrigation and fertilization as necessary to insure the continued health of dune stabilizing vegetation; replacing vegetation as needed; repairing or replacing sand-fencing; and constructing and maintaining pile supported wooden dune walkovers at public beach access points.

Policy CM.1.3.2: The City shall support the Beach Renourishment project administered by the U.S. Army Corps of Engineers. The City shall also continue to monitor and participate in Duval County initiated efforts to explore and secure future renourishment funding sources.

Policy CM.1.3.4: The City, in cooperation with Duval County, shall request the Florida Department of Natural Resources to reestablish the coastal construction control line every five years.

Policy CM.1.3.5: Wind erosion shall be controlled through stabilization of the berm, using the most effective methods to improve the performance of the beach fill.

Policy CM.1.3.6: Foot traffic across the stabilized berm should be eliminated by providing elevated walkways or crossovers at each point of public access so that the vegetation which provides long term stability remains undisturbed. With the elimination of driving on Jacksonville Beach, large breaks in the berm and stabilizing fencing and vegetation designed for vehicular traffic should be eliminated, and elevated ramps provided at access points required for emergency and maintenance vehicles.

Goal CM.3: The vulnerability of the people and property of Jacksonville Beach to coastal hazards such as hurricane damage and coastal flooding shall be minimized.

Objective CM.3.1: By April 1, 1991, the City shall ensure that future development will minimize the exposure of population and property to storm damage by adopting and enforcing requirements pursuant to the standards established by Policies CM.3.1.1 through CM.3.1.9 to restrict development within coastal high-hazard areas and curtail public funding within these areas.

Policy CM.3.1.1: The City shall adopt and enforce design and construction standards specified in the Southern Standard Building Code.

Policy CM.3.1.2: The City's Floodplain Management and Stormwater Ordinance shall comply with the minimum building elevations of the FEMA Flood Insurance Rate Maps and the building requirements of the National Flood Insurance Program. The Ordinance shall be in full compliance with guidelines established by the St. Johns River Water Management District, and shall specifically restrict discharge of rainwater into ditches that may flood evacuation routes.

Policy CM.3.1.3: The Coastal High Hazard Area for Jacksonville Beach shall consist of the Category 1 evacuation areas within the city, as determined by the NEFRPC's Hurricane Evacuation Study.

Policy CM.3.1.4: New sanitary sewer facilities shall be flood-proofed, and designed to insure that raw sewage will not leak from the facilities during flooding and storm events

Policy CM.3.1.5: The hazard mitigation annex of the Local Peacetime Emergency Plan shall be reviewed and updated on a five-year basis, beginning the calendar year which follows the adoption of this planning element. In the revisions, the City Manager shall identify specific actions that could be implemented to reduce exposure to natural hazards.

Policy CM.3.1.6: City-funded public facilities shall not be built in the coastal high-hazard area, unless the facility is for public access or resource restoration.

Policy CM.3.1.7: Undeveloped lands within the coastal high-hazard area shall be designated "conservation-protected areas" on the Future Land Use Map, and the coastal high-hazard areas shall be shown on the zoning maps.

Policy CM.3.1.8: Construction projects within the designated redevelopment areas shall be in accordance with the adopted land uses specified in the Community Redevelopment Plans.

Policy CM.3.1.9: Undeveloped upland areas adjacent to the estuarine marshes shall be designated for conservation or low density residential use to provide an adequate buffer bordering the marsh and to reduce the extent of development in flood prone areas. Low density residential development shall be required to comply with minimum flood elevation requirements. The placement of fill in these areas shall be limited to only that which is necessary for streets and building pads.

Objective 3.2: The City's hurricane evacuation time for a Category 3 storm shall be less than 12 hours.

Policy CM.3.2.1: The City shall notify each resident household of evacuation procedures prior to each hurricane season. Hotels, motels, and timeshare condominiums shall post this notification conspicuously in each unit. Each new dwelling unit shall be posted with this information when a Certificate of Occupancy is issued. Landlords and property managers shall provide this notice to tenants of rental units upon execution of a lease or rental agreement.

Policy CM.3.2.2: Land use plan amendments shall not be approved within all designated Category 3 Hurricane Vulnerability Zones as delineated by the Northeast Florida Regional Planning Council unless the change is made to reflect existing conditions, the requested change is for a lower density, a requested increase in density is offset by a decrease in density in another part of the Category 3 Hurricane Vulnerability Zone, or the developer mitigates the added evacuation route loading by paying an impact fee for additional roadway improvements.

Policy CM.3.2.3: Future improvements to emergency evacuation route roads shall include remedies to reduce or eliminate hindrances likely to result from flooding.

Policy CM.3.2.4: The City shall review the Hurricane Evacuation Study, 1999 Update, upon its completion by the NEFRPC, and incorporate pertinent data and directives related to hurricane evacuation from Jacksonville Beach.

Objective 3.3: The City shall provide immediate response to post-disaster emergency situations. Priority shall be given to ensure public health, safety and welfare.

Policy CM.3.3.1: The Local Peacetime Emergency Plan shall be modified to comply with the policies under this objective, and shall contain step-by-step details for post-disaster recovery operations.

Policy CM.3.3.2: After a hurricane, but prior to re-entry of the population into evacuated areas, the City Council shall meet to hear preliminary damage assessments, appoint a Recovery Task Force, and consider a temporary moratorium on building activities not essential for public health, safety, and welfare.

Policy CM.3.3.3: The Recovery Task Force shall include the Planning and Development Director, City Manager, Public Works Director, and other members as directed by the City Council. Staff shall be provided by the departments whose directors sit on the Task Force. The Task Force shall be terminated after implementing its responsibility under Policy CM.3.3.4.

Policy CM.3.3.4: The Recovery Task Force shall review and decide upon emergency building permits; coordinate with state and federal officials to prepare disaster assistance applications; analyze and recommend to the City Council 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 CM.3.3.7: All new construction, substantial improvements; or reconstruction, redevelopment, or repair of damaged structures shall comply with the provisions of the existing coastal zone requirements. In the event a structure is damaged by any cause to an extent exceeding 50 percent of its assessed value, the entire structure and not just the repaired portion must be brought into compliance with these requirements.

Policy CM.3.3.10: The City shall maintain a contingency fund equal to 10 percent of the value of public facilities in the coastal high-hazard area to cover the local government's match for disaster assistance grants. This shall be accomplished by creating the fund at a rate of two percent per year for five years and maintaining these monies in an interest-bearing account.

Policy CM.3.3.11: The City shall identify structures in the coastal high-hazard area, inventory their assessed value, judge the utility of the land for public access, and make recommendations for acquisition when post-disaster opportunities arise.

Objective CM.4.1: The level of service standards adopted elsewhere in this Comprehensive Plan for facilities in the coastal area and the additional standards under this objective shall be applied whenever development orders or permits are requested.

Policy CM.4.1.2: Flood-proofing of potable water lines and sewerage, and the improvement of storm drainage as outlined in the Public Facilities Element, shall be required to facilitate post-disaster redevelopment.

Objective CM.4.2: All public facilities in the coastal area shall be available concurrent with the time they are needed to serve new development, and existing deficiencies remedied.

Policy CM.4.2.2: No public funds shall be expended for infrastructure to facilitate development of remaining undeveloped areas located within designated A-zones. Areas within designated A-zones that have already been platted and partially developed, or planned for imminent development, shall be designated for conservation or low density residential uses so infrastructure investment is minimized. Additionally, all infrastructure required to serve development within designated A-zones (e.g., potable water supply, sanitary sewer) shall be flood-proofed.

Objective CM.5.1: An intergovernmental coordination mechanism shall be established in order to manage coastal resources affecting or affected by governments other than the City.

Policy CM.5.1.1: The City shall review the comprehensive plans of adjacent coastal communities, as well as those of Duval and St. Johns Counties, to determine if coastal resources, particularly the beaches, coastal wetlands, areas of native upland vegetation, and the Pablo Creek estuarine system, are being managed in a consistent manner.

Policy CM.5.1.2: The City shall develop or continue joint planning and management programs with adjacent coastal communities, as well as Duval and St. Johns Counties, for beach renourishment, hurricane evacuation, provision of public access, provision of infrastructure, controlling stormwater, continued upgrading of regional sewage treatment plant (in keeping with the regional 201 facilities plan), and coordinating efforts to protect species with special status.

Policy CM.5.1.3: The City shall coordinate development in the coastal zone with all adjacent communities and coastal counties which may be impacted by such development, and shall forward copies of development proposals to potentially affected governmental jurisdictions for review and comment.

Policy CM.5.1.4: The City shall assist the Consolidated City of Jacksonville in the development of an all-hazards Local Mitigation strategy (LMS) for the entire Duval County area, to be completed by December, 1999. Assistance shall include Jacksonville Beach representation on the LMS advisory committee.

Policy CM.5.1.5: Upon the Consolidated City of Jacksonville's adoption of the LMS, the City will amend the Comprehensive Plan to include the appropriate mitigation initiatives identified in the LMS which will facilitate a reduction in potential damage from the types of natural disasters contemplated in the LMS relative to Jacksonville Beach.

Policy CM.5.1.6: The City will seek to maintain its participation in the LMS process following its initial adoption, through a request for membership in the LMS working committee.

Policy CM.5.2.2: The City shall join with adjacent coastal communities to coordinate local input into future beach renourishment projects performed by the U.S. Army Corps of Engineers.

Policy CM.5.2.3: The City shall assist the Northeast Florida Regional Planning Council in the protection of regionally significant coastal resources.

Policy CM.5.2.4: The City, in cooperation with adjacent coastal communities, shall establish a mechanism to develop a county-wide beach and dune management plan so as to demonstrate a commitment to regional beach resources, and to insure the long-term maintenance of a viable dune system throughout Duval County's beaches.

CONSERVATION ELEMENT

Objective CO.1.3: The City shall protect the natural functions of the 100-year floodplain so that the flood-carrying and flood storage capacity are maintained.

Policy CO.1.3.1: The City shall identify and recommend to the State and the St. Johns River Water Management District floodplains that would warrant acquisition under the Conservation and Recreation Lands (CARL) Program.

CAPITAL IMPROVEMENTS ELEMENT

Objective CI.1.4 The City shall ensure that future development will minimize the exposure of population and property to storm damage by restricting development in coastal high-hazard areas and curtailing public funding of facilities within these areas.

Policy CM.1.4.1 New sanitary sewer facilities shall be flood-proofed, and designed to insure that raw sewage will not leak from the facilities during flooding and storm events.

Policy CM.1.4.2 The hazard mitigation annex of the Local Peacetime Emergency Plan shall be reviewed and updated on a five-year basis, beginning the calendar year which follows the adoption of this planning element. In the revisions, the City Manager shall identify specific actions that could be implemented to reduce exposure to natural hazards.

Policy CM.1.4.3 City-funded public facilities shall not be built in the coastal high-hazard area, unless the facility is for public access or resource restoration.