

## **Executive Summary**

The experiences of the 2004 Hurricane Season epitomize the importance of better integrating hazard mitigation activities into local comprehensive planning. 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 Bay 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 Bay 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**

Bay County's Comprehensive Plan has good integration of hazard mitigation principles and its LMS has adequate data and goals to support comprehensive planning. There are goals, objectives, and policies that support risk reduction from 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 in which Bay County can continue to reduce or eliminate risks from storm surge, flood, and wildfire. These recommendations pertain to the use of vacant lands and/or redevelopment practices. An assessment of whether the LMS goals and objectives are reflected in the comprehensive plan (and vice versa) is provided in the Preliminary Recommendations Matrix in **Section 5**. Based on the land use tabulations, most of the vacant acreage is susceptible to flood and storm surge. 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, 2,513 are susceptible to Category 1 storm surge, 5,111 acres are susceptible to Category 3 storm surge, 12,412 acres are susceptible to 100-year flood, and 4,608 acres are susceptible to wildfire. Of these areas, some 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.

*Storm Surge*

- The County should continue to coordinate with the FDOT and MPO to provide more effective and efficient transportation movement and hurricane evacuation, and identify hurricane evacuation routes on the Future Transportation Map Series.
- The Comprehensive Plan should continue to prohibit new high risk developments (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks in CHHA).
- The County should continue to institute beachfront construction standards to protect coastal resources and minimize potential coastal storm damage, and avoid damaging significant dunes.
- The County should continue to protect natural coastlines by purchasing or leasing large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.
- The County should continue to use the Post-Hazard Mitigation Strategy(LMS) as basis for additional regulations for building practices, flood zone management, retrofitting existing buildings and other measures to reduce coastal storm damage
- The Comprehensive Plan should consider requiring that all new mobile homes (manufactured homes) and recreational vehicle developments within the HVZ be required by county development regulations to pay an impact fee to the county for off-site shelter.
- The County should consider adopting a coastal protection overlay zone recommended by NW FL Coast Resource Management to enhance & protect dune system.
- The Comprehensive Plan should consider instituting a level of service (LOS) standard that is tied to levels of development (e.g., evacuation and sheltering) in the HVZ.
- The Comprehensive Plan should consider requiring developments that increase evacuation clearance time in the CHHA to provide mitigation measures such as emergency van pools.
- The Comprehensive Plan should consider imposing impact fees in HVZ to cover costs to build new shelters, or retrofit schools as shelters, and operating costs, and evacuation activities.
- The County should consider using transfer of development rights from areas within the CHHA to areas outside the CHHA.
- The Comprehensive Plan should consider requiring that new roads, pipelines, and other public infrastructure within high risk areas (e.g., CHHA, 100-year floodplain) shall be built to lessen direct damages from natural hazards.
- The County Comprehensive Plan should consider including a policy that references procedures for special needs evacuees in the 2002 CEMP. The emergency management division will maintain a voluntary register of people who need assistance during an evacuation & ensure that an annually updated shelter list is available and maintained.
- The County should consider prioritizing evacuation route improvements in Capital Improvements schedule and in conjunction with MPO Long-Range Transportation Plan.

- The County should consider requiring that all new public emergency shelters to be built outside the HVZ.
- The County should consider increasing shelter capacity by evaluating all new or school retrofit projects outside of the HVZ and 100-year floodplain for the ability to shelter special needs and general population.

*Flood*

- The County should continue to protect natural flood control features by requiring that developers avoid activities that would destroy wetlands or the natural functions of wetlands, use wetland setbacks as specified, and not allow wetland crossings that connect dry upland areas to interrupt the natural water flow between wetlands.
- The County should continue to adopt regulations to ensure new development doesn't create flood hazard to existing or downstream development.
- The County should continue to use its Local Hazard Mitigation Strategy to reduce the potential for flood damage.
- The County should consider requiring that all structures built in the 100-year floodplain include at least one 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, the City of Jacksonville and the Santa Rosa Island Authority are example communities that have adopted freeboard requirements.
- The Comprehensive Plan should consider protecting against hazard impacts from natural disasters by limiting density & intensity of development, encouraging clustered building placement on uplands, limiting impervious surface, or requiring setbacks and landscaped buffers in the 100-year floodplain.
- The County should consider establishing Interlocal agreements with adjacent local governments that address conservation, use, and protection of unique vegetative communities and water bodies that cross local jurisdictional boundaries.
- The Comprehensive Plan should consider prohibiting a reduction in flood storage capacity or the other natural functions and values of the floodplain in designated floodway areas, restoring or enhancing disturbed or degraded wetlands by removing invasive toxics or replanting native vegetation on county-owned land.
- The Comprehensive Plan should consider protecting natural functions of stormwater management features through land development regulations and proper classification of land uses to complement manmade stormwater management systems, to collectively reduce flood vulnerability.
- The Comprehensive Plan should consider designating wetlands, floodplains for preservation through FLUM or overlay zoning district, and ensure adequate open space for protected natural resource lands, environmentally sensitive lands, and drainage and stormwater retention areas in the 100-year floodplain.
- The County should consider including a policy for reducing future losses through transfers of development rights from areas within the 100-year floodplain to areas outside the 100-year floodplain.
- The County should consider including a policy to not approve variances to required flood elevations.

- The County should consider establishing an impact fee and/or other equitable user-oriented revenue sources for the construction of drainage facilities, either county-wide or in districts of high flooding potential.

#### *Wildfire*

- 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.

#### *General*

- 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.
- 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 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 storm surge, 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, and promote strategies to support comprehensive planning.

- Include data layers on hazard maps to illustrate population (i.e., density) or property (i.e., value) exposure.
- Include maps for each hazard data layer to illustrate which future land use categories are susceptible to each hazard.

- Include a quantitative risk assessment for existing and future development (i.e., loss estimates) or specific critical facilities.
- Expand the Guiding Principles section to include actual policies.
- Include loss estimates for future land use.
- Use complementary, not contradictory data in the plans such as the LMS, CEMP, and Comprehensive Plan.
- Include a goal to maintain communication between the LMS steering committee and county and municipal departments to coordinate intra- and interdepartmental mitigation activities.
- Include a goal to review and compare LMS with plans that have mitigation provisions (e.g., Comp Plan).
- Update the LMS on a regular basis, and include LMS projects on the Capital Improvement Schedule, as appropriate.
- Include goal to support evacuation planning and evacuation route improvements.
- Examine topographic data to ensure that the best available data is being used to run the SLOSH model to determine which areas need to evacuate.
- Include goal to support safe shelter capabilities.
- Include goal to protect natural resources (e.g., 100 year floodplain, dunes, etc.).
- Include goal to purchase undeveloped lands at high risk to natural hazards (e.g., flood), with considerations of private property rights and compensation requirements.
- Include a goal to support public education on natural hazards mitigation.

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## 1. County Overview

### Geography and Jurisdictions

Bay County is located along the Gulf of Mexico in the Panhandle Region of Northwest Florida. It covers a total of 1,033 square miles, of which approximately 764 square miles are land and 270 square miles are water.

There are eight incorporated municipalities within Bay County, including the cities of Callaway, Lynn Haven, Mexico Beach, Panama City, Panama City Beach, Parker and Springfield as well as the Town of Cedar Grove. The City of Panama City 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 Bay County and the percent change from the 2000 U.S. Census are presented in **Table 1.1**. While the majority of these residents live in incorporated jurisdictions, approximately 40% live in the county's unincorporated areas. Bay County has experienced significant population growth in recent years, a trend that is expected to continue. Between 1990 and 2000, Walton County had a growth rate of 16.7%, which is slightly less than the statewide average of 23.5% for the same time period.

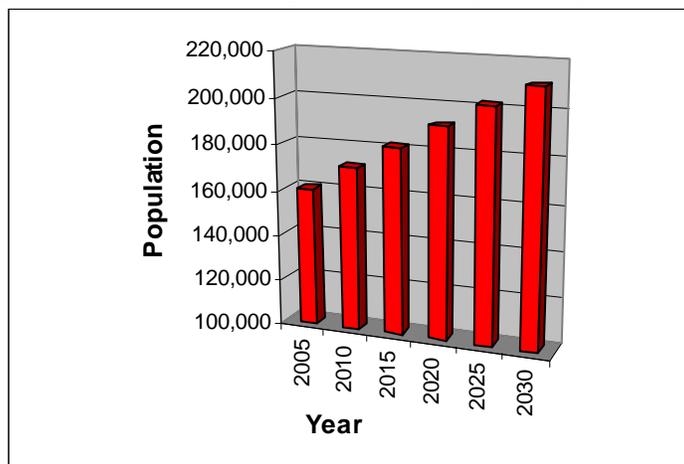
**Table 1.1 Population Estimates by Jurisdiction, 2003**

Jurisdiction	Population (Census 2000)	Population (Estimate 2004)	Percent Change 2000-2004	Percent of Total Population (2004)
Unincorporated	57,628	62,762	8.91%	39.61%
Callaway	14,233	14,808	4.04%	9.35%
Cedar Grove	5,367	5,882	9.60%	3.71%
Lynn Haven	12,451	14,776	18.67%	9.33%
Mexico Beach	1,017	1,107	8.85%	0.70%
Panama City	36,417	37,207	2.17%	23.48%
Panama City Beach	7,671	8,322	8.49%	5.25%
Parker	4,623	4,648	0.54%	2.93%
Springfield	8,810	8,925	1.31%	5.63%
<b>Countywide Total</b>	<b>148,217</b>	<b>158,437</b>	<b>6.90%</b>	<b>100.00%</b>

Source: Bureau of Economic and Business Research

According to BEBR (2004), Bay County's population is projected to grow steadily and is to reach an estimated 210,700 by the year 2030, increasing the average population density of 207 to 276 persons per square mile. **Figure 1.1** illustrates medium growth population projections for Walton County based on 2004 calculations.

Figure 1.1 Population Projections for Bay County, 2005–2030



Source: Bureau of Economic and Business Research

Of particular concern within Bay 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 148,217 persons residing in Bay County 13.4% are listed as 65 years old or over; 19.7% are listed as having a disability; 13% are listed as below poverty; and 6.4% live in a home where the primary language is other than English.

## 2. Hazard Vulnerability

### Hazards Identification

The highest risk hazards for Bay County as identified per the County's Local Mitigation Strategy (LMS) are high winds, storm surge, flooding, wildfire and hazardous materials events. According to the County LMS sinkholes are not identified as a potential hazard risk.

### Hazards Analysis

The following analysis examines three major hazard types: surge from tropical cyclones, flood, and wildfire. All of the information in this section was obtained through the online Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS). MEMPHIS was designed to provide a variety of hazard related data in support of the Florida Local Mitigation Strategy DMA2K revision project, and was created by Kinetic Analysis Corporation under contract with the Florida Department of Community Affairs (DCA). Estimated exposure values were determined using the Category 3 Maxima Scenario for storm surge; FEMA's designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH) for flood; and medium-to-high risk zones from MEMPHIS for wildfire (Level 5 through Level 9). Storm surge exposure data is a subset of flood exposure; therefore, the storm surge results are also included in the flood results. For more details on a particular hazard or an explanation of the MEMPHIS methodology, consult the MEMPHIS Web site (<http://lmsmaps.methaz.org/lmsmaps/index.html>).

#### *Existing Population Exposure*

**Table 2.1** presents the population currently exposed to each hazard throughout Bay County. Of the 148,217 (U.S. Census 2000) people that reside in Bay County, over 19% are exposed to storm surge, over 20% are exposed to 100-year flooding, and 11% are exposed to wildfire. Of the 30,521 people exposed to flood, 35.7% are disabled and 11.3% are over age 65.

**Table 2.1 Estimated Number of Persons Exposed to Hazards**

Segment of Population	Storm Surge	Flood	Wildfire
<b>Total (all persons)</b>	<b>28,348</b>	<b>30,521</b>	<b>16,376</b>
Minority	2,720	2,366	2,177
Over 65	4,254	3,440	1,459
Disabled	8,954	10,889	5,245
Poverty	3,152	3,149	2,059
Language Isolated	14	82	132
Single Parent	1,386	1,638	828

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 Bay 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 Bay 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
Bay	14.5	17.5	18.5	23.75	23.75
Escambia	16.75	20	20	23.75	23.75
Okaloosa	13.5	19.25	19.25	21.75	21.75
Santa Rosa	8.5	9.25	9.25	10.5	10.5
Walton	11.75	21	21	21.5	21.5

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 14.5 and 23.75 hours to safely evacuate Bay 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, Bay County currently has an existing shelter deficit. According to Florida's Statewide Emergency Shelter Plan, Bay County has an existing shelter capacity of 7,515 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is

14,959 people, leaving an existing shelter deficit of 7,445. In 2009, the projected shelter demand is 16,131, leaving an anticipated shelter deficit of 8,617.

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. Bay 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 Bay County by occupancy type that are exposed to each of the 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 Bay 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 Hazards**

<b>Occupancy Type</b>	<b>Storm Surge*</b>	<b>Flood</b>	<b>Wildfire</b>
Single Family	11,138	17,516	5,527
Mobile Home	1,325	14,399	2,663
Multi-Family	8,299	7,840	1,283
Commercial	1,950	3,563	709
Agriculture	112	1,765	931
Gov. / Institutional	326	413	244
<b>Total</b>	<b>23,150</b>	<b>45,496</b>	<b>11,357</b>

Source: Mapping for Emergency Management, Parallel Hazard Information System

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

There are 56,853 structures exposed to at least on of the three hazards, most of which are single family homes. Of these structures, 80% are exposed to flood. Over 45,000 structures are located in the 100-year floodplain, of which 50% are exposed to storm surge induced flooding. Over 48% of the structures exposed to surge are single family homes. Typically, structures at risk from surge are high-value real estate due to their proximity to the ocean or tidally influenced water bodies such as the West Bay, East Bay, St. Andrews Bay, and North Bay. 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.” As of March 2005, there are 83 repetitive loss properties in unincorporated Bay County.

It is likely that the exposure of Bay County's existing population and structures and estimated loss values will increase over time due to anticipated appreciation, unless hazard mitigation measures are applied through local comprehensive planning and project implementation.

### **Analysis of Current and Future Vulnerability Based on Land Use**

The previous hazards analysis section discussed population and existing structures at risk from surge, flooding, wildfire and sinkholes according to MEMPHIS estimates. This section is used to demonstrate the County's vulnerabilities to these hazards in both tabular format and spatially, in relation to existing and future land uses. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004 for tabulation of the total amount of acres and percentage of land in the identified hazards areas, sorted by their existing land use category according for the unincorporated areas. The total amount of acres and percentage of land in the identified hazards areas was tabulated and sorted by their future land use category according to the local Future Land Use Map (FLUM), as well as the amount of these lands listed as vacant according to existing land use. Bay County future land use data was acquired in February 2001 and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas are based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the Bay County future land use map dated February 2001. 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 in the coastal communities of Panama City Beach, Mexico Beach, Lynn Haven, and Callaway, as well as along the Gulf of Mexico and the Intracoastal Waterway, and regions around West Bay, North Bay, St. Andrews Bay, and East Bay. The total amount of land in the CHZ is 37,231.3 acres. As shown in **Table 2.4**, 55.4% are in agricultural use; 27.4% are used for government, institutional, hospitals or education purposes; 6.8% are currently undeveloped; and 5.2% are parks, conservation areas and golf courses. **Table 2.5** shows that of the 2,512.6 undeveloped acres, 35.7% are designated as conservation lands. The County is taking favorable action in preserving this land to limit population in the CHHA, further eliminating any additional evacuation or shelter demands.

In **Attachment B**, two maps present the existing and future land uses within the Hurricane Vulnerability Zone (HVZ), which represents Category 1 to 3 Hurricane Evacuation Zones. The HVZ is predominantly located in the coastal communities of Panama City Beach, Mexico Beach, Lynn Haven, Parker, and Callaway, as well as along the Gulf of Mexico and the Intracoastal Waterway, and regions around West Bay, North Bay, St. Andrews Bay, and East Bay. The total amount of land in the HVZ is 55,962.1 acres. As shown in **Table 2.4**, 55.2% are in agricultural use; 24.2% are used for government, institutional, hospitals or education purposes; 9.1% are currently undeveloped; and 4.4% are residential single family homes. **Table 2.5** shows that of the 5,111.1 undeveloped acres, 38.4% are designated as conservation lands. The County is taking positive action in designating a large portion of the acreage as in preserving this land to reduce vulnerability and limiting the amount of people who would need to evacuate or be sheltered from a hurricane.

In **Attachment C**, two maps present the existing and future land uses within a 100-year flood zone. There are flood-prone areas scattered across the County. However, a majority of the large

swaths surround the many bays, particularly West Bay. The total amount of land in the special flood hazard area is 119,035.3 acres. As shown in **Table 2.4**, 75.2% are in agricultural use; 10.4% are currently undeveloped; 6.1% are used for government, institutional, hospitals or education purposes; and 3.8% are parks, conservation areas and golf courses. **Table 2.5** shows that of the 12,411.6 undeveloped acres, 25.4% are designated for agricultural use. Since a large portion of the acreage is designated agricultural, the County has the opportunity to maintain this land use and low density development to prevent increased vulnerability to flooding. Although stormwater management systems are designed to eliminate flooding, these systems can fail during a storm if debris blocks drainage channels or culverts wash out.

In **Attachment D**, two maps present the existing and future land uses within wildfire susceptible areas. These areas are scattered across the county, particularly in Lynn Haven and Panama City. The total amount of land in the wildfire susceptible areas is 12,482.5 acres. As shown in **Table 2.4**, 40.2% are in agricultural use; 36.9% are undeveloped lands; 14.9% are residential multi-family homes; and 3.4% are residential single family homes. **Table 2.5** shows that of the 4,608.2 undeveloped acres, 81.6% are used for agriculture. The County should continue to take measures to reduce wildfire risk within the urban/rural interface.

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

Existing Land Use Category		Coastal Hazards Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas
Agriculture	Acres	20,621.5	30,900.8	89,485.9	5,017.3
	%	55.4	55.2	75.2	40.2
Attractions / Stadiums / Lodging	Acres	28.1	101.7	46.4	2.7
	%	0.1	0.2	0.0	0.0
Places of Worship	Acres	6.2	31.7	25.6	1.6
	%	0.0	0.1	0.0	0.0
Commercial	Acres	68.0	240.3	211.3	110.8
	%	0.2	0.4	0.2	0.9
Government / Institutional / Hospitals / Education	Acres	10,216.2	13,514.7	7,284.5	272.6
	%	27.4	24.2	6.1	2.2
Industrial	Acres	126.0	388.6	136.0	12.0
	%	0.3	0.7	0.1	0.1
Parks / Conservation Areas / Golf Courses	Acres	1,943.3	1,966.2	4,569.4	156.1
	%	5.2	3.5	3.8	1.3
Residential Group Quarters / Nursing Home	Acres	0.0	0.0	30.5	0.0
	%	0.0	0.0	0.0	0.0
Residential Mobile Home / Commercial Parking Lot	Acres	51.7	112.8	29.7	2.2
	%	0.1	0.2	0.0	0.0
Residential - Multi-Family	Acres	197.3	547.5	1,489.6	1,863.0
	%	0.5	1.0	1.3	14.9
Residential - Single-Family	Acres	1,130.0	2,472.5	3,106.8	422.9
	%	3.0	4.4	2.6	3.4
Transportation / Communication / Rights-of-Way	Acres	1.3	35.2	23.9	4.2
	%	0.0	0.1	0.0	0.0
Utility Plants & Lines / Solid Waste Disposal	Acres	329.0	539.0	184.1	8.9
	%	0.9	1.0	0.2	0.1
Vacant	Acres	2,512.6	5,111.1	12,411.6	4,608.2
	%	6.8	9.1	10.4	36.9
<b>Total</b>	<b>Acres</b>	<b>37,231.3</b>	<b>55,962.1</b>	<b>119,035.3</b>	<b>12,482.5</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Department of Community Affairs

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

Future Land Use Category		Coastal Hazards Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Agriculture	Acres	522.8	122.8	925.2	237.6	13,299.1	3,151.8	7,319.7	3,760.4
	%	1.4	4.9	1.7	4.7	11.2	25.4	58.6	81.6
Agriculture/ Timberland	Acres	3,706.0	119.9	8,871.7	441.4	51,046.5	1,706.3	2,761.7	188.6
	%	10.0	4.8	15.9	8.6	42.9	13.8	22.1	4.1
Conservation	Acres	17,957.5	897.7	24,503.6	1,960.2	34,708.0	2,129.7	785.6	23.0
	%	48.2	35.7	43.8	38.4	29.2	17.2	6.3	0.5
Conservation/ Preservation	Acres	147.8	146.0	101.9	100.1	1,866.4	1,845.4	14.5	14.5
	%	0.4	5.8	0.2	2.0	1.6	14.9	0.1	0.3
Conservation/ Recreation	Acres	1,392.2	0.2	844.5	0.7	2,796.2	24.8	0.0	0.0
	%	3.7	0.0	1.5	0.0	2.4	0.2	0.0	0.0
General Commercial	Acres	38.1	8.3	448.1	178.3	357.8	138.0	62.4	40.6
	%	0.1	0.3	0.8	3.5	0.3	1.1	0.5	0.9
Industrial	Acres	657.2	230.7	1,089.7	235.0	415.8	78.9	11.6	0.7
	%	1.8	9.2	2.0	4.6	0.4	0.6	0.1	0.0
Neighborhood Commercial	Acres	1.3	0.0	74.7	34.3	12.9	6.9	0.0	0.0
	%	0.0	0.0	0.1	0.7	0.0	0.1	0.0	0.0
Planned Unit Development	Acres	0.0	0.0	0.0	0.0	43.7	43.7	0.0	0.0
	%	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
Public/ Institutional	Acres	10,504.5	235.9	13,600.5	228.1	7,388.8	321.2	212.9	7.1
	%	28.2	9.4	24.3	4.5	6.2	2.6	1.7	0.2
Recreation	Acres	189.3	11.4	201.1	14.7	100.8	58.0	93.4	0.0
	%	0.5	0.5	0.4	0.3	0.1	0.5	0.8	0.0
Residential	Acres	1,763.6	566.7	4,772.9	1,443.5	6,135.5	2,372.6	429.4	180.8
	%	4.7	22.6	8.5	28.2	5.2	19.1	3.4	3.9
Rural Residential	Acres	0.0	0.0	0.0	0.0	609.5	416.4	791.2	392.6
	%	0.0	0.0	0.0	0.0	0.5	3.4	6.3	8.5
Seasonal/ Resort	Acres	351.1	173.0	528.3	237.2	254.4	117.9	0.2	0.0
	%	0.9	6.9	0.9	4.6	0.2	1.0	0.0	0.0
<b>Total</b>	<b>Acres</b>	<b>37,231.3</b>	<b>2,512.6</b>	<b>55,962.1</b>	<b>5,111.1</b>	<b>119,035.3</b>	<b>12,411.6</b>	<b>12,482.5</b>	<b>4,608.2</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Department of Community Affairs

The amount of total land and existing vacant land in identified hazard areas was also tabulated for each of Bay County's eight 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.

Panama City Beach has the most vacant acres in the CHZ and HVZ, and has the largest proportion of surge prone acres out of its vacant land area. Panama City has the most acres in the flood zone, but Parker has the largest proportion of flood zone acres out of its vacant land area. The City of Lynn Haven has the most acres in the wildfire susceptible areas, but Panama City has the largest proportion of wildfire 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 Bay 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**

Future Land Use Category		Coastal Hazards Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Callaway	Acres	460.1	138.9	966.6	209.3	589.2	287.4	22.3	2.7
	%	100.0	30.2	100.0	21.7	100.0	48.8	100.0	12.0
Cedar Grove	Acres	2.2	0.2	0.0	0.0	1,843.0	485.8	149.6	21.8
	%	100.0	10.0	0.0	0.0	100.0	26.4	100.0	14.6
Lynn Haven	Acres	614.4	105.2	834.6	107.0	1,069.2	389.7	173.2	47.7
	%	100.0	17.1	100.0	12.8	100.0	36.4	100.0	27.5
Mexico Beach	Acres	149.4	50.6	630.9	178.8	209.3	66.0	0.0	0.0
	%	100.0	33.9	100.0	28.3	100.0	31.5	0.0	0.0
Panama City	Acres	373.2	47.5	2,650.9	338.0	2,894.5	785.2	103.4	38.8
	%	100.0	12.7	100.0	12.7	100.0	27.1	100.0	37.5
Panama City Beach	Acres	391.5	174.6	1,006.1	370.5	835.5	368.9	69.6	14.9
	%	100.0	44.6	100.0	36.8	100.0	44.2	100.0	21.5
Parker	Acres	20.3	5.3	437.4	86.3	174.3	97.4	0.9	0.0
	%	100.0	26.4	100.0	19.7	100.0	55.9	100.0	0.0
Springfield	Acres	0.0	0.0	88.5	24.3	407.1	146.2	21.4	0.0
	%	0.0	0.0	100.0	27.5	100.0	35.9	100.0	0.0
<b>Total Municipal Acres</b>	<b>Acres</b>	<b>2,011.1</b>	<b>522.3</b>	<b>6,615.0</b>	<b>1,314.2</b>	<b>8,022.1</b>	<b>2,626.6</b>	<b>540.4</b>	<b>126.0</b>
	<b>%</b>	<b>100.0</b>	<b>26.0</b>	<b>100.0</b>	<b>19.9</b>	<b>100.0</b>	<b>32.7</b>	<b>100.0</b>	<b>23.3</b>

Source: Department of Community Affairs

### 3. Existing Mitigation Measures

#### Local Mitigation Strategy (LMS)

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 Bay County LMS (adopted September 21, 2004) 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 Bay County to determine if the capital improvement projects are included in the LMS hazard mitigation project list.

*Hazard Analysis and Vulnerability Assessment (Section 6, Summary of Hazards and Vulnerabilities).*

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

Strengths:

- Includes a qualitative risk assessment for each hazard based on a variety of risk factors and evaluation criteria.

- Includes a quantitative scoring system that assigns numbers and values to facility, system or neighborhood profiles (by jurisdiction) that determine the total value of structures at risk to specific hazards along with relative risk rankings.
- Includes a general discussion of land use trends and potential vulnerability based on current land uses and the potential for new development.

Weaknesses:

- Does not include data for population exposure to hazards.
- Does not provide information about demographic, income, and special needs population.
- Does not include a clear description of geographic areas exposed to each of the hazards.
- Does not include maps for each of the identified hazards.
- Does not include maps for critical facilities, although a listing of critical facilities is incorporated by reference.
- Does not include maps for repetitive loss areas, although a listing of individual repetitive loss properties is included.
- Does not include 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 in relation to the hazard.

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 Bay County LMS does not include a Guiding Principles section for the county nor each municipality. 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. It is recommended that Jackson County's next LMS update include a Guiding Principles section.

*LMS Goals and Objectives*

The Bay 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 E**. An assessment of whether the LMS goals and objectives are reflected in the comprehensive plan (and vice versa) is provided in **Section 5** as part of the preliminary recommendations. Final recommendations will result from a collaborative process between DCA, Bay County, and PBS&J. The following is a summary of the LMS goals and objectives that support comprehensive plan GOPs.

Goal 1 establishes that local government will have the capability to develop, implement and maintain effective mitigation programs. Objectives include that data and information needed for defining hazards, risk areas and vulnerabilities in the community will be obtained, that the capability to effectively utilize available data and information related to mitigation planning and program development will be available, and that the effectiveness of mitigation initiatives implemented in the community will be measured and documented.

Goal 6 states that the policies and regulations of local government will support effective hazard mitigation programming throughout the community. Objectives include that local government will ensure that hazard mitigation needs and programs are given appropriate emphasis in resource

allocation and decision-making, that local government will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community, and that local jurisdictions will participate fully in the National Flood Insurance Program and the associated Community Rating System.

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

### **Comprehensive Emergency Operations Plan (CEMP)**

The Bay County CEMP references the LMS throughout Annex II: Mitigation Functions. The CEMP notes that mitigation activities are ongoing regardless of the occurrence of a disaster, and describes the coordination of activities in not only the post-disaster environment but also those activities that are necessary to promote a successful mitigation program during normal day-to-day local operations. The Chief of the Department of Emergency Services is designated as the lead position responsible for coordinating hazard mitigation activities within the county for both pre-disaster and post-disaster scenarios, with support coming from each municipality.

The CEMP states that the concept of operations to be used to administer mitigation activities are found in the Bay County LMS, and that approved Hazard Mitigation Grant Program (HMGP) and Community Development Block Grant (CDBG) funding will be administered in the same manner consistent with policies outlined within the LMS. Under the standard operating procedures, each representative member of the Bay County LMS is assigned responsibility for the collection of damage information occurring within their individual jurisdiction and prioritizing that information onto their project list. The LMS Team will then coordinate with those impacted departments, municipalities and agencies on acquiring additional information and assisting with a determination if necessary to amend the applicable mitigation priority list(s) in the LMS.

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

### **Post-Disaster Redevelopment Plan (PDRP)**

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

### **National Flood Insurance Program/Community Rating System**

Bay County and all municipalities participate in the National Flood Insurance Program (NFIP). Bay County participates in the NFIP Community Rating System (CRS) with a rating as a class 7, and the following four municipalities participate in the CRS with ratings as follows: Callaway (9), Lynn Haven (9), Panama City (7), and Parker (8). Cedar Grove, Mexico Beach, Panama City Beach and Springfield do not currently participate in the CRS.

## **4. Comprehensive Plan Review**

### **Purpose and Intent**

The Bay County Comprehensive Plan (Adopted December 14, 1999) was reviewed for the purpose of developing this profile. This review was undertaken in order to assess what steps Bay County has taken to integrate hazard mitigation initiatives from their Local Mitigation Strategy (LMS) and hazard mitigation initiatives in general, into the local planning process. Each Element of the Plan was evaluated to establish 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 of storm surge, flooding, and wildfire hazards. A preliminary list of objectives and policies currently contained in the Plan that pertain to hazard mitigation and any policies related to these hazards is found in **Attachment F**. The following is a discussion of the extent to which the Plan appears to address each of the hazards. Recent policy amendments may not have been available for review, or proposed policies might be in the process of creation, which address these hazards. As a result, this assessment is considered preliminary and subject to input from the local government.

## **Summary of Findings**

The highest risk hazards for Bay County as identified per the County's Local Mitigation Strategy (LMS) are high winds, storm surge, flooding, wildfire and hazardous materials events. Sinkholes are not identified as a potential hazard risk. Therefore, sinkhole hazard is not addressed in this summary. The Comprehensive Plan indicates support for Local Mitigation Strategy policies, and for policies to direct growth within the CHHA. The Coastal Management Element includes requirements for the Land Development Code to include regulations to prohibit development from compounding hazards and their risks. Policies also discuss County hurricane evacuation clearance times, and provisions to assist in meeting those clearance time goals.

Requirements are in place in the Plan to develop a Post-Hazard Mitigation Strategy and PDRP. The intent of the PDRP will be to minimize threats to life and property caused by coastal storms. The PDRP will be used as the basis to govern building practices, flood zone management, retrofit existing buildings and support other coastal protection measures. In addition, policies state that the County will coordinate with the State Division of Emergency Management (DEM) as specified in Section 252.36, F.S. in order to implement the State CEMP.

## **Flooding**

Flooding is addressed from two vantage points, the protection of natural drainage features, and protection of lives and properties through development standards and stormwater abatement. The Plan addresses implementation and maintenance of existing programs from other agencies, such as the NFIP program. There is also currently a Flood Damage Prevention Ordinance in place, which is implemented by the County. The County will use its Flood Damage Prevention Ordinance to ensure that structures built in flood zones are properly elevated and constructed so as to reduce the risk of flood damage.

Policies in the Coastal Management Element aim at reducing the potential risk to lives and property from flooding through hazard mitigation strategies and special building construction practices. The Conservation Element states that the County will use its LMS to reduce the potential for future flood damage. The Conservation Element also addresses coastal dune and wetland protection, and suggests enforcement protection for these areas be included in the Land Development regulations.

## **Storm Surge and Evacuation**

The area designated as the CHHA is known as land area lying within the Category 1 Hurricane Evacuation Zone. One Comprehensive Plan goal is aimed at improving coordination between County and State agencies, relative to maintaining or improving hurricane evacuation. The Plan also states that the County will maintain the roadway clearance time established in the Northwest Florida Hurricane Evacuation Study.

Hurricane evacuation routes are identified and shown on the Future Transportation Map Series. Plan policies include provisions for the County to assist and support efforts by FDOT and the MPO to improve major State highway access into Bay County. A primary purpose of the access

improvements will be to provide more effective and efficient transportation movement during hurricane evacuation.

### **Sheltering**

Similar to most of Florida's coastal counties, Bay County currently has an existing shelter deficit. According to Florida's Statewide Emergency Shelter Plan, Bay County has an existing shelter capacity of 7,515 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 14,959 people, leaving an existing shelter deficit of 7,445. In 2009, the projected shelter demand is 16,131, leaving an anticipated shelter deficit of 8,617. 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 areas.

### **Wildfire**

No policies pertaining to wildfires mitigation and management practices were found in the Comprehensive Plan.

## **5. Recommendations**

For the Local Mitigation Strategy (LMS) to be effective in the decision-making process of growth management, its objectives and policies must be integrated into the Comprehensive Plan. The Plan is the legal basis for all local land use decisions made. It is the document that outlines the fundamental regulatory provisions for all development, and should therefore state the broad measures of hazard mitigation to be implemented by other regulations such as ordinances, neighborhood plans, land use codes and development regulations.

The following Preliminary Recommendations Matrix provides an overview of hazard mitigation strategies found within the County's LMS, policies found within the Bay County Comprehensive Plan, and suggestions to strengthen such plans.

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

**BAY COUNTY PROFILE**

Strategies & Integration Topics: Are these integrated in the LMS and Local Comprehensive Plan			Current LMS Information, Goals & Objectives	Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Further Integration into the LMS	Basis For Suggested Options
LMS	Comp		Key G = Goal O = objective P = Policy MA = Mitigation Action				
<b>Strategy - Collaboration, coordination, and education</b>							
Is there information sharing and/or involvement in plan development between planners and emergency managers?	No	No	None found during this review.	None found during this review.	Create an objective or policy to coordinate with LMS committee in updating the LMS to incorporate planning expertise, land use & development regulations. Require a planner to be on the LMS Committee	Include a goal/objective to maintain communication with LMS steering committee & key county/municipal departments to coordinate intra- and inter-departmental mitigation activities among jurisdictions and the public.	Clear directives for planning and emergency management staff to work together will ensure that the plans address all aspects of hazards. Best management practices from Protecting Florida's Communities and Okaloosa LMS and Comp Plan
Do the Comp Plan, LMS, CEMP, and other local, regional, state and federal plans cross-reference each other and include consistent data on hazardous locations?	Yes	Yes		<b>CME O 7.9</b> By 2000, prepare a Post-Hazard Mitigation Strategy (LMS)	New development, redevelopment, zoning changes & land use plan amendments shall be consistent & coordinated with LMS & NW FL Hurricane Evacuation Re-Study	Include goal/objective to review & compare LMS with plans that have mitigation provisions (e.g., comp plan)	Okaloosa County Comp Plan FLUE O 7 & LMS
				<b>CME P 7.9.1</b> Use the Post-Hazard Mitigation Strategy (LMS) as basis for additional regulations for building practices, flood zone management, retrofitting existing buildings & other measures to reduce coastal storm damage			
				<b>CE P 6.13.2</b> County will use its LMS to reduce the potential for flood damage	Review and coordinate Stormwater Master Plan with LMS Guiding Principles		Okaloosa County Comp Plan SE P 1.2
				<b>CME P 7.16.1</b> County will coordinate with FDEM toward implementation of the state comprehensive emergency management plan	Review and coordinate existing resource protection plans with LMS. Coordinate with government & regional agencies, & private groups to implement the NW FL Resource Management Plan for beach, dune & shoreline protection, & floodplain management.	Coordinate with adjacent governments, state & regional agencies, etc. to integrate mitigation.	Okaloosa County Comp Plan CME P 1.2.7 Okaloosa County Comp Plan CE 2.9
		<b>G 6 O</b> Local jurisdictions will participate fully in the NFIP & CRS	<b>SME O 5E.11</b> Continue eligibility & participate in NFIP				

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

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	LMS	Comp	Key G = Goal O = objective P = Policy MA = Mitigation Action				
Do the Comp Plan, LMS, CEMP, and other local and regional plans cross-reference each other and include consistent data on hazardous locations? (continued)	LMS & Comp data needs to be compared (Local Action).		<b>G 1 O</b> Data & information needed for defining hazards, risk areas & vulnerabilities in the community will be obtained	Data and Analysis section not reviewed for this project.	Include map of identified hazard locations (e.g., SLOSH, 100-year floodplain) overlain with land uses in the FLU series. (Note: counties to determine other hazard zone boundaries as appropriate)	Include existing and future land uses on each hazard map, for those hazards identified as those that county is at most risk.	Consistent use of data will enhance/strengthen hazard mitigation planning. Maps are useful to analyze relationship between land uses in hazard areas for mitigation planning or changes to future land uses.
					Cross reference the LMS source data that is used in plan updates to ensure that data is consistent and not conflicting.		
Are hazard mitigation projects addressed in the 5-year schedule of Capital Improvement Projects?	Local Action	Local Action	No specific projects are listed in the version of the LMS that was reviewed for this profile.	CME O 7.7 Limit public expenditures that subsidize private sector development in Coastal High Hazard Areas (CHHA)	During the annual review of the five-year schedule of capital improvements the LMS project list shall be considered. Add a policy similar to CME O 7.7 as a CIE policy as well. Establish criteria within the capital budgeting process to evaluate capital improvement projects that consider criteria the elimination of future public hazards, consistent with LMS Guiding Principles	Update the LMS projects on a regular basis, to incorporate into the CIE, given that the project is financially feasible.	FEMA funds are available for hazard mitigation. Establish criteria to consider public hazard elimination when evaluating capital improvement projects. [9J-5.016(3)(c)1a.]
Are there measures to educate residents, homeowner/property associations, and the business community of ways they can mitigate against hazards?	Yes	No	<b>G 10</b> All members of the community will understand the hazards threatening local areas & the techniques to minimize vulnerability to those standards	None found during this review	Coordinate with the LMS committee to educate public about mitigation techniques and benefits associated with property protection via floodproofing or elevating existing structures in SFHA (via the CRS outreach initiatives), Firewise initiative, retrofitting against wind hazards, landscaping to reduce wind-borne debris, & increasing flood water retention; and preparedness measures such as evacuation and sheltering.	The 2004 LMS adequately addresses this strategy through Goal 10.	While regulation for new development can reduce or eliminate risk to hazards, one of the best ways to mitigate existing risk is through education.

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

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Strategies & Integration Topics: Are these integrated in the LMS and Local Comprehensive Plan			Current LMS Information, Goals & Objectives	Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Further Integration into the LMS	Basis For Suggested Options
LMS	Comp		Key G = Goal O = objective P = Policy MA = Mitigation Action				
<b>Strategy - Get out of the way: provide evacuation and sheltering services</b>							
Are there measures to provide adequate evacuation clearance time to support current population and population growth?	No	Yes	None found during this review.	<p><b>TE O 4.11</b> Assist &amp; support efforts by FDOT &amp; MPO toward improving major State highway access into Bay County to provide more effective &amp; efficient transportation movement &amp; hurricane evacuation</p>	<p>Prioritize evacuation route improvements in Capital Improvements schedule &amp; in conjunction with MPO Long-Range Transportation Plan.</p>	<p>Include goal/objective to ensure roads are designed &amp; engineered for the amount of wind, surge, flooding and debris that can be expected.</p>	<p>Best management practices from <i>Protecting Florida's Communities</i></p>
					<p>Provide adequate emergency evacuation routes &amp; highway capacity on evacuation routes and by mitigation measures adopted in LMS.</p>		<p>Okaloosa County Comp Plan TE P 1.5 &amp; LMS</p>
					<p>Developments that increase evacuation clearance time in the CHHA are required to provide mitigation measures such as emergency van pools</p>	<p>Include goal/objective to support interagency involvement in evacuation planning.</p>	<p>Okaloosa County Comp Plan CME P 2.5.3</p>
				<p><b>TE P 4.11.1</b> Hurricane evacuation routes are identified &amp; shown on Future Transportation Map Series</p>		<p>Examine topographic data used to run the SLOSH model to determine if better data (i.e., LIDAR), as available, to use to identify evacuation zones.</p>	<p>Science &amp; technology can provide more accurate data, &amp; enhance analysis.</p>
				<p><b>CME O 7.16</b> County shall maintain a 24 hour roadway clearance time for evacuations for category 4 &amp; 5 storms</p>			<p>Okaloosa County Comp Plan CME P 2.5.2</p>
				<p><b>CME P 7.16.2</b> Improve coordination between county &amp; state agencies to maintain or improve hurricane evacuation</p>	<p>Adopt CEMP that's consistent with updated NWFL Hurricane Evacuation Re-Study</p>		<p>Okaloosa County Comp Plan CME 2.5.1</p>
					<p>Institute a level of service (LOS) standard that is tied to levels of development and/or institute an impact fee in the CHHA or HVZ to help pay for public expenses of implementing evacuation orders.</p>		<p>Best management practices from <i>Protecting Florida's Communities</i></p>

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

**BAY COUNTY PROFILE**

Strategies & Integration Topics: Are these integrated in the LMS and Local Comprehensive Plan			Current LMS Information, Goals & Objectives	Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Father Integration into the LMS	Basis For Suggested Options	
LMS	Comp	Key G = Goal O = objective P = Policy MA = Mitigation Action						
Are there measures to provide adequate shelter space to meet population growth and special needs?	Yes	No	G 3 O Designated evacuation shelters will be retrofitted or relocated to ensure operability during & after disasters.	None found during this review.	Require new developments that increase evacuation clearance time in the CHHA to provide mitigation measures such as emergency van pools or emergency shelters outside of the HVZ where appropriate.	Update social vulnerability results on a regular basis in the LMS and existing shelter capacity to substantiate mitigation action pertaining to sheltering provisions.	There is an existing shelter deficit of 7,445 and population growth is imminent.	
					Require new public emergency shelters to be built outside the HVZ .	Include goal/objective to ensure adequate and safe public shelters are available in all locations in the County to prevent or reduce post-disaster homelessness, including adequate electrical supplies for cooking and to maintain sanitary conditions.		Okaloosa County LMS BMP from <i>Protecting Florida's Communities</i>
					Institute impact fees in HVZ to cover costs to build new shelters, or retrofit schools as shelters, & operating costs.			
					Institute a LOS standard or ratio for population in an HVZ to shelter capacity			
					To increase shelter capacity, all new or school retrofit projects outside of the HVZ and 100-year floodplain shall be evaluated for sheltering of special needs and general population.	Include FL Shelter demand and capacity for current and future population.		
					All new mobile homes (manufactured homes) and recreational vehicle developments within the HVZ shall be required by county development regulations to pay an impact fee to the county for off-site shelter.			Escambia County Comp Plan CME P 11.A.7.8
					Reference procedures for special needs evacuees in 2002 CEMP with regard to evacuation and shelter plans.			Escambia County Comp Plan CME P 11.A.7.3

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<b>Strategy - Make the environment less hazardous: Protect and enhance natural protective features</b>								
Are there measures to protect and/or restore natural resources that might in turn decrease the risk from storm surge?	Yes	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community.	CE O 6.15 Restrict development that will damage or destroy significant dunes	New development, redevelopment, zoning changes & land use plan amendments shall be consistent with LMS Guiding Principles regarding the hazard impacts from natural disaster through land use policies that support sustainable communities	Include goal/objective to support protection of natural resources.  Include data and maps of environmentally sensitive lands (e.g., CBRS, and coastal dunes and wetlands, etc.) overlaid with storm surge zones and future land uses.	Okaloosa County Comp Plan FLUE P 7.1	
				CME O 7.4 Restrict development that will damage or destroy significant dunes unless mitigation measures are undertaken.				Most sensitive portion of coastal area shall be managed through the imposition of strict construction standards to minimize damage to natural environment, private property, & life [§161.53(5), F.S.]; protect beaches or dunes, establish construction standards which minimize impacts of man-made structures on beach or dune systems, and restore altered beaches or dunes [9 J-5.012(3)(b)4], and best management practices from <i>Protecting Florida's Communities</i> .
				CE P 6.15.1 & CME P 7.4.1 Developers of beachfront projects shall make every effort to avoid damaging significant dunes. Dunes must be restored & revegetated to pre-development conditions where damage is unavoidable. Mitigation to be performed per DEP Coastal Construction permit.				
				CME O 7.5 Institute beachfront construction standards to protect coastal resources & minimize potential coastal storm damage.			Exceed CCCL permitting standards.	
				CME P 7.5.1 All development seaward of the Coastal Construction Control Line (CCCL) shall be in compliance with Ch 62B-33, F.A.C. Other development undertaken within 1500 ft of CCCL must comply with Coastal Zone Protection Act [§161.55, F.S.]				
					County adopts coastal protection overlay zone recommended by NW FL Coast Resource Management to enhance & protect dune system.	Walton County Comp Plan FLUE P L-1.5.1		

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from storm surge? (continued)	Yes	Yes		CME P 7.7.4 Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.	Protect against hazard impacts from natural disaster through transfer or purchase of development rights in high risk areas.	Include goal/objective to promote continued purchase of undeveloped lands at high risk to flooding, with proper considerations of private property rights & compensation	Okaloosa County Comp Plan CME P 1.2.2
			G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community. (continued)	CME O 7.8 Restore eroded/damaged beach & dune systems when financially feasible	Institute special assessment districts to finance beach renourishment & berm maintenance in areas that do not grant public beach access.		Best management practices from <i>Protecting Florida's Communities</i>
				CME P 7.8.1 Require restoration of damaged beach & dunes systems as part of new beachfront development projects; and participate in joint federal, state & local beach nourishment projects where financially feasible.	County shall limit clearing of natural dune vegetation & other coastal upland vegetation & development on primary dune	As LMS Guiding Principles are updated, incorporate into the comp plan.	Walton County Comp Plan CE P C-4.4.4 & consistent use of information will enhance/strengthen planning endeavors for hazard mitigation.
				CME P 7.6.1 The CHHA will be all land in the Category 1 hurricane evacuation zone	Define CHHA to also include category 1 surge zone.	To illustrate those at risk to a Cat 1 hurricane, include map of category 1 hurricane evaluation zone, category 1 storm surge, existing evacuation corridors & population density of evacuees by census tract.	Most sensitive part of the coast...[§161.53(5), F.S.]; protect beaches or dunes, establish construction standards which minimize impacts of man-made structures on beach or dune systems, and restore altered beaches or dunes [9 J-5.012(3)(b)4], and best management practices from <i>Protecting Florida's Communities</i> .
				CIE O 11.3 Restrict development in CHHA & limit public expenditures that subsidize development in CHHA.	New roads, pipelines, and other public infrastructure within high risk areas (e.g., CHHA, 100-year floodplain) shall be built to lessen direct damages from natural hazards.		Consistent use of information will enhance/strengthen planning endeavors for hazard mitigation, and Santa Rosa County Comp Plan CME P 7.1.A.7

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from flooding?	No	Yes	None found during this review.	CE O 6.11 Protect & conserve wetlands & their natural functions.	Establish Interlocal agreements with adjacent local governments that address conservation, use, & protection of unique vegetative communities & water bodies that cross local jurisdictional boundaries.	Include goal/objective to promote purchase undeveloped lands at high risk to flooding, with considerations of private property rights & constitutional requirements for compensation.	Okaloosa County Comp Plan CE P C-3.2.9 & Okaloosa County LMS mitigation actions.
				CE 6.11.3: The County will employ the following measures to protect and conserve wetlands. 1. Wetlands will be delineated and depicted on all site plans included in applications for development approval. Developers will design and construct development projects so as to avoid activities that would destroy wetlands or the natural functions of wetlands. 3. Wetland setbacks will be required as specified in Policy 6.7.4 for development on lots or parcels created after the effective date of this policy. 4. Wetlands crossings that connect dry upland areas are permissible provided the natural water flow between wetlands is not interrupted. 5. In the event a lot or parcel of property is rendered totally undevelopable by avoidance of wetlands the property may be developed when: 1) disturbance of wetlands is the minimum necessary to build an allowable use, and; 2) mitigation is provided consistent with applicable law.	Restore/enhance disturbed or degraded wetlands by removing invasive toxics or replanting native vegetation on county-owned land		Okaloosa County Comp Plan CE P 5.1
					New development, redevelopment, zoning changes & land use plan amendments shall be consistent with LMS Guiding Principles regarding the protection of areas identified as high hazard impact areas, such as CHHA, through land use policies that support sustainable communities		Santa Rosa County Comp Plan FLUE P 7.1
					There shall be no reduction in the flood storage capacity or the other natural functions and values of the floodplain in designated floodway areas. Encroachments shall be prohibited within designated regulatory floodway including fill and new construction and development improvements that would result in any increase in flood levels.		Santa Rosa County Comp Plan IE P 6.3.B.5

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from flooding? (continued)	No	Yes	None found during this review.		Protect against hazard impacts from natural disasters by limiting density & intensity of development, building placement (clustering), building coverage or impervious surface, or setbacks & landscaped buffers in the 100-year floodplain.		Okaloosa County Comp Plan FLUE P 6.3
				CE P 6.11.3.2 Developers will design & construct development projects to avoid destroying wetlands & their natural functions.			Okaloosa County Comp Plan CME P 1.2.1
					Restrict increases in land use density & intensity in wetlands & development is subject to TDRs where sufficient uplands exist, & lowest floor elevation must be one foot above the BFE per FIRM. Where uplands don't exist development will be limited to a threshold		Okaloosa County Comp Plan CE P 2.1
				CE P 6.13.4 County will adopt regulations to ensure new development doesn't create flood hazard to existing or downstream development	Development approval process shall ensure new development & redevelopment is consistent with natural drainage patterns & require appropriate stormwater management systems consistent with adopted drainage LOS, natural drainage patterns & soil conditions.		Okaloosa County Comp Plan FLUE P 1.2
				CE O 6.12 By 2000, institute a GIS program to identify lots/parcels containing wetlands based on actual jurisdictional interpretations & develop monitoring program to determine wetland loss		Include map of 100-year floodplain overlay with future land uses.	Consistent use of data will enhance/strengthen mitigation planning.
				CE P 6.12.1 County will use its GIS to institute a wetlands identification & monitoring program	Designate wetlands, floodplains for preservation through FLUM or overlay zoning district.		Best management practices from <i>Protecting Florida's Communities</i>

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from flooding? (continued)	No	Yes	None found during this review.	CE P 6.13.2 County will use its Local Hazard Mitigation Strategy to reduce the potential for flood damage	Protect natural functions of stormwater management features through land development regulations and proper classification of land uses to complement manmade stormwater management systems, to collectively reduce flood vulnerability.		Okaloosa County Comp Plan and Best management practices from <i>Protecting Florida's Communities</i>
					Exceed FEMA NFIP elevation requirements for development in the 100-year floodplain where feasible (e.g., CRS).		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.
					Protect 100-year floodplains, CHHA, surge zones and identified sinkholes via acquisition, conservation easement, purchase of development rights, etc.		Okaloosa County Comp Plan CE P 5.3
					Ensure adequate open space for protected natural resource lands, environmentally sensitive lands, & drainage & stormwater retention areas in the 100-year floodplain.	Include goal/objective to maintain/enhance stormwater management systems in 100-year floodplain	Okaloosa County Comp Plan FLUE P 10.8

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from wildfire?	No	No	None found during this review.	None found during this review.	Identify areas that are susceptible to wildfire. Include maps that depict wildfire risk to existing and future land use.	Support activities that newly document or update maps, aerials photos, or remote sensing imagery that shows degree of risk (Levels of Concern) for wildfire - use data to focus mitigation activities and support comp plan policies.	Areas susceptible to wildfire 9J-5.006(2)(b) & Okaloosa County LMS mitigation action.		
					County shall implement Firewise Medal Community Program	Support public education activities of local fire departments & FL Division of Forestry in promoting "Firewise" programs, local inspections, & enforcement activities to reduce/ eliminate wildfire risk.		Alachua County Comp Plan & Okaloosa County LMS	
					The County shall educate the public, especially those at high risk from wildfires, & make them aware of proactive steps they can take to mitigate wildfire damage.				
					Install fire hydrants in high risk wildfire areas in the wildland urban interface.	Support public and private mitigation efforts to provide fire hydrants to locations at risk along the urban/rural interface where water systems exist to provide such services.			DCA's <i>Wildfire Mitigation in FL: Land Use Planning Strategies and Best Development Practices</i> & Okaloosa County LMS mitigation actions,
					Review proposals for subdivisions, lot splits, and other developments for fire protection needs during site plan review process.	Support activities that integrate wildfire mitigation techniques with design & review process of subdivision plats to reduce risks to new communities through cooperative efforts between land planning offices, fire departments & FL Division of Forestry.			
				Cooperate with fire protection service or agencies to determine guidelines for use and development of wildfire-prone areas.					

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from wildfire? (continued)	No	No	None found during this review.	None found during this review.	<p>All new development should complete &amp; implement a wildfire mitigation plan specific to that development, subject to review &amp; approval by the Okaloosa County Fire Rescue Department.</p> <p>Structures shall be designed to minimize potential for loss of life &amp; property (e.g., outdoor sprinkler systems, fire-resistant building materials or treatments, &amp; landscaping &amp; site design practices.</p> <p>Streets, roads, driveways, bridges &amp; culverts should be designed to assure access for firefighting.</p> <p>County shall pursue funds for community/volunteer service program for fuels management on County owned land</p> <p>County shall implement a fuels management program to include prescribed burning, mechanical fuel reduction, thinning; increased public awareness of prescribed burning.</p> <p>Require management plans for conservation easements that address reduction in wildfire fuels.</p>		Alachua County Comp Plan	

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<b>Strategy - Make structures more resistant to natural hazard forces</b>								
Are there measures that support retrofitting or relocating private and/or public structures in hazard areas?	Yes	Yes	G 3 O Designated evacuation shelters will be retrofitted or relocated to ensure operability during & after disasters	CME P 7.9.1 Use the Post-Hazard Mitigation Strategy(LMS) as basis for additional regulations for building practices, flood zone management, retrofitting existing buildings & other measures to reduce coastal storm damage	Floodproof WWTP and WTP systems in CHHA	Map and assess vulnerability of public facilities and infrastructure that are susceptible to hazards. This information can be used to prioritize facilities for structural/operational analyses. The analysis results can then be used to prioritize LMS mitigation projects and capital improvement projects.	Best management practices from <i>Protecting Florida's Communities</i>	
			G 3 O Local emergency service facilities will be retrofitted or relocated to withstand structural impacts of a disaster	CE P 6.13.3 County will use its Flood Damage Prevention Ordinance to ensure that structures built in flood zones are properly elevated & constructed to reduce flood risk	Prioritize public structures for retrofit, relocation, or flood-proofing public facilities or infrastructure in high risk hazard areas.			
					New roads, pipelines, and other public infrastructure within high risk areas (e.g., CHHA, 100-year floodplain) shall be built to lessen direct damages from natural hazards.			
					Limit expansion of public facilities in high risk hazard areas			Assist property owners, residents, businesses, non-profits and others in understanding and knowing or their eligibility for grants, loans and services that may help to mitigate hazards that directly affect their interests.
					Prohibit septic tanks in CHHA.			
		G 6 O Local jurisdictions will participate fully in the NFIP & CRS	SME O 5E.11 Continue eligibility & participate in NFIP SME P 5 E.11.1 County will continue NFIP participation & use its Flood Damage Prevention Ordinance to reduce flooding potential	Enforce rigorous development standards that exceed the NFIP/CRS requirements (e.g., elevation, anchoring structures to resist flotation collapse and lateral movement)	Include objective to enforce NFIP standards.	Best management practices from <i>Protecting Florida's Communities &amp; CRS</i>		

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Are there measures to protect cultural resources from natural hazards?	No	No	None found during this review.	None found during this review.	Create an inventory of culturally significant facilities/sites (e.g., historic, archaeological) in high hazard areas.	Asses vulnerability of historic structures & include goal/objective to mitigate historic properties	Best management practices from <i>Protecting Florida's Communities</i> for comp plans & Okaloosa County LMS mitigation actions.
					Protect culturally significant facilities (e.g., historic, archaeological) in high hazard areas.		
Does the comp plan include measures to mitigate flood damage to Repetitive Loss structures?	Yes	Yes	G 6 O Local jurisdictions will participate fully in the NFIP & CRS	SME O 5E.11 Continue eligibility & participate in NFIP	Identify structures that are repetitively damaged by coastal storms.		Repetitive loss structures shall be inventoried or analyzed [9J-5.012(2)(e)2]
				SME P 5 E.11.1 County will continue participation in NFIP and will use its Flood Damage Prevention Ordinance to reduce flooding potential	Perform an analysis for acquiring, relocating or elevating Repetitive Loss structures in the SFHA (100- year floodplain.	Include a goal/objective to mitigate repetitive loss properties.	Okaloosa County Comp Plan & LMS & Best management practices from <i>Protecting Florida's Communities</i>
					Enforce rigorous development standards consistent with the NFIP and CRS program.	Include objective to ensure all future buildings are constructed to FBC, and are built above BFE in FIRM A and V zones.	
						Initiate grant/ loan program to assist all property owners with financing elevating , floodproofing, or relocating existing repetitive loss structures in SFHA.	Assist property owners, residents, businesses, non-profits and others in understanding and knowing or their eligibility for grants, loans and services that may help to mitigate hazards that directly affect their interests.
					Limit expansion of public facilities in high risk hazard areas.		Best management practices from <i>Protecting Florida's Communities</i>

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Are there measures to require compliance with or exceed building codes and/or design standards for certain hazard areas?	Yes	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community.	SME P 5D.10.6L Require evaluation of flooding that may be caused by development of vacant land adjacent to existing developed areas, including adjacent building lots in subdivisions			The most sensitive portion of the coastal area shall be managed through the imposition of strict construction standards in order to minimize damage to the natural environment, private property, and life. (§161.53(5), F.S.) & Best management practices from <i>Protecting Florida's Communities</i>
				SME P 5E.10.1.1 Prohibit unauthorized obstruction of natural or man-made drainageways			
				SME 5E.10.1.7.b For purpose of flood attenuation, all development projects shall be designed & constructed to 25-year critical storm duration per FDOT Drainage Manual; except for single family, duplex, triplex and quadplex dwellings and customary accessory uses			
			G 6 O Local jurisdictions will participate fully in the NFIP & CRS	SME O 5E.11 Continue eligibility & participate in NFIP	Adopt more stringent development standards than the NFIP in the 100-year floodplain.	Include objective to support development that meets or exceeds existing codes and standards of the FBC, CCCL, and NFIP.	
			SME P 5 E.11.1 County will continue participation in NFIP and will use its Flood Damage Prevention Ordinance to reduce flooding potential				
				CME O 7.5 Institute beachfront construction standards to protect coastal resources & minimize potential coastal storm damage.			
				CME P 7.5.1 All development seaward of the Coastal Construction Control Line (CCCL) shall be in compliance with Ch 62B-33, F.A.C. Other development undertaken within 1500 ft of CCCL must comply with Coastal Zone Protection Act [§161.55, F.S.]	Exceed CCCL permitting standards in CHHA		

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Are there measures to require compliance with or exceed building codes and/or design standards for certain hazard areas? (continued)	Yes	Yes		CME P 7.9.1 Use the Post-Hazard Mitigation Strategy as basis for additional regulations for building practices, flood zone management, retrofitting existing buildings & other measures to reduce coastal storm damage	Restrict increases in land use density& intensity in wetlands. Development is subject to TDRs where sufficient uplands exist. Lowest floor elevation must be one foot above the BFE per FIRM. Where uplands don't exist development will be limited to a threshold determined by the	Include goal/objective to support No Adverse Impact (NAI) initiatives and best practices.	Okaloosa County Comp Plan CE P 2.1	
				CE O 6.1.3 Reduce potential risk to lives & property from flooding by using hazard mitigation strategies & special building construction practices.				
				CE P 6.13.2 County will use its Local Hazard Mitigation Strategy to reduce the potential for flood damage				
				CE P 6.13.3 County will use its Flood Damage Prevention Ordinance to ensure that structures built in flood zones are properly elevated & constructed to reduce flood risk				
				CE P 6.13.4 County will adopt regulations to ensure new development doesn't create flood hazard to existing or downstream development				
	CE P 6.15.1 & CME P 7.4.1 Developers of beachfront projects shall make every effort to avoid damaging significant dunes. Dunes must be restored & revegetated to pre-development conditions where damage is unavoidable. Mitigation to be performed per DEP Coastal Construction permit.							

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<b>Strategy - Manage the development and redevelopment in hazardous areas</b>							
Are there measures to limit population densities in high-hazard areas?	No	Yes	None found during this review.	CME O 7.7 Restrict development in CHHA & limit public expenditures that subsidize development in CHHA	Direct population concentrations away from the CHHA through implementation of FLUM, acquisition of land, & LMS	Include map that depicts population densities in existing land use categories, and project growth rate to illustrate current & potential future vulnerability	Okaloosa County Comp Plan CME O 2.1
				CME P 7.7.2 Public subsidy of infrastructure for development in CHHA shall be limited to demand resulting from build-out at 15 du/acre. This policy shall not preclude private investment for infrastructure within the CHHA.			
				CME P 7.7.3 High risk developments (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks shall not be located in CHHA	Issuance of development permits in CHHA shall be conditioned that construction be limited to adopted densities & intensities in LDRs	Panama City Beach Comp Plan CME P 16.1	
				CME P 7.7.4 Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.	Include goal/objective to support acquisition of undeveloped land in high hazard areas		
				CME P 7.7.5 County shall not accept dedications of roads, water & sewer facilities, or other public facilities in CHHA unless specifically provided for in an enforceable development agreement.			
				CME P 7.13.2 Capacity of public infrastructure shall not be increased on Coastal Barrier Resources consistent with CBRA.			

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Are there measures to limit population densities in high-hazard areas? (continued)	No	Yes		CIE O 11.3 Restrict development in CHHA & limit public expenditures that subsidize development in CHHA.	Restrict increases in land use density& intensity in wetlands & development is subject to TDRs where sufficient uplands exist, & lowest floor elevation must be one foot above the BFE per FIRM. Where uplands don't exist development will be limited to a threshold defined by County	Include objective to limit public expenditures in high hazard areas, unless funds are used to mitigate an existing critical facility or repetitive loss structure.	
				CIE P 11.3.1 Residential density in CHHA will be restricted to a maximum of 15 du/ac in areas where adequate infrastructure exists to accommodate that level of development.			
				CME O 7.7 Restrict development in CHHA & limit public expenditures that subsidize development in CHHA			
Are there measures to limit public expenditures that subsidize development in high-hazard areas?	No	Yes	None found during this review.	CME P 7.7.2 Public subsidy of infrastructure for development in CHHA shall be limited to demand resulting from build-out at 15 du/acre. This policy shall not preclude private investment for infrastructure within the CHHA.		Include map of critical facilities, & table & map of infrastructure in hazard zones, to depict those currently exposed to hazard impacts	
				CME P 7.7.3 High risk developments (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks shall not be located in CHHA	Ensure that all public facilities that serve first response and critical emergency needs are located outside the flood zone or flood prone areas.		Update the LMS maps/tables that show which critical facilities are located in SFHAs. These could be prioritized for retrofit or relocation using HMGP, PDM, or FMA funds.
				CIE O 11.3 Restrict development in CHHA & limit public expenditures that subsidize development in CHHA.			
				CME P 7.7.4 Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.	Conduct an analysis on unintended consequences (e.g., subsidizing development) from allowing public expenditures in CHHA.	Include list of all mitigated projects in high hazard areas, damage costs prior to mitigation, cost to mitigate and cost savings due to mitigation (if known).	Limitation of public expenditures that subsidize development in high hazard coastal areas, and establishing criteria to consider public hazard elimination when evaluating capital improvement projects.9J-5.016
				CME P 7.7.5 County shall not accept dedications of roads, water & sewer facilities, or other public facilities in CHHA unless specifically provided for in an enforceable development agreement.			
				CME P 7.13.2 Capacity of public infrastructure shall not be increased on Coastal Barrier Resources consistent with CBRA.			

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

**BAY COUNTY PROFILE**

Strategies & Integration Topics: Are these integrated in the LMS and Local Comprehensive Plan			Current LMS Information, Goals & Objectives	Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Father Integration into the LMS	Basis For Suggested Options
	LMS	Comp	Key G = Goal O = objective P = Policy MA = Mitigation Action				
Are there creative neighborhood design solutions or development regulations that mitigate hazards, such as clustering or transfer of development rights?	No	Yes	None found during this review.	CE P 6.11.3.2 Developers will design & construct development projects to avoid destroying wetlands & their natural functions.	Protect against hazard impacts due to natural disasters by limiting density and intensity of development, building placement (clustering), building coverage or impervious surface, or setbacks and landscaped buffers. Evaluate proposed plan amendments to ensure they do not contribute to urban sprawl that fails to protect against such natural disasters.	Include goal/objective to encourage creative neighborhood design solutions or development regulations which mitigate natural hazards	Okaloosa County Comp Plan FLUE P 6.3
				CE P 6.13.4 County will adopt regulations to ensure new development doesn't create flood hazard to existing or downstream development			
Are there measures to limit redevelopment in hazard areas and procedures for post-disaster recovery that will lead to a more disaster-resistant community?	No	Yes	None found during this review.	SME P 5D.10.6L Require evaluation of flooding that may be caused by development of vacant land adjacent to existing developed areas, including adjacent building lots in subdivisions	For the purposes of protecting the shoreline and/or wetlands, the county may allow (or require) clustering of development upland from wetlands or landward of the shoreline.		Santa Rosa FLUE P 8.1.A.3
				CME P 7.7.4 Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.			
Are there measures to limit redevelopment in hazard areas and procedures for post-disaster recovery that will lead to a more disaster-resistant community?	No	Yes	None found during this review.	CME O 7.14 By 2001, county will establish a comprehensive pre- & post-disaster redevelopment strategy.	Implement recommendations from the LMS & PDRP to reduce risk from riverine & coastal flooding & hurricane wind to life property & critical infrastructure.	Include in LMS Guiding Principles, measures to protect people, reduce post disaster public expenditures & coordinate with private sector to mitigate losses.	Okaloosa County Comp Plan CME O 2.6, FEMA funds are available for hazard mitigation & Okaloosa county LMS
				CME P 7.14.1 County will establish comprehensive pre- & post-disaster redevelopment strategy to include land purchase, hazard mitigation, building practices & other related considerations. This strategy will be incorporated into this Plan upon completion.	Implement Guiding Principles in LMS to protect people, reduce post-disaster public expenditures, mitigate losses & coordinate with private sector to mitigate losses.		Okaloosa County Comp Plan CME P 2.6.1
				Development approval process shall ensure new development & redevelopment is consistent with natural drainage patterns & require appropriate stormwater management systems consistent with adopted drainage LOS, natural drainage patterns & soil conditions		Okaloosa County Comp Plan FLUE P 1.2	
				PDRP will provide a process for consideration of relocation, removal, or modification of damaged structures.			Panama City Beach County Comp Plan CME O 15

**INTEGRATION OF THE LOCAL MITIGATION STRATEGY INTO THE LOCAL COMPREHENSIVE PLAN**

**BAY COUNTY PROFILE**

Strategies & Integration Topics: Are these integrated in the LMS and Local Comprehensive Plan			Current LMS Information, Goals & Objectives	Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Further Integration into the LMS	Basis For Suggested Options
LMS	Comp	Key G = Goal O = objective P = Policy MA = Mitigation Action					
Are there measures to limit redevelopment in hazard areas and procedures for post-disaster recovery that will lead to a more disaster-resistant community? (continued)	No	Yes	None found during this review.	(continued from previous page)	Limit specific impacts & cumulative impacts of development or redevelopment upon wetlands, water quality, water quantity, or other natural resources through site design techniques, such as clustering, elevation on pilings, setbacks, and buffering. The intent of this policy is to avoid such impact and to permit Mitigation of impacts only as a last resort.		Walton County Comp Plan CE P C-1.1.1
					Permitting of new development & redevelopment in any Hurricane Evacuation Zones shall not result in increased hurricane evacuation times.		Walton County Comp Plan CE P C-4.2.5

## 6. Municipal Case Study – Panama City Beach

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

### Hazards Analysis

The following analysis examines three hazard types: surge from tropical cyclones, flood, and wildfire. No population or structures were determined to be exposed to 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 Panama City Beach that is exposed to each hazard, as well as a breakdown of the sensitive needs population exposure.

Of the 7,671 (U.S. Census 2000) people that reside in Panama City Beach, 58% are exposed to storm surge, 58% are exposed to 100-year flooding, and 44.9% are exposed to wildfire. Of the 4,500 people exposed to surge, 45.1% are disabled. Of the 4,500 people exposed to flood, 45.1% are disabled and 21.9% are over age 65. Of the 2,024 people exposed to wildfire, 32.2% are disabled and 20% are over age 65.

**Table 6.1 Estimated Number of Persons Exposed to Hazards in Panama City Beach**

Segment of Population	Storm Surge**	Flood	Wildfire
<b>Total (all persons)*</b>	<b>4,500</b>	<b>4,500</b>	<b>2,024</b>
Minority	115	115	10
Over 65	987	987	405
Disabled	2,029	2,029	651
Poverty	439	439	139
Language-Isolated	706	655	54
Single Parent	190	190	135

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 Panama City Beach by occupancy type that are exposed to each of the hazards being analyzed. The estimated exposure of Panama City Beach existing structures to the storm surge, flood, and wildfire hazards was determined through MEMPHIS.

There are 7,778 structures exposed to at least one of the three hazards, of which most are multi-family dwellings. Of these structures, 85% are exposed to flood. Over 6,600 structures are located within the 100-year floodplain, of which 60.8% are exposed to storm surge induced flooding. As of March 2005, there are 186 repetitive loss properties in Panama City Beach.

**Table 6.2** also indicates that there are 1,170 structures exposed to wildfire, of which 50% are single-family homes.

**Table 6.2 Estimated Number of Structures Exposed to Hazards in Panama City Beach**

Occupancy Type	Storm Surge*	Flood	Wildfire
Single Family	1,278	1,011	585
Mobile Home	61	3,592	197
Multi-Family	2,213	1,406	182
Commercial	434	510	170
Agriculture	10	87	28
Gov. / Institutional	24	2	8
<b>Total</b>	<b>4,020</b>	<b>6,608</b>	<b>1,170</b>

Source: Mapping for Emergency Management, Parallel Hazard Information System

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

As of March 2005, there are 91 repetitive loss properties in Panama City Beach. The specific location of repetitive loss properties is restricted per federal privacy requirements, but is routinely made available to Panama City Beach to facilitate the identification of potential mitigation strategies for these properties.

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, 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. Existing land use data was acquired from County Property Appraisers and the Florida Department of Revenue in 2004 for tabulation of the total amount of acres and percentage of land in identified hazard areas, sorted by existing land use category for the unincorporated areas. The total amount of acres and percentage of land in the identified hazards areas was tabulated and sorted by 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. Panama City Beach’s future land use data was acquired in March 2005 from the Bay County and might not reflect changes per recent future land use amendments. Maps of existing land use within hazard areas are based on the 2004 County Property Appraiser geographic information system (GIS) shapefiles. Maps of future land uses in hazard areas were developed using the City of Madeira Beach future land use map dated March 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, and wildfire susceptible areas.

In **Attachment A**, two maps present the existing and future land uses within the Coastal Hazards Zone (CHZ), which represents the Category 1 Hurricane Evacuation Zone joined with the Category 1 Storm Surge Zone. The areas along the Gulf Coast and the West Bay are located in surge-prone areas. The total amount of land in the CHZ is 422 acres. As shown in **Table 6.3**, 45.6% are currently undeveloped; 23% are used for attractions, stadiums and lodging purposes; 15.5% are used for residential single-family homes; and 6.3% are used for residential multi-family housing. **Table 6.4** shows that of the 192.61 undeveloped acres, 40.39% are designated for residential single-family development. The City has an opportunity to implement mitigation measures to make these homes less vulnerable to storm surge.

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 areas along the Gulf Coast and the West Bay are located in the HVZ. The total amount of land in the HVZ is 1,314 acres. As shown in **Table 6.3**, 42.9% are currently undeveloped; 18.6% are used for attractions, stadiums and lodging purposes; 13.2% are used in commercial use; and 7.8% are used for residential single-family homes. **Table 6.4** shows that of the 563.57 undeveloped acres, 43% are designated for use as a tourist district. The City has an opportunity to implement mitigation measures to make these tourist destinations less vulnerable to storm surge.

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, predominantly along the Gulf Coast and the West Bay. The total amount of land in the special flood hazard area is 1,721.3 acres. As shown in **Table 6.3**, 36.4% is used for agriculture; 30.9% are currently undeveloped; 9.1% are used for residential single-family homes; and 7.6% are parks, conservation areas and golf courses. **Table 6.4** shows that of the 531.46 undeveloped acres, 42.91% are designated for residential single-family development. The City has an opportunity to implement mitigation measures to make these homes less vulnerable to flooding.

In **Attachment D**, two maps present the existing and future land uses within wildfire susceptible areas. There are a few small locations scattered across Panama City Beach that are in wildfire susceptible areas. The total amount of land in the wildfire susceptible areas is 138.5 acres. As shown in **Table 6.3**, 52.5% are parks, conservation areas and golf courses; 21.7% are currently undeveloped; 20.6% are used for government, institutional, hospitals or education purposes; and 4.2% are used for agriculture. **Table 6.4** shows that of the 30.10 undeveloped acres, 34.09% are designated for recreation and 34.09% are designated for use as a tourist district. The City has an opportunity to implement mitigation measures to make these homes less vulnerable to wildfire.

**Table 6.3 Existing Land Use in Hazard Areas in Panama City Beach**

Existing Land Use Category		Coastal Hazards Zone	Hurricane Vulnerability Zone	Flood Zones	Wildfire Susceptible Areas
Agriculture	Acres	0.0	91.4	626.0	5.8
	%	0.0	7.0	36.4	4.2
Attractions / Stadiums / Lodging	Acres	97.0	244.1	106.3	0.0
	%	23.0	18.6	6.2	0.0
Places of Worship	Acres	0.0	3.6	5.8	0.0
	%	0.0	0.3	0.3	0.0
Commercial	Acres	20.1	172.8	78.3	0.0
	%	4.8	13.2	4.6	0.0
Government / Institutional / Hospitals / Education	Acres	18.3	35.7	60.2	28.5
	%	4.3	2.7	3.5	20.6
Industrial	Acres	0.2	4.5	0.0	0.0
	%	0.1	0.3	0.0	0.0
Parks / Conservation Areas / Golf Courses	Acres	0.0	52.2	130.0	72.7
	%	0.0	4.0	7.6	52.5
Residential - Multi-Family	Acres	26.5	33.4	23.9	0.0
	%	6.3	2.5	1.4	0.0
Residential Mobile Home / Commercial Parking Lot	Acres	1.8	7.6	2.9	0.0
	%	0.4	0.6	0.2	0.0
Residential - Single-Family	Acres	65.3	102.1	155.8	1.3
	%	15.5	7.8	9.1	1.0
Transportation / Communication / Rights-of-Way	Acres	0.2	3.1	0.7	0.0
	%	0.1	0.2	0.0	0.0
Vacant	Acres	192.6	563.6	531.5	30.1
	%	45.6	42.9	30.9	21.7
<b>Total</b>	<b>Acres</b>	<b>422.0</b>	<b>1,314.0</b>	<b>1,721.3</b>	<b>138.5</b>
	<b>%</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: Department of Community Affairs

**Table 6.4 Existing Land Use in Hazard Areas by Future Land Use Category in Panama City Beach**

Future Land Use Category		Coastal Hazards Zone		Hurricane Vulnerability Zone		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant	Total	Vacant	Total	Vacant
Agriculture	Acres	0.00	0.00	0.00	0.00	2.01	2.01	0.00	0.00
	%	0.00	0.00	0.00	0.00	0.12	0.38	0.00	0.00
Conservation	Acres	7.80	6.91	15.16	9.81	93.19	66.43	28.09	2.23
	%	1.85	3.59	1.15	1.74	5.41	12.50	20.29	7.41
Educational	Acres	0.00	0.00	0.00	0.00	0.89	0.00	3.12	0.00
	%	0.00	0.00	0.00	0.00	0.05	0.00	2.25	0.00
Industrial District	Acres	0.00	0.00	0.00	0.00	7.58	7.58	0.00	0.00
	%	0.00	0.00	0.00	0.00	0.44	1.43	0.00	0.00
Mixed Use	Acres	19.17	18.50	207.32	186.82	130.86	34.78	7.36	6.91
	%	4.54	9.60	15.78	33.15	7.60	6.54	5.32	22.96
Multi-Family Residential	Acres	11.59	6.24	12.04	5.80	18.73	11.82	0.00	0.00
	%	2.75	3.24	0.92	1.03	1.09	2.22	0.00	0.00
Public Buildings and Grounds	Acres	1.34	0.00	7.13	0.00	28.31	0.00	0.00	0.00
	%	0.32	0.00	0.54	0.00	1.64	0.00	0.00	0.00
Recreation	Acres	25.41	11.15	35.22	11.15	149.59	21.62	43.02	10.26
	%	6.02	5.79	2.68	1.98	8.69	4.07	31.07	34.09
Single Family Residential	Acres	124.17	77.80	204.87	107.68	848.70	228.06	4.68	0.45
	%	29.42	40.39	15.59	19.11	49.31	42.91	3.38	1.50
Tourist District	Acres	232.52	72.01	832.20	242.32	441.40	159.17	52.17	10.26
	%	55.10	37.39	63.34	43.00	25.64	29.95	37.68	34.09
<b>Total</b>	<b>Acres</b>	<b>422.01</b>	<b>192.61</b>	<b>1,313.95</b>	<b>563.57</b>	<b>1,721.24</b>	<b>531.46</b>	<b>138.44</b>	<b>30.10</b>
	<b>%</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>

Source: Department of Community Affairs

**Municipal Hazard Mitigation Goals and Objectives**

The Bay County LMS does not include any municipal-level hazard mitigation goals or objectives (only countywide), though the City of Panama City Beach has adopted its designated portion of the LMS and will continue participating in the updating and expansion of the LMS as necessary.

**Comprehensive Plan Review**

**Purpose and Intent**

The City of Panama City Beach Comprehensive Plan (Adopted March 25, 1993) was reviewed for the purpose of developing this profile. This review was undertaken in order to assess what steps the City of Panama City 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 of storm surge, flooding, and wildfire 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 highest risk hazards for Bay County as identified per the County's Local Mitigation Strategy (LMS) are high winds, storm surge, flooding, wildfire and hazardous materials events. Sinkholes are not identified as a potential hazard risk. Therefore, sinkhole hazard is not addressed in this summary. Plan policies facilitate hazard mitigation through intergovernmental coordination and numerous hurricane evacuation related policies. Another goal evident in the City's Plan is the limitation of population concentrations inside the CHHA, in order to reduce the exposure of human life to natural disasters.

The Plan includes the development of a Post-disaster Redevelopment Plan (PDRP) for Panama City Beach to identify short-term recovery and long-term redevelopment activities. The PDRP will provide a process for consideration of relocation, removal or modification of damaged structures. Intergovernmental coordination includes periodic review of hurricane evacuation plans through a joint meeting of the Bay County Emergency Management Department, municipalities and transportation planners.

## **Storm Surge, Evacuation, and Sheltering**

Similar to most of Florida's coastal counties, Bay County currently has an existing shelter deficit. This shelter deficit includes the vulnerable population in the City of Panama City Beach. According to Florida's Statewide Emergency Shelter Plan, Bay County has an existing shelter capacity of 7,515 people. The 2004 shelter demand for a Category 4 or Category 5 hurricane is 14,959 people, leaving an existing shelter deficit of 7,445. In 2009, the projected shelter demand is 16,131, leaving an anticipated shelter deficit of 8,617. 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 areas.

The Plan includes the condition that population concentrations are to be directed away from the CHHA through provisions in the Land Development Regulations, if the emergency evacuation time enumerated in Policy 11.3 cannot be maintained. Public awareness strategies identified in the Plan include property owner notification of CHHA property designations in preparation for potential disasters. The City will also continue to develop evacuation procedures for citizens and organizations concerned with the transportation disadvantaged.

There are several Plan policies conveying protocol for evacuation procedures and transportation improvements. The Coastal Management Element requires that improvements to road segments included in the hurricane evacuation route be considered a priority in making traffic circulation improvements. The evacuation timetable will be adjusted as necessary, based on occupied dwelling unit information, and impacts on the transportation system relative to hurricane evacuation will be considered during development review.

## **Flooding**

Flooding is addressed from two vantage points, the protection of natural drainage features, and protection of lives and properties through development standards and stormwater abatement.

Several policies address flood hazard issues, including steering development away from the 100-year floodplain and floodprone areas, and practicing development techniques to minimize flooding and enhance flood prevention. Redevelopment of structures within the CHHA will require compliance with National Flood Insurance minimum elevation and construction standards, and conformance to minimum coastal construction standards. All development activity undertaken within designated A-zones as shown on the official FEMA FIRM map will be subject to standards of the City's Floodplain Management Ordinance.

### **Wildfire**

No policies pertaining to wildfires mitigation and management practices were found in the Comprehensive Plan.

## **Summary of Recommendations**

The City of Panama City Beach's Comprehensive Plan has good integration of hazard mitigation principles and its LMS has adequate data and goals to support comprehensive planning. There are goals, objectives, and policies that support risk reduction from 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 in which the City of Panama City Beach can continue to reduce or eliminate risks from storm surge and flood. An assessment of whether the LMS goals and objectives are reflected in the comprehensive plan (and vice versa) is provided in the Preliminary Recommendations Matrix at the end of this section. 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 flood and storm surge. 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, 193 are susceptible to Category 1 storm surge, 564 acres are susceptible to Category 3 storm surge, 532 acres are susceptible to 100-year flood, and 30 acres are susceptible to wildfire. Of these areas, some 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.

#### *Storm Surge*

- The Comprehensive Plan should continue to require that the issuance of development permits in the CHHA be limited to adopted densities and intensities in the land development regulations, and limit the amount of public expenditures in the CHHA.
- The Comprehensive Plan should continue to improve road segments that are a part of the hurricane evacuation route as a priority in making traffic circulation improvements.
- The Comprehensive Plan should continue to consider the impacts on the transportation system relative to hurricane evacuation in the development approval process.
- The Comprehensive Plan should continue to develop evacuation procedures for citizens and other organizations concerned with the transportation disadvantaged.
- The City should continue to protect and conserve the natural functions of wetlands and water bodies by using buffers, and coordinate with local governments and

agencies to maximize natural resource planning, conservation and protection activities so that no net losses of dune vegetation occur in the coastal area compared to January 1993.

- The Comprehensive Plan should consider land acquisition of undeveloped areas, using conservation easements, and purchase or transfer of development rights from areas within the CHHA to areas outside the CHHA.
- The City should consider coordinating with Bay County, FDOT and MPO to prioritize improvements to hurricane evacuation routes, and identify hurricane evacuation routes on the Future Transportation Map Series.
- The Comprehensive Plan should consider prohibiting new high risk developments (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks in CHHA, and require that existing facilities prepare an evacuation plan if located in the HVZ..
- The Comprehensive Plan should consider requiring developments that increase evacuation clearance time in the CHHA to provide mitigation measures such as emergency van pools.
- The Comprehensive Plan should consider requiring that all new mobile homes (manufactured homes) and recreational vehicle developments within the HVZ shall be required by county development regulations to pay an impact fee to the county for off-site shelter.
- The Comprehensive Plan should consider instituting a level of service (LOS) standard that is tied to levels of development (e.g., evacuation and sheltering) in the HVZ.
- The Comprehensive Plan should consider imposing impact fees in HVZ to cover costs to build new shelters, or retrofit schools as shelters, and operating costs, and evacuation activities.
- The City should consider increasing shelter capacity by evaluating all new or school retrofit projects outside of the HVZ and 100-year floodplain for the ability to shelter special needs and general population.
- The City should consider that new development, redevelopment, zoning changes and land use plan amendments shall be consistent and coordinated with LMS and the NW FL Hurricane Evacuation Study.
- The City should consider defining the CHHA to also include category 1 surge zone.
- The City should consider requiring that all new public emergency shelters to be built outside the HVZ.
- The City should consider the LMS project list during the annual review of the five-year capital improvements.
- The City should consider establishing a criteria in the capital budgeting process for the consideration of projects that reduce the risk of natural hazards

#### *Flood*

- The Comprehensive Plan should continue to use LDRs to protect and conserve wetlands and ensure no net losses of wetlands areas as they existed on 1/1/90.
- The City should continue to protect and conserve the natural functions of wetlands and water bodies through wetland and shoreline protection buffers, and limit

development in designated wetland areas at the density of one dwelling unit per five acres.

- The Comprehensive Plan should continue to minimize the impacts to wetlands by limiting dredging and filling of wetlands; requiring buildings to be clustered to the maximum extent possible, and be built on pilings to exceed by one foot the highest recorded flood level in the wetland. If there is not flooding data available, buildings must be built at least two feet above the highest seasonal water level.
- The Comprehensive Plan should continue to design and locate development so that there are no impacts to wetland's flood storage and conveyance capabilities, and require that development in 100-year floodplain provide a 1:1 ratio for compensating flood storage where flood storage areas are displaced.
- The City should consider ensuring that all public facilities that serve first response and critical emergency needs are located outside the flood zone or flood prone areas.
- The Comprehensive Plan should consider requiring the restoration or enhancement of disturbed or degraded wetlands by removing invasive toxics or replanting native vegetation on city-owned land.
- The Comprehensive Plan should consider using the development approval process to ensure that new development and redevelopment is consistent with natural drainage patterns; and requiring appropriate stormwater management systems consistent with adopted drainage LOS, natural drainage patterns, and soil conditions.
- The Comprehensive Plan should consider prioritizing public structures for retrofit, relocation, or flood-proofing public facilities or infrastructure in the 100-year floodplain.
- The Comprehensive Plan should consider floodproofing water and wastewater treatment plants in the CHHA
- The city should limit the expansion of public facilities in high risk hazard areas, when retrofitting or floodproofing is used instead of relocation or replacement.
- The Comprehensive Plan should consider designating wetlands, floodplains for preservation through FLUM or overlay zoning district, and ensure adequate open space for protected natural resource lands, environmentally sensitive lands, and drainage and stormwater retention areas in the 100-year floodplain.
- The City should consider including a policy for reducing future losses through transfers of development rights from areas within the 100-year floodplain to areas outside the 100-year floodplain.
- The City should consider including a policy to not approve variances to required flood elevations.

### *Wildfire*

In the urbanized areas of Panama City Beach, there are no immediate hazard risks pertaining to wildfires. Therefore, it is not a priority for this municipality to incorporate this hazard mitigation principle into the local Comprehensive Plan. Although Table 10 depicts wildfire hazard within the city boundaries in land use categories such as "Mixed Use", these are primarily undeveloped lands. As they become developed, the wildfire hazard will be greatly reduced.

*General*

- The Comprehensive Plan should continue 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.
- 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 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 storm surge and floods, and make them aware of proactive steps they can take to mitigate damage.

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Strategies & Integration Topics: Are these integrated in LMS & Local Comprehensive Plan?		Current LMS Information, Goals & Objectives		Current Comp Plan Policies	Options for Further Integration into the Comprehensive Plan	Options for Further Integration into the LMS	Basis For Suggested Options	
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<b>Strategy - Collaboration, coordination, and education</b>								
Is there information sharing and/or involvement in plan development between planners and emergency managers?	No	Yes	None found during this review.	CME O 19 Incorporate recommendations of a hazard mitigation plan into Comp Plan.	The same steering committee or members from each group of planners & emergency managers should update LMS & comp plan.	Include a goal/objective to maintain communication with LMS steering committee & key county/municipal departments to coordinate intra- and inter-departmental mitigation activities among jurisdictions and the public.	Best management practices from <i>Protecting Florida's Communities</i>	
Do the Comp Plan, LMS, CEMP, and other local and regional plans cross-reference each other and include consistent data on hazardous locations?	No	Yes	None found during this review.	CME P 11.2 Periodically review hurricane evacuation plans through a joint meeting of Bay County Emergency Management Department, municipalities & transportation planners.	New development, redevelopment, zoning changes & land use plan amendments shall be consistent & coordinated with LMS & NW FL Hurricane Evacuation Study	Include goal/objective to review & compare LMS with plans that have mitigation provisions (e.g., comp plan)	Okaloosa County LMS & Comp Plan FLUE O 7,	
				CME P 18.1 Prepare short-term recovery implementation procedures to be incorporated in the Bay County Peacetime Emergency Plan and City operating procedures.				
				CME P 19.1 By 12/94, City will prepare LMS to address hazard mitigation via regulation of building practices, floodplains, beach & dune alteration, stormwater management, sanitary sewer & septic tanks, & land use to reduce exposure of people & property to natural hazards. Recommendations will be incorporated into Comp Plan.	Coordinate Stormwater Master Plan with LMS Guiding Principles			Okaloosa Comp Plan SE P 1.2
				DSE P 1.1 In 1993, City Stormwater Management Plan shall be developed with Bay County and regulatory agencies, such as FDEP & Northwest Florida Water Management District.				Bay County Comp Plan
G 6 O Local jurisdictions will participate fully in the NFIP & CRS	DSE P 1.4 Upon completion of the stormwater management plan, the City will amend the comp plan to include the findings & recommendations	Continue eligibility & participate in NFIP						

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Do the Comp Plan, LMS, CEMP, and other local and regional plans cross-reference each other and include consistent data on hazardous locations? (continued)	LMS & Comp data needs to be compared (local action)		<b>G 1 O</b> Data & information needed for defining hazards, risk areas & vulnerabilities in the community will be obtained	Data and Analysis section not reviewed for this project.	Include map of identified hazard locations (e.g., SLOSH, 100-year floodplain) overlain with land uses in the FLU series.  Cross reference the LMS source data that is used in plan updates to ensure that data is consistent and not conflicting.	Include existing and future land uses on each hazard map, for those hazards identified as those that county is at most risk.	Consistent use of data will enhance/strengthen hazard mitigation planning. Maps are useful to analyze relationship between land uses in hazard areas for mitigation planning or changes to future land uses.
Are hazard mitigation projects addressed in the 5-year schedule of Capital Improvement Projects?	Local Action	Local Action	No specific projects are listed in the version of the LMS that was reviewed for this profile.	<b>CIE P 1.1</b> (in part) In the absence of legal constraints on the use of revenues, projects and programs shall be funded in order to correct public hazards	During the annual review of the five-year schedule of capital improvements the LMS project list will be considered.  Establish criteria within the capital budgeting process to evaluate capital improvement projects that eliminate future public hazards.	Update the LMS projects on a regular basis, to incorporate into the CIE.	FEMA funds are available for hazard mitigation.  Establish criteria to consider public hazard elimination when evaluating capital improvement projects. [9J-5.016(3)(c)1a.]  Bay County Comp Plan CME P O.7.7
Are there measures to educate residents, homeowner/property associations, and the business community of ways they can mitigate against hazards?	Yes	Yes	<b>G 10</b> All members of the community will understand the hazards threatening local areas & the techniques to minimize vulnerability to those standards	<b>CME P 10.3</b> Notify at the appropriate time, owners of property in the CHHA of property designation to increase public awareness of hurricane hazard.			

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<b>Strategy - Get out of the way: provide evacuation and sheltering services</b>							
Are there measures to provide adequate evacuation clearance time to support current population and population growth?	No	Yes	None found during this review.	CME O 11 Maintain a roadway clearance time for hurricane evacuation.			
				CME P 11.1 Improvements to road segments that are a part of the hurricane evacuation route shall be considered a priority in making traffic circulation improvements.	Prioritize evacuation route improvements in Capital Improvements schedule & MPO Long-Range Transportation Plan.	Include goal/objective to ensure roads are designed & engineered for the amount of wind, surge, flooding and debris that can be expected.	Best management practices from <i>Protecting Florida's Communities</i>
				CME P 11.2 Periodically review hurricane evacuation plans through a joint meeting of Bay County Emergency Management Department, municipalities and transportation planners.	Adopt CEMP that's consistent with updated NWFL Hurricane Evacuation Re-Study		Okaloosa County Comp Plan CME P 2.5.1 & Okaloosa LMS
				CME P 11.3 Emergency Evacuation map is adopted as the routes to be used for evacuations in an emergency. Evacuations should be achieved in at least 10 hours from the time the City Council concludes that evacuation is necessary.			Okaloosa County Comp Plan CME P 2.5.2
				CME P 11.4 Adjust the evacuation timetable as necessary based on occupied dwelling unit information.	Proposed plan amendments that increase densities in CHHA are subject to review & transportation analysis to determine impact on hurricane evacuation times & routes		Okaloosa County Comp Plan CME P 2.5.3
				CME P 11.5 Consider the impacts on the transportation system relative to hurricane evacuation in the development approval process.	Institute a level of service (LOS) standard that is tied to levels of development and/or institute an impact fee in the CHHA or HVZ to help pay for evacuation expenses		Best management practices from <i>Protecting Florida's Communities</i>
				CME P 11.7 Continue to develop evacuation procedures for citizens and other organizations concerned with the transportation disadvantaged.	Hurricane evacuation routes are identified & shown on Future Transportation Map Series	Examine the topographic data that was used to run the SLOSH model to determine if better data (i.e., LIDAR), as available, could be used to identify evacuation zones.	Science & technology can provide more accurate data, and enhance analysis, & Okaloosa County Comp Plan

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Are there measures to provide adequate shelter space to meet population growth and special needs?	Yes	No	G 3 O Designated evacuation shelters will be retrofitted or relocated to ensure operability during & after disasters	None found during this review.	Require developments that increase evacuation clearance time in the CHHA to provide mitigation measures such as emergency van pools or on-site emergency shelters	Update social vulnerability results on a regular basis in the LMS and existing shelter capacity to substantiate mitigation action pertaining to sheltering provisions.	There is an existing shelter deficit of 7,445 and population growth is imminent.
					Require new public emergency shelters to be built outside the HVZ	Include goal/objective to ensure that all public buildings that serve as first response & critical emergency or public needs are located outside flood zones or flood-prone areas.	
					Institute impact fees in HVZ zone to cover costs to build new shelters, or retrofit schools to use as shelters, & operating costs.		
					To increase shelter capacity, all new or school retrofit projects outside of the HVZ and 100-year floodplain shall be evaluated for sheltering of special needs and general population, and built to ARC standards.		
					All new mobile homes and recreational vehicle developments within the HVZ shall be required by county development regulations to pay an impact fee to the county for off-site shelter.		Escambia County Comp Plan CME P 11.A.7.8

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<b>Strategy - Make the environment less hazardous: Protect and enhance natural protective features</b>							
Are there measures to protect and/or restore natural resources that might in turn decrease the risk from storm surge?	Yes	Yes	<b>G 6 O</b> Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community.	<b>CE O 3</b> Coordinate with other local governments & agencies to maximize natural resource planning, conservation & protection activities so that no net losses of dune vegetation occur in the coastal area compared to January 1993.	Require restoration of damaged beach & dunes systems as part of new beachfront development projects; and participate in joint federal, state & local beach nourishment projects where financially feasible.	Include data and maps of environmentally sensitive lands (e.g., CBRS, and coastal dunes and wetlands, etc.) overlaid with storm surge zones and future land uses.	Most sensitive portion of coastal area shall be managed through the imposition of strict construction standards to minimize damage to natural environment, private property, & life [§161.53(5), F.S.]; protect beaches or dunes, establish construction standards which minimize impacts of man-made structures on beach or dune systems, and restore altered beaches or dunes [9 J-5.012(3)(b)4], and best management practices from <i>Protecting Florida's Communities</i> .
				<b>CME O 4</b> Adopt criteria for the permitting of shoreline land uses within the coastal area			
				<b>CME P 4.2</b> All new or redeveloped shoreline land use shall be on existing upland areas, & provide for treatment of all discharge, including stormwater runoff, from land uses into bodies of water to incorporate standards for treatment to meet the requirements of 17-4.240, F.A.C.& stormwater LOS.			
				<b>CME P 10.1</b> The CHHA will be all land in the Category 1 storm surge zone	Define CHHA to also include category 1 surge zone.		
				<b>CE O 5</b> Through implementation of LDRs, City will protect and conserve wetlands, seagrasses and shorelines and ensure no net losses of wetlands and seagrass areas as they existed on January 1, 1990.	New development, redevelopment, zoning changes & land use plan amendments shall be consistent with LMS Guiding Principles regarding the protection of environmentally sensitive lands through land use policies that support sustainable communities	Include goal/objective to support protection of natural resources.	Okaloosa County Comp Plan FLUE P 7.1
						As LMS Guiding Principles are updated, incorporate into the comp plan.	Consistent use of information will enhance/strengthen planning endeavors for hazard mitigation.

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from storm surge? (continued)	Yes	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community. (continued)	CE P 5.8 (in part) The City shall protect and conserve the natural functions of wetlands and water bodies through wetland and shoreline protection buffers. These buffers shall be no more than 100 feet and no less than 50 feet.	Protect against hazard impacts from natural disaster through land acquisition, conservation easements, and/or purchase of development rights in high risk areas.	Include goal/objective to promote continued purchase of undeveloped lands at high risk to flooding, with proper considerations of private property rights & compensation	Okaloosa County Comp Plan CME P 7.7.4
					Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA to reduce the development potential of these areas.		Bay County Comp Plan CME P 7.7.4
Are there measures to protect and/or restore natural resources that might in turn decrease the risk from flooding?	No	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community.	CE O 5 Through LDRs, City shall protect & conserve wetlands, seagrasses and shorelines & ensure no net losses of wetlands and seagrass areas as they existed on 1/1/90.	Use GIS to institute a wetlands identification & monitoring program. Identify lots/parcels containing wetlands based on actual jurisdictional interpretations & develop monitoring program to determine wetland loss	Designate wetlands, floodplains for preservation through FLUM or overlay zoning district.	Bay County Comp Plan CE O 6.12
				CE P 5.2 City shall protect and conserve the natural functions of existing soils, wetlands, marine resources, wildlife habitat, flood zones, and estuaries by using guidelines to establish standards in its LDRs.			Consistent use of data will enhance/strengthen mitigation planning.
				CE P 5.4 Wetlands and seagrass areas within the City shall be deemed environmentally sensitive, in recognition of their many natural functions and values, and shall be protected from incompatible land uses.	Restore/enhance disturbed or degraded wetlands by removing invasive toxics or replanting native vegetation	Options for Further Integration into the LMS	Okaloosa County Comp Plan CE P 5.1 Okaloosa County LMS mitigation actions.
				CE P 5.7 (in part) Buffers will be created between development and wetlands, surface water bodies, and upland areas adjacent to these resources.	New development, redevelopment, zoning changes & land use plan amendments shall be consistent with LMS Guiding Principles regarding the protection of environmentally sensitive lands through land use policies that support sustainable communities	Include goal/objective to protect environmentally sensitive lands in 100-year floodplain	Okaloosa County Comp Plan FLUE P 7.1 & Okaloosa County LMS mitigation actions.
				CE P 5.8 (in part) The City shall protect and conserve the natural functions of wetlands and water bodies through wetland and shoreline protection buffers. These buffers shall be no more than 100 feet and no less than 50 feet.			
				CE P 5.9 (in part) Notwithstanding anything contained herein to the contrary, development in designated wetland areas will be allowed at the density of one dwelling unit per five acres.			

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Are there measures to protect and/or restore natural resources that might in turn decrease the risk from flooding? (continued)	Yes	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community. (continued)	CE P 5.12 Policy 5.12: (in part) Performance standards to minimize the impacts to wetlands: a. Limit dredging or filling of wetlands b. Buildings shall be clustered to the maximum extent possible.c. Buildings must be built on pilings of sufficient height to exceed by one foot the highest recorded flood level in the wetland. If there is not flooding data available, buildings must be built at least two feet above the highest seasonal water level. e. Development is designed and located in such a manner that there are no impacts to wetland's flood storage & conveyance capabilities.	Include goal/objective to maintain/enhance stormwater management systems in 100-year floodplain		
				CE P 5.15 All development activity undertaken within designated A-zones per official FEMA Flood Insurance Rate Map for City shall be subject to restrictions & standards of city's Floodplain Management Ordinance per Chapter 11 of the City's Code of Ordinances.			Development approval process shall ensure new development & redevelopment is consistent with natural drainage patterns & require appropriate stormwater management systems consistent with adopted drainage LOS, natural drainage patterns & soil conditions.
				CE P 5.17 Development in 100-year floodplain will be required to provide 1:1 ratio for compensating flood storage where flood storage areas are displaced.			

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<b>Strategy - Make structures more resistant to natural hazard forces</b>								
Are there measures that support retrofitting or relocating private and/or public structures in hazard areas?	Yes	Yes		CME O 6 Eliminate substandard structures & incompatible uses, & redevelop following disasters.	Review and consider the Post-Hazard Mitigation Strategy(LMS) as basis for additional regulations for building practices, flood zone management, retrofitting existing buildings & other measures to reduce coastal storm damage	Map and assess vulnerability of public facilities and infrastructure that are susceptible to hazards. This information can be used to prioritize facilities for structural/operational analyses. The analysis results can then be used to prioritize LMS mitigation projects and capital improvement projects.	Bay County Comp Plan CME P 7.9.1	
			G 3 O Designated evacuation shelters will be retrofitted or relocated to ensure operability during & after disasters		Prioritize public structures for retrofit, relocation, or flood-proofing public facilities or infrastructure in 100-year floodplain.			
			G 3 O Local emergency service facilities will be retrofitted or relocated to withstand structural impacts of a disaster					Best management practices from <i>Protecting Florida's Communities</i>
				CIE P 1.1 (in part) In the absence of legal constraints on the use of revenues, projects and programs shall be funded in order to correct public hazards	Floodproof WWTP and WTP systems in CHHA	Assist property owners, residents, businesses, non-profits and others in understanding and knowing or their eligibility for grants, loans and services that may help to mitigate hazards that directly affect their interests.	Okaloosa County Comp Plan CME P 1.2.5, FEMA funds are available for hazard mitigation & Okaloosa county LMS	
		G 6 O Local jurisdictions will participate fully in the NFIP & CRS	DSE G Provide a drainage program to provide reasonable protection from flood damage to public and private property.					
Are there measures to protect cultural resources from natural hazards?	No	No	None found during this review.	FLUE O 5 The City shall continue to implement procedures for evaluating historic resources and natural resources within the City.	Create an inventory of culturally significant facilities/sites (e.g., historic, archaeological) in high hazard areas.	Asses vulnerability of historic structures & include goal/objective to mitigate historic properties	Best management practices from <i>Protecting Florida's Communities</i>	
				FLUE P 5.1 The city shall keep a current listing of historic resources and natural resources. Historic resources will be those identified by the Department of State on its Master Site File.				
				FLUE P 5.2 The Land Development Regulations will implement regulations for development or redevelopment on each site to evaluate the possibility of historic resources.	Protect culturally significant facilities (e.g., historic, archaeological) in high hazard areas.			

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Does the comp plan include measures to mitigate flood damage to Repetitive Loss structures?	Yes	Yes	G 6 O Local jurisdictions will participate fully in the NFIP & CRS	CME O 6 Eliminate substandard structures & incompatible uses, and& redevelop following disasters.	Identify structures that are repetitively damaged by coastal storms.	Include a goal/objective to mitigate repetitive loss properties.	Repetitive loss structures shall be inventoried or analyzed [9J-5.012(2)(e)2]
					Perform an analysis for acquiring, relocating or elevating Repetitive Loss structures in the SFHA (100-year floodplain).		
					Limit expansion of public facilities in high risk hazard areas, when retrofitting/floodproofing is used instead of relocation or replacement.		
					Initiate grant/ loan program to assist all property owners with financing elevating, floodproofing, or relocating existing repetitive loss structures in SFHA.	Assist property owners, residents, businesses, non-profits and others in understanding and knowing or their eligibility for grants, loans and services that may help to mitigate hazards that directly affect their interests.	
Are there measures to require compliance with or exceed building codes and/or design standards for certain hazard areas?	Yes	Yes	G 6 O Local governments will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community.	CME P 15.1 Redevelopment of structures within the CHHA that are permitted subject to the adopted requirements shall be constructed to comply with National Flood Insurance minimum elevation and construction standards and conform to minimum coastal construction standards.	Exceed CCCL permitting standards in CHHA		Best management practices from <i>Protecting Florida's Communities</i>
				CME O 16 Establish site design criteria for construction and reconstruction within the CHHA.			
				DSE G Provide a drainage program to provide reasonable protection from flood damage to public and private property.	Ensure development does not cause any adverse impacts to adjacent or other properties		

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Are there measures to require compliance with or exceed building codes and/or design standards for certain hazard areas? (continued)	Yes	Yes	G 6 O Local jurisdictions will participate fully in the NFIP & CRS	DSE O 1 In conjunction with development of its LDRs, the City shall develop a stormwater management plan for the City, which addresses creation of stormwater utility & existing & future stormwater management needs.	Prohibit unauthorized obstruction of natural or man-made drainageways	Include objective to support development that meets or exceeds existing codes and standards of the FBC, CCCL, and NFIP.	Bay County Comp Plan SME P 5E.1
				DSE P 1.1 (in part) By December 1993, the City will identify existing deficiencies and begin correction of those deficiencies prior to the completion of the Stormwater Management Plan.			
				DSE O 2 City shall achieve and maintain stormwater management level of service standard upon adoption of comp plan.			
				DSE P 2.1 Stormwater discharge facilities shall be designed to achieve the water quantity and quality standards for a level of service standard where peak post-development runoff shall not exceed peak pre-development runoff rates based upon the 25-year, 24-hour designed storm.			

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<b>Strategy - Manage the development and redevelopment in hazardous areas</b>							
Are there measures to limit population densities in high-hazard areas?	No	Yes: for Surge	None found during this review.	CME O 12 Limit population concentrations inside CHHA to reduce exposure to human life to natural disasters.			
				CME P 12.1 The Public Works Department shall prepare annually an estimate of population density in the CHHA, to include all existing development and developments having received development approval.			
				CME P 12.2 Population concentrations shall be directed away from the CHHA through provisions in the Land Development Regulations, if the emergency evacuation time standard of Policy 11.3 cannot be maintained.	Direct population concentrations away from the CHHA through implementation of FLUM, acquisition of land, & LMS	Include map that depicts population densities in existing land use categories, and project growth rate to illustrate current & potential future vulnerability	Okaloosa County Comp Plan CME O 2.1
				CME P 16.1 The issuance of development permits in the CHHA shall be conditioned that construction be limited to adopted densities and intensities in the land development regulations.	High risk facilities (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks shall not be located in CHHA and existing facilities should prepare an evacuation plan if in HVZ.		Bay County Comp Plan CME P 7.7.3
					Use local, state or federal funds to purchase/lease large tracts of undeveloped land in the CHHA.	Include goal/objective to support acquisition of undeveloped land in high hazard areas	Bay County Comp Plan CME P 7.7.4

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Are there measures to limit public expenditures that subsidize development in high-hazard areas?	No	Yes	None found during this review.	CME P 1.2 The City shall not publicly fund infrastructure expansion or improvements in CHHA unless such funds are necessary to provide services to existing development,adequate emergency evacuation, or for needs of water-dependent uses.	Capacity of public infrastructure shall not be increased on Coastal Barrier Resources consistent with CBRA.	Include objective to limit public expenditures in high hazard areas, unless funds are used to mitigate an existing critical facility or repetitive loss structure.	Bay County Comp Plan CME P 7.13.2
				CME G 2 Protect human life and limit public fund expenditure in areas that are subject to destruction by natural disasters.			
				CME O 13 Limit public fund expenditures for public facilities and infrastructure in the CHHA.	City shall not accept dedications of roads, water & sewer facilities, or other public facilities in CHHA unless specifically provided for in an enforceable development agreement.	Include list of all mitigated projects in high hazard areas, damage costs prior to mitigation, cost to mitigate and cost savings due to mitigation (if known).	Bay County Comp Plan CME P 7.7.5
				CME P 13.1 Public facilities shall not be located or improved in the CHHA unless use is necessary to protect public health, safety, and welfare; services provided by the facility cannot be provided at another location outside the CHHA; or use is necessary to restore and/or enhance natural resources.	New high risk facilities (e.g., nursing homes, convalescent homes, hospitals, mobile home parks, subdivisions or RV parks shall not be located in CHHA and require that existing facilities must prepare an evacuation plan if located in the HVZ.	Include map of critical facilities, & table & map of infrastructure in hazard zones, to depict those currently exposed to hazard impacts	Bay County Comp Plan CME P 7.7.3
				CME P 14.2.C Public facilities shall be relocated to areas outside of the CHHA, unless they satisfy the criteria established in Policy 13.1.	Ensure that all public facilities that serve first response and critical emergency needs are located outside the flood zone or flood prone areas.	Update the LMS maps/tables that show which critical facilities are located in SFHAs. These could be prioritized for retrofit or relocation using HMGP, PDM, or FMA funds.	Critical facilities ability to provide essential services may be hampered if the structure or surrounding areas are flooded, posing a barrier to access. Okaloosa Comp Plan for comp plan recommendation.

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Are there creative neighborhood design solutions or development regulations that mitigate hazards, such as clustering or transfer of development rights?	No	Yes					CME P 16.1 Issuance of development permits in the CHHA shall be conditioned that construction will be limited to adopted densities and intensities in the land development regulations; placement of required open space, if any, shall be in the most vulnerable area of the site; and access to structures shall be provided on the landward side.	Protect against natural hazard impacts by limiting density and intensity of development using transfer of development rights.	Include goal/objective to encourage creative neighborhood design solutions or development regulations which mitigate natural hazards	Okaloosa County Comp Plan FLUE P 6.3
						CE P 5.12 Policy 5.12: (in part) Performance standards to minimize the impacts to wetlands: a. Limit dredging or filling of wetlands b. Buildings shall be clustered to the maximum extent possible.c. Buildings must be built on pilings of sufficient height to exceed by one foot the highest recorded flood level in the wetland. If there is not flooding data available, buildings must be built at least two feet above the highest seasonal water level. e. Development is designed and located in such a manner that there are no impacts to wetland's flood storage & conveyance capabilities.				
Are there measures to limit redevelopment in hazard areas and procedures for post-disaster recovery that will lead to a more disaster-resistant community?	No	Yes					CME O 6 Eliminate substandard structures & incompatible uses, & redevelop following disasters.			Okaloosa County Comp Plan CME P 2.6.1, FEMA funds are available for hazard mitigation & Okaloosa county LMS & Best management practices from <i>Protecting Florida's Communities</i>
						CME P 15.1 Redevelopment of structures in CHHA permitted subject to adopted requirements shall be constructed to comply with NFIP minimum elevation & construction standards & conform to minimum coastal construction standards.	Exceed minimum NFIP requirements when practicable.	Include objective to enforce or exceed NFIP standards when practicable.		
						CME O 14 Adopt a Post-disaster Redevelopment Plan (PDRP) for Panama City Beach that identifies short-term recovery and long-term redevelopment activities.		Include in LMS Guiding Principles, measures to protect people, reduce post disaster public expenditures & coordinate with private sector to mitigate losses.		
						CME O 15 PDRP will provide a process for consideration of relocation, removal or modification of damaged structures.				
						CME P 18.1 Prepare short-term recovery implementation procedures to be incorporated in the Bay County Peacetime Emergency Plan and City operating procedures.				

## 7. Data Sources

### County Overview:

Florida Population Studies Bulletin 141: Projections of Florida Population by County, 2004–2030. Bureau of Economic and Business Research, Warrington College of Business, University of Florida. Gainesville, Florida.

Florida Statistical Abstract – 2004 (38<sup>th</sup> 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.

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

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

### GIS Data:

#### Flood Zone

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

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

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

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

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

Hurricane Storm Surge Zone GIS Data

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

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

Sinkhole Hazard GIS Data

Source: Kinetic Analysis Corporation web site (2005),  
at: [http://lmsmaps.methaz.org/lmsmaps/final\\_cty/](http://lmsmaps.methaz.org/lmsmaps/final_cty/)

- 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 the above website.

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.

Parks, Conservation Areas, Golf Courses

"Parks, Conservation Areas, Golf Courses" existing land uses include all public and private conservation areas depicted on the statewide GIS coverage of conservation lands "flma\_200501.shp", produced by FDEP (2005).

Municipal Boundaries

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

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

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

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

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

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

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

- *Local government will have the capability to develop, implement and maintain effective mitigation programs.*
  - Data and information needed for defining hazards, risk areas and vulnerabilities in the community will be obtained
  - The capability to effectively utilize available data and information related to mitigation planning and program development will be available
  - The effectiveness of mitigation initiatives implemented in the community will be measured and documented
  
- *The policies and regulations of local government will support effective hazard mitigation programming throughout the community.*
  - Local government will ensure that hazard mitigation needs and programs are given appropriate emphasis in resource allocation and decision-making
  - Local government will establish and enforce building and land development codes that are effective in addressing the hazards threatening the community
  - Local jurisdictions will participate fully in the National Flood Insurance Program and the associated Community Rating System

**ATTACHMENT F**  
**Bay County Comprehensive Plan Excerpts Related to Hazard Mitigation**

**TRANSPORTATION ELEMENT**

**OBJECTIVE 4.11:** Assist and support efforts by FDOT and the MPO toward improving major State highway access into Bay County to provide more effective and efficient transportation movement and hurricane evacuation.

**Policy 4.11.1:** Hurricane evacuation routes are identified and shown on the Future Transportation Map Series – Map 5 found in this element.

**SOLID WASTE MANAGEMENT SUB-ELEMENT**

**OBJECTIVE 5D.6:** By 1999, include provisions in the Land Use Code that will regulate the location, construction, and operation of landfills.

**Policy 5D.6.1.4:** Temporary C and D landfills may be allowed in Urban and Suburban Service Areas during declared emergencies.

**STORMWATER MANAGEMENT SUB-ELEMENT**

**OBJECTIVE 5E.10:** Establish specific provisions for the regulation of stormwater runoff.

**Policy 5D.10.6L** Require evaluation of flooding that may be caused by the development of vacant land adjacent to existing developed areas, including adjacent building lots in subdivisions.

**Policy 5E.10.1.1** Prohibit the unauthorized obstruction of natural or man-made drainageways.

**Policy 5E.10.1.7.b:** For purposes of flood attenuation, all development projects shall be designed and constructed so as to accommodate the 25-year critical duration storm event as outlined in the FDOT Drainage Manual. This requirement shall not apply to the construction of single-family, duplex, triplex, or quadraplex dwellings and customary accessory uses.

**OBJECTIVE 5E.11:** Continue eligibility for and participation in the National Flood Insurance Program (NFIP).

**Policy 5E.11.1:** The County will continue participation in the NFIP and will use its Flood Damage Prevention Ordinance to reduce the potential for flooding.

**CONSERVATION ELEMENT**

**OBJECTIVE 6.11:** Protect and conserve wetlands and the natural functions of wetlands.

**Policy 6.11.3.2:** Developers will design and construct development projects so as to avoid activities that would destroy wetlands or the natural functions of wetlands.

**OBJECTIVE 6.12:** By 2000, institute a program using GIS that will identify lots or parcels containing wetlands based on actual jurisdictional interpretations, and develop a monitoring program to determine loss of wetlands.

**Policy 6.12.1:** The County will use its GIS to institute a wetland identification and monitoring program.

**OBJECTIVE 6.13:** Reduce the potential risk to lives and property from flooding by using hazard mitigation strategies and special building construction practices.

**Policy 6.13.2:** The County will use its Local Hazard Mitigation Strategy, when completed, to reduce the potential for flood damage.

**Policy 6.13.3:** The County will use its Flood Damage Prevention Ordinance to ensure that structures built in flood zones are properly elevated and constructed so as to reduce the risk of flood damage.

**Policy 6.13.4:** The County will adopt regulations to ensure that new development does not create a flood hazard to existing or downstream development.

**OBJECTIVE 6.15:** Restrict development that will damage or destroy significant dunes (as defined at 62B-33.002(13), F.A.C.)

**Policy 6.15.1:** Developers of beachfront projects shall make every effort to avoid damaging significant dunes. Where such damage is unavoidable, the significant dune must be restored and revegetated to at least pre-development conditions. Mitigation required as a result of a DEP Coastal Construction Permit shall be presumed to satisfy dune restoration requirements.

**OBJECTIVE 6.18:** Provide landowners with beneficial use of their property when environmental restrictions cause the loss of full development potential through use of innovative and flexible development strategies.

#### **COASTAL MANAGEMENT ELEMENT**

**OBJECTIVE 7.4:** Restrict development that will damage or destroy significant dunes (as defined at 62B-33.002(13), F.A.C.) unless appropriate mitigation measures are undertaken.

**Policy 7.4.1:** Developers of beachfront projects shall make every effort to avoid damaging significant dunes. Where such damage is unavoidable, the significant dune must be restored and revegetated to at least predevelopment conditions. Mitigation required as a result of a DEP Coastal Construction Permit shall be presumed to satisfy dune restoration requirements.

**OBJECTIVE 7.5:** Institute beachfront construction standards that will protect coastal resources and minimize the potential for damage caused by coastal storms.

**Policy 7.5.1:** All development undertaken seaward of the Coastal Construction Control Line (CCCL) shall be in strict compliance with Ch. 62B-33, F.A.C. Other development undertaken within 1500 feet of the CCCL must be undertaken in compliance with the Coastal Zone Protection Act. (§161.55 F.S.).

**OBJECTIVE 7.6:** Define and establish the “Coastal High-Hazard Area” (CHHA).

**Policy 7.6.1:** The CHHA will be all land area lying within the Category 1 Hurricane Evacuation Zone.

**OBJECTIVE 7.7:** Restrict development in the “Coastal High-Hazard Area” (CHHA) and limit public expenditures that subsidize development within the CHHA.

**Policy 7.7.2.:** Public subsidy of infrastructure for development in the CHHA shall be limited to the demand that will result from build-out at 15du/acre. This policy shall not preclude private investment for infrastructure in the CHHA.

**Policy 7.7.3:** High risk developments such as nursing homes, convalescent centers, hospitals, mobile home parks, subdivisions, or R/V parks shall not be located in the CHHA.

**Policy 7.7.4:** Use local, state, and federal funds as may be available to purchase or lease large tracts of undeveloped land in the CHHA so as to reduce the development potential of these areas.

**Policy 7.7.5:** The County shall not accept dedications of roads, water and sewer facilities, or other public facilities in the CHHA unless specifically provided for in an enforceable development agreement.

**OBJECTIVE 7.8:** Restore eroded or damaged beach and dune systems when financially feasible.

**Policy 7.8.1:** Require restoration of damage beach and dune systems as part of new beachfront development projects; and participate in joint federal, state and local beach nourishment projects when financially feasible.

**OBJECTIVE 7.9:** By 2000, prepare a Post-Hazard Mitigation Strategy intended to minimize threat to the life and property caused by coastal storms.

**Policy 7.9.1:** Use the Post-Hazard Mitigation Strategy as the basis for additional regulations governing building practices, flood zone management, retrofitting existing buildings, and other measures as considered necessary to reduce damage by coastal storms.

**Policy 7.13.2:** Capacity of public infrastructure shall not be increased on Coastal Barrier Resources consistent with the Coastal Barrier Resources Act (U.S. Code, Title 16, Chapter 55).

**OBJECTIVE 7.14:** By 2001, establish a comprehensive pre- and post disaster development strategy.

**Policy 7.14.1:** The County will establish a comprehensive pre and post disaster redevelopment strategy that will include land purchase, hazard mitigation, building practices and other related considerations. This strategy will be incorporated into this Plan upon completion and approval.

**Policy 7.16.1:** The County will coordinate with the State Division of Emergency Management (DEM) as specified in Section 252.36, F.S. toward implementation of the state comprehensive emergency management plan.

**Policy 7.13.2:** Capacity of public infrastructure shall not be increased on Coastal Barrier Resources consistent with the Coastal Barrier Resources Act (U.S. Code, Title 16, Chapter 55).

**OBJECTIVE 7.16:** The County shall maintain a roadway clearance time for hurricane evacuation of 24 hours for category 4-5 storms. (Northwest Florida Hurricane Evacuation Study, July 1999).

**Policy 7.16.2:** Improve coordination between the County and State agencies relative to maintaining or improving hurricane evacuation.

### **CAPITAL IMPROVEMENTS ELEMENT**

**OBJECTIVE 11.3:** Restrict development in the "Coastal High Hazard Area" (CHHA) and limit public expenditures that subsidize development within the CHHA.

**Policy 11.3.1:** Residential density in the CHHA will be restricted to a maximum of 15 dwelling units per acres (15 du/acre) in areas where adequate infrastructure exists to accommodate that level of development.

**ATTACHMENT G**

**City of Panama City Beach Comprehensive Plan Excerpts Related to Hazard Mitigation**

**COASTAL MANAGEMENT ELEMENT**

**Policy 1.2:** The City shall not utilize public funds for infrastructure expansion or improvements in CHHA unless such funds are necessary to: 1. Provide services to existing development; 2. Provide adequate evacuation in the event of an emergency; 3. Provide for needs of water-dependent uses.

**OBJECTIVE 3:** Coordinate with other local governments and appropriate agencies to maximize natural resource planning, conservation and protection activities so that no net losses of dune vegetation occur in the coastal area as compared to January 1993.

**OBJECTIVE 4:** (in part) Adopt criteria for the permitting of shoreline land uses within the coastal area.

**Policy 4.2:** (in part) All new or redeveloped shoreline land use shall: (d) Locate on existing upland areas; (f) Provide for the treatment of all discharge, including stormwater runoff, from land uses into bodies of water to incorporate standards for treatment adequate to meet the requirements of 17-4.240, F.A.C. and the stormwater level of service standards adopted in this Plan.

**OBJECTIVE 10:** Identify the Coastal High Hazard Area.

**Policy 10.1:** The Coastal High Hazard Area (CHHA) shall be defined as the area approximated by the Category 1 hurricane storm surge as reflected on the Tri-State Evacuation Study, Mississippi-Alabama-Florida, June 1986, Appendix A, Surge Contour Maps.

**Policy 10.3:** Notify at the appropriate time, owners of property in the CHHA of property designation to increase public awareness of hurricane hazard.

**OBJECTIVE 11:** Maintain a roadway clearance time for hurricane evacuation.

**Policy 11.1:** Improvements to road segments that are a part of the hurricane evacuation route shall be considered a priority in making traffic circulation improvements.

**Policy 11.2:** Periodically review hurricane evacuation plans through a joint meeting of the Bay County Emergency Management Department, the municipalities and transportation planners.

**Policy 11.3:** The Emergency Evacuation map is adopted as the routes to be used for evacuations in an emergency. Peacetime emergency evacuations should be achieved in at least 10 hours from the time the City Council concludes that evacuation is necessary.

**Policy 11.4:** Adjust the evacuation timetable as necessary based on occupied dwelling unit information.

**Policy 11.5:** Consider the impacts on the transportation system relative to hurricane evacuation in the development approval process.

**Policy 11.7:** Continue to develop evacuation procedures for citizens and other organizations concerned with the transportation disadvantaged.

**OBJECTIVE 12:** Limit population concentrations inside the CHHA to reduce exposure to human life to natural disasters.

**Policy 12.1:** The Public Works Department shall prepare annually an estimate of population density in the CHHA. This estimate shall include all existing development and developments which have received development approval.

**Policy 12.2:** Population concentrations shall be directed away from the CHHA through provisions in the Land Development Regulations, if the emergency evacuation time standard of Policy 11.3 cannot be maintained.

**OBJECTIVE 13:** Limit public fund expenditures for public facilities and infrastructure in the CHHA.

**Policy 13.1:** Public facilities shall not be located or improved in the CHHA unless the following criteria are met: A. The use is necessary to protect public health, safety, and welfare; or B. The services provided by the facility cannot be provided at another location outside the CHHA; or C. The use is necessary to restore and/or enhance natural resources.

**OBJECTIVE 14:** Adopt a Post-disaster Redevelopment Plan (PDRP) for Panama City Beach that identifies short-term recovery and long-term redevelopment activities.

**Policy 14.2.C:** Public facilities shall be relocated to areas outside of the CHHA, unless they satisfy the criteria established in Policy 13.1.

**OBJECTIVE 15:** The PDRP will provide a process for consideration of relocation, removal or modification of damaged structures.

**Policy 15.1:** Redevelopment of structures within the CHHA that are permitted subject to the adopted requirements shall be constructed to comply with National Flood Insurance minimum elevation and construction standards and conform to minimum coastal construction standards.

**OBJECTIVE 16:** Establish site design criteria for construction and reconstruction within the CHHA.

**Policy 16.1:** The issuance of development permits in the CHHA shall be conditioned on the following criteria; Siting A. Construction will be limited to adopted densities and intensities in the land development regulations. B. Placement of required open space, if any, shall be in the most vulnerable area of the site; C. Access to structures shall be provided on the landward side;

**OBJECTIVE 18:** Establish formal procedures to implement the PDRP.

**Policy 18.1:** Prepare short-term recovery implementation procedures to be incorporated in the Bay County Peacetime Emergency Plan and City operating procedures.

### **DRAINAGE SUB-ELEMENT**

**Goal:** Provide a drainage program, which will reduce stormwater pollution and provide reasonable protection from flood damage to public and private property.

**OBJECTIVE 1:** In conjunction with development of its Land Development Regulations, the City shall develop a stormwater management plan for the City. This management plan shall address the creation of stormwater utility and address existing and future stormwater management needs.

**Policy 1.1:** In 1993, the City will initiate the development of a stormwater management plan for the City. The plan shall address the creation of a stormwater utility and address existing and future needs. The plan shall be developed in cooperation with Bay County and regulatory agencies, such as the Florida Department of Environmental Regulation and the Northwest Florida

Water Management District. By December 1993, the City will identify existing deficiencies and begin correction of those deficiencies prior to the completion of the Stormwater Management Plan.

**Policy 1.4:** (in part) Upon completion of the stormwater management plan, the City will amend the comprehensive plan to include the findings and recommendations of the stormwater plan.

**OBJECTIVE 2:** The City shall achieve and maintain the stormwater management level of service standard upon adoption of the comprehensive plan.

**Policy 2.1:** (in part) Stormwater discharge facilities shall be designed to achieve the water quantity and quality standards outlined below. A. Level of service standards. 1. Water Quantity. Peak post-development runoff shall not exceed peak pre-development runoff rates based upon the 25-year, 24-hour designed storm.

### **CONSERVATION ELEMENT**

**OBJECTIVE 5:** Through implementation of the Land Development Regulations, the City shall include provisions for conservation and protection of fisheries, wildlife habitat and marine habitat in the development review and approval process. The City will protect and conserve wetlands, seagrasses and shorelines and ensure that there will be no net losses of wetlands and seagrass areas as they existed on January 1, 1990.

**Policy 5.2:** The City shall protect and conserve the natural functions of existing soils, wetlands, marine resources, wildlife habitat, flood zones, and estuaries by using the following guidelines to establish standards in its Land Development Regulations.

**Policy 5.4:** Wetlands and seagrass areas within the City shall be deemed environmentally sensitive, in recognition of their many natural functions and values, and shall be protected from incompatible land uses. The City shall afford protection to all these resources.

**Policy 5.7:** (in part) Buffers will be created between development and wetlands, surface water bodies, and upland areas adjacent to these resources.

**Policy 5.8:** (in part) The City shall protect and conserve the natural functions of wetlands and water bodies through wetland and shoreline protection buffers. These buffers shall be no more than 100 feet and no less than 50 feet.

**Policy 5.9:** (in part) Notwithstanding anything contained herein to the contrary, development in designated wetland areas will be allowed at the density of one dwelling unit per five acres.

**Policy 5.12:** (in part) Performance standards to minimize the impacts to wetlands are as follows:  
a. Dredging or filling of wetlands shall be allowed only if such dredging and filling does not exceed five percent of the wetlands on the site, provided that a permeable fill is utilized and the natural flow of water continues. Buildings shall be clustered to the maximum extent possible. c. Buildings must be built on pilings of sufficient height to exceed by one foot the highest recorded flood level in the wetland. If there is not flooding data available, buildings must be built at least two feet above the highest seasonal water level. e. Development is designed and located in such a manner that there are no impacts to the following: iii. The flood storage and flood conveyance capabilities of the wetland.

**Policy 5.15:** All development activity undertaken within designated A-zones as shown on the official Flood Insurance Rate Map for Panama City Beach, Florida published by the Federal Emergency Management Agency shall be subject to the restrictions and standards of the city's Floodplain Management Ordinance which are contained in Chapter 11 of the City's Code of Ordinances.

**Policy 5.17:** Development within the 100-year floodplain will be required to provide 1:1 ratio for compensating flood storage where flood storage areas are displaced.

**OBJECTIVE 6:** Eliminate substandard structures and incompatible uses, and redevelop following disasters.

**OBJECTIVE 19:** Incorporate the recommendations of a hazard mitigation plan into the Comprehensive Plan.

**Policy 19.1:** By December 1994, the City will prepare a natural disaster hazard mitigation report. This report will address general hazard mitigation including regulation of building practices, floodplains, beach and dune alteration, stormwater management, sanitary sewer and septic tanks, and land use to reduce the exposure of human life and public and private property to natural hazards. The recommendations of this report will be incorporated into the Comprehensive Plan.

### **CAPITAL IMPROVEMENTS ELEMENT**

**Policy 1.1:** (in part) In the absence of legal constraints on the use of revenues, projects and programs shall be funded in order to: 2. Correct public hazards.