

Integrating Hazard Mitigation into Comprehensive Planning

Okeechobee County Profile

Florida Department of Community Affairs



The experiences of the 2004 and 2005 hurricane seasons epitomize the importance of better integrating hazard mitigation activities into local comprehensive planning. In the fall of 2004, residents all over the state experienced significant damages from Hurricanes Charley, Frances, Jeanne, and Ivan as a result of winds, tornadoes, surge, and/or flooding. But this was not the only time we have experienced natural disasters, 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 firefighters' best efforts, 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 Okeechobee County Profile has been prepared as part of a statewide effort by the Florida Department of Community Affairs to guide local governments in integrating hazard mitigation principles into local Comprehensive Plans. Information provided in this profile will enable planners to (1) convey Okeechobee 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 be better integrated into the Comprehensive Plan; and (4) determine if any enhancements could be made to the Local Mitigation Strategy (LMS) to better support comprehensive planning. Best available statewide level data are provided to convey exposure and risk as well as illustrate the vulnerability assessment component of the integration process.

In this profile, we present an argument for why hazard mitigation needs to be a part of comprehensive planning through an examination of population growth, the hazards that put the County at risk, the special needs population and structures that could be affected by these hazards, and the distribution of existing and future land uses in different hazard areas. We hope that this analysis will serve as an example of the issues each jurisdiction should consider as they update their plans to include hazard mitigation. The profile also contains a review of the LMS and the Comprehensive Plan. Based on the analysis and review, we were able to develop specific options for the County on how to incorporate more hazard mitigation into the Comprehensive Plan and how to enhance the LMS so that it is also a better tool for local planners.

During our review, we found that Okeechobee County had many strengths regarding hazard mitigation in both its LMS and Comprehensive Plan, and these are outlined in the profile. There are always ways to further strengthen such plans, however, and the following is a summary of some of the options that would enable the County to do so.

OKEECHOBEE COUNTY GENERAL RECOMMENDATIONS

- The Okeechobee County Comprehensive Emergency Management Plan (CEMP) Recovery and Mitigation Annex includes a list of 47 Mitigation Recommendations and 6 Mitigation Strategy Goals with corresponding Objectives. These recommendations, goals, and objectives are very valuable and curtailed to the needs of the community, however they have not been included in other relevant planning documents such as the Local Mitigation Strategy or Local Comprehensive Plan. Therefore the most important recommendation for Okeechobee County is to review these Mitigation Recommendations, Goals and Objectives found in their CEMP. Many of these

recommendations have been repeated in this document due to the fact that they are very well written and important in this process.

- The County should collect, organize and maintain a library of information containing current documents and Programmatic materials on emergency management and mitigation (Okeechobee CEMP, 2005, p. 58).
- The County should develop acquisition and relocation ordinances for storm damaged buildings located in high hazard areas which can be converted to open space or less vulnerable land uses (Okeechobee CEMP, 2005, p. 59).
- Currently there is no Post Disaster Redevelopment Plan (PDRP) in Okeechobee County; however the CEMP includes a recommendation to develop an ordinance which requires the county to develop a PDRP. Furthermore, the CEMP recommends that the county host workshops and provide guidance on the development of the plan as well as include policies, strategies, and measures within redevelopment plans that take advantage of post-disaster “opportunities” for implementing redevelopment goals. The lead agencies identified for these goals include the County Building Department, Office of Emergency Management, Road and Bridge Department, Engineering and Environmental Health (Okeechobee CEMP, 2005, p. 60). It is important to ensure that all of these departments are active in this process. Additionally it is recommended that the development of the PDRP be included in both the County Comprehensive Plan as well as the LMS.
- As stated in the Okeechobee County CEMP, the County should incorporate economic issues into the Okeechobee County PDRP with the cooperation of the private, state and federal sectors. This will emphasize reconstruction and diversification of the economic base, support existing small business communities, and encourage business growth further inland (Okeechobee CEMP, 2005, p. 61). It is important to also include this information in other economic development/redevelopment plans or policies that exist within the county.
- The County CEMP states the need for a process to establish local reconstruction mitigation and recovery procedures. It recommends that the following elements be included:
 - Rebuilding Prioritization
 - Establishment of Damage Thresholds
 - Temporary Moratoria on Reconstruction
 - Public Acquisition
 - Density Allocations
 - Identification of resources for temporary housing
 - Establishment of mutual aid agreements among counties for additional building inspectors
 - Definition of “retrofitting” in post-disaster context (Okeechobee County CEMP, 2005, p. 62).
- The County can include a map of hazard locations overlaying land uses as a new map in the Future Land Use series. Also, the Comprehensive plan can reference the LMS as a source of data to be used in the EAR process. The LMS could include existing and future land uses on hazard maps and reference the PDRP as a hazard mitigation tool after its adoption. By using consistent data and showing linkages between the different plans, each plan will be stronger. Maps, such as the ones in this profile, provide useful visual knowledge on the relationship between land uses and hazard zones that can be used for planning mitigation or changes in future land use.

- As mentioned in the County CEMP, the county could disseminate educational information to business owners on mitigation and flood-proofing techniques to be used during repair and rebuilding. This information should be made available to disaster victims at Disaster Recovery Centers immediately after an event. The county should also utilize a variety of dissemination methods such as the mass mailing of brochures, educational advertisements in the newspapers and information postings on local websites (Okeechobee County CEMP, 2005, p. 63). This recommendation also works to further one of the goals in the Okeechobee LMS to educate the public and increase awareness.
- The County CEMP recommends that design criteria be developed for wind resistance and flood-proofing protection based on each critical infrastructure system's assets. This would be determined by an analysis conducted that would prioritize infrastructure functions based upon risk and vulnerability. The design criteria would then be applied for wind resistance and flood-proofing to new construction. Existing facilities could then be retrofitted according to the priority and rank lists created by the analysis conducted. Furthermore, the CEMP states that the county should determine whether critically damaged key infrastructure and facilities should remain in place or be relocated. The plan states that this information should be included in the County Comprehensive Plan and sites for relocation should be noted on the Future Land Use Map (Okeechobee County CEMP, 2005, p. 66). This is an excellent action that could result in specific projects to be included on the LMS prioritized list of actions and projects.
- The County can include a policy in the Comprehensive Plan to maintain and expand evacuation routes. The County can prioritize evacuation route improvements in the Capital Improvements Schedule and MPO Long-Range Transportation Plan. This is considered a best management practice from *Protecting Florida's Communities*. (FDCA, 2005b) The LMS can add an objective that supports maintaining or reducing evacuation clearance times by planning for population growth.
- The County CEMP recommends the enhancement of Okeechobee County's responsibility for reducing future damages and losses by implementing the following procedures:
 - 1) Enhance the provision of the local building code or floodplain management ordinance, which requires that substantially damaged buildings (which are repairable) be brought into compliance with current code and ordinance requirements during the repair process.
 - 2) Identify and implement technically feasible methods of retrofitting undamaged portions of (less than substantially) damaged buildings for compliance with current code requirements.
 - 3) Implement a program that offsets retrofit burdens. Financial assistance through such vehicles as loan supports, tax credits, and insurance incentives as well as public funding are possible financial components of a retrofit program (Okeechobee County CEMP, 2005, p. 68).The county should also consider how the comprehensive plan and LMS could be instrumental during these enhancements.
- The County CEMP discusses pre-disaster planning for critical facilities and recommends that all critical facilities be made disaster resistant through retrofitting or relocation. Additionally it recommends the development of a policy that ensures all new structures housing critical facilities be built to a standard that will make them flood and wind resistant (Okeechobee County CEMP, 2005, p. 66). This type of policy could be included in the Comprehensive Plan and these retro-fit projects would be appropriate projects to be included on the Local Mitigation Strategy prioritized list of projects and actions.

- The County CEMP suggests the development of a shelter strategy which identifies those facilities within the county which could be used as shelters once retrofitted. These facilities could include churches, condo and apartment area clubhouses, country clubs, large businesses, schools, county buildings, vacant buildings, community colleges, etc. The strategy would recommend that all identified buildings be retrofitted as necessary with hurricane shelters and other improvements adequate to fulfill the needs of the shelter (Okeechobee County CEMP, 2005, p. 56). These retrofit projects would be appropriate projects to be included on the Local Mitigation Strategy prioritized list of projects and actions.
- The County CEMP also recommends the development of standards for future buildings that will be used as shelters to ensure that they are constructed and equipped with sufficient interior space and facilities for use as long term emergency shelters. The CEMP states that minimum features should include bathrooms, supplies, emergency power, and hurricane shutters. Additionally, shelters designed for the medically dependent should be staffed with proper personnel and equipment. Furthermore the CEMP states that design criteria should be developed for public schools and community colleges to be used as shelters. The CEMP suggests that the county review construction standards and the feasibility of requiring such facilities to be able to withstand, at a minimum, Category 4 force winds (Okeechobee County CEMP, 2005, p. 56). These standards could then be included in the comprehensive plan and identified retrofit projects could be added to the LMS prioritized list of actions and projects.
- The County CEMP suggests the exploration of the possibility of providing tax incentives to the private sector for new buildings, when designed to double as shelters (Okeechobee County CEMP, 2005, p. 57).
- The County CEMP recommends the strengthening of the procedures and guidelines under which variances to building codes and zoning ordinances may be granted; to avoid compromising regulations designed to minimize losses of life and property (Okeechobee County CEMP, 2005, p. 71).

Flood Hazards

- The Okeechobee County CEMP recommends that all land parcels located within the Special High Flood Hazard Area be identified and where feasible the county should pursue the use of public acquisition and relocation within Redevelopment Plans (Okeechobee CEMP, 2005, p. 62). This should also be incorporated into the Comprehensive Plan as well as the LMS.
- The County CEMP recommends that all new developers be required to submit new flood data and as-built topographic mapping to FEMA through the Letter of Map Revision process. These new requirements could be incorporated into existing County ordinances and regulations (Okeechobee County CEMP, 2005, p. 64). This data could then be used to further augment the hazard vulnerability analysis of the LMS and Comprehensive Plan.
- The County CEMP recommends that a cumulative substantial damage and improvements limit be adopted for all structures in the special flood hazard area based on NFIP standards. It also recommends that the county encourage the retrofitting of structures that are damaged less than 50% of market values. It states that funding sources should be identified to assist business owners and homeowners with this effort (Okeechobee County CEMP, 2005, p. 65).

- Flood-proofing water and sewage facilities can minimize the interruption of service during a flood event. The County CEMP recognizes that some water and sewage facilities are designed for the 10 year flood event. In a flooding event, these facilities may become inundated and stretched beyond capacity due to infiltration and inflow. Additionally, effluent disposal (point discharge) limits may be exceeded; and the buildings lift stations, well hatches, and pump stations may be inundated. The County CEMP suggests the development of plans to repair and/or restore damaged water and sewage treatment facilities immediately after the storm in order to function consistently within health and environmental plans. Furthermore, the CEMP recommends the evaluation of emergency sewage disposal procedures as well as the identification and implementation of long-term cost-effective mitigation measures, including the flood-proofing of operating facilities to withstand the 25-year event and eliminate floodwater inflow and infiltration into sanitary sewer systems (Okeechobee County CEMP, 2005, p. 67). This type of project would be appropriate to include on the LMS prioritized list of actions and projects.

Wildfire Hazards

- Wildfire was identified in the Okeechobee County LMS as one of the hazards impacting the county. The County CEMP suggests implementing fuel management programs, which would benefit nearby structures and infrastructure as well as the environment.
- The County CEMP also suggests that hurricane-damaged areas be identified by aerial photography in addition to clearing fuel breaks, with both land crews and with heavy equipment. The fuel breaks should average 20 to 30 feet, but wider zones may be cleared around the structures. Furthermore the County CEMP points out that the firebreaks should be managed by mowing and clearing around them frequently (Okeechobee County CEMP, 2005, p. 73). The county should consider placing the mitigation maintenance projects on their list of prioritized actions and projects in the County LMS.
- The County CEMP further addresses wildfire through landscape management. It states that the county should identify and replace vulnerable trees with storm tolerant and fire resistant trees as identified in the local urban forestry and landscape plan. The selection of plant species which are also resistant to storm effects would also reduce the amount of debris. (Okeechobee County CEMP, 2005, p. 74)
- Okeechobee County also has a specific Wildland Fire Mitigation Plan that should be integrated into the LMS and Comprehensive Plan. The plan's risk assessment should be updated with new GIS data and it's project list should be integrated into the LMS project list.

Drought Hazards

- The County CEMP includes several recommendations concerning drought management. The plan suggests the development of a countywide task force to develop a county response plan to deal with drought management. When this drought management response plan is completed it should be included in the County Local Mitigation Strategy.



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Geography and Jurisdictions

Okeechobee County is located along the northern bank of Lake Okeechobee in Central Florida. It covers a total of 774 square miles with an average population density of 46.4 people per square mile (U.S. Census, 2000).



There is one incorporated municipality within the County, and it is listed in **Table 1.1**.

Population and Demographics

Official 2004 population estimates for all jurisdictions within Okeechobee County as well as the percent change in population from the 2000 U.S. Census are presented in **Table 1.1**. The most current estimated countywide population of Okeechobee County is 38,004 people (University of Florida, Bureau of Economic and Business Research, 2004). A majority, 85.6%, of the population lives in the unincorporated areas of the county. Between 1990 and 2000, Okeechobee County as a whole had a growth rate of 21.2%, which was lower than the statewide growth rate of 23.5% in those 10 years.

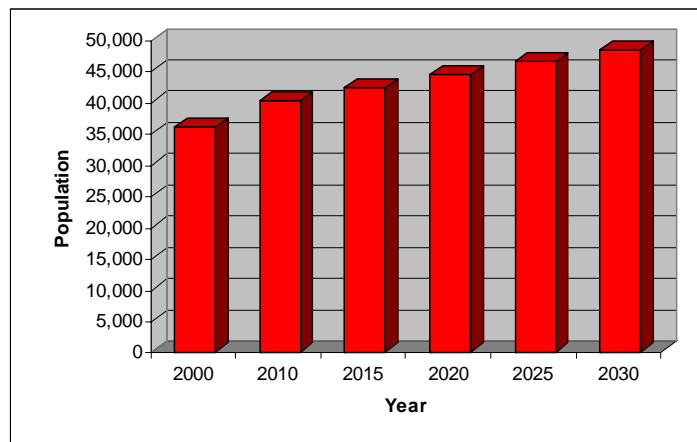
Table 1.1 Population Estimates by Jurisdiction

Jurisdiction	Population, Census 2000	Population Estimate, 2004	% Change, 2000-2004	% of Total Population (2004)
UNINCORPORATED	30,534	32,546	6.6%	85.6%
Okeechobee	5,376	5,458	1.5%	14.4%
Countywide Total	35,910	38,004	5.8%	100.0%

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

According to the University of Florida, Bureau of Economic and Business Research (2004), Okeechobee County’s population is projected to grow slowly for the next 25 years, reaching 48,300 people by the year 2030. **Figure 1.1** illustrates medium population projections for Okeechobee County based on 2004 calculations.

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



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

Of particular concern within Okeechobee County’s population are those persons with special needs and/or limited resources such as the elderly, disabled, low-income, or language-isolated

residents. According to the 2000 U.S. Census, 16.3% of Okeechobee County residents are listed as 65 years old or over, 24.1% are listed as having a disability, 16.0% are listed as below poverty, and 19.2% live in a home with a primary language other than English.



Hazards Identification

The following are natural hazards that pose a risk for the County as identified in the County's Local Mitigation Strategy (LMS): floods, hurricanes and coastal storms, severe storms/tornadoes, wildfires, and drought/heat wave. The LMS prioritized these hazards based upon relative risk ratings and are listed above in descending order.

According to the Okeechobee County LMS, in 2004 the county was directly impacted by 2 hurricanes (Charley and Frances) and indirectly affected by two others (Ivan and Jeanne). The county has also experienced wildfires. In January 1982, the Eagle Island fire burned 10,800 acres and in April 2001, the Park fire burned 17,000 acres. Additionally, the National Weather Service reports that over the past 50 years the county has been impacted by 18 tornadoes and 40 severe storms. While flooding is a known hazard in the county, past occurrences specific to Okeechobee County were not discussed in the LMS. Furthermore, the LMS stated that there was no record of drought/heat wave in the county (Okeechobee County, 2005).

Hazards Analysis

The following analysis looks at two major hazard types: flooding and wildfire. All of the information in this section, except the evacuation and shelter estimates, 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. It was created by Kinetic Analysis Corporation under contract with the Florida Department of Community Affairs (FDCA). Estimated exposure values were determined using the Category 3 Maxima Scenario for storm surge, the Federal Emergency Management Agency's (FEMA's) designated 100-year flood zones (A, AE, V, VE, AO, 100 IC, IN, AH) and levels of concern 5 through 9 for wildfire. Due to a lack of digital data for FEMA flood zones, the full flood statistics are unavailable at this time. 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>) or your countywide LMS.

Existing Population at Risk

Table 2.1 presents the estimated countywide population at risk from hazards, as well as a breakdown of the sensitive needs populations at risk. Wildfire poses a serious risk for Okeechobee County residents with 86.8% of the population living in medium- to high-risk wildfire zones. Forty-two percent of those at risk from wildfire are disabled, possibly making a quick evacuation difficult for these people. Storm surge from Lake Okeechobee can be a risk for the areas bordering the Lake or its canals. **Table 2.1** shows 99 people at risk from surge effects.

Table 2.1 Estimated Number of Persons at Risk from Selected Hazards

Population	Flood	Wildfire (medium-high risk)	Surge
Minority	NA	6,053	0
Over 65	NA	5,355	26
Disabled	NA	13,099	48
Poverty	NA	4,595	40
Language Isolated	NA	670	0
Single Parent	NA	1,671	0
Countywide Total	NA	31,156	99

NA= Not Available (FEMA FIRM maps not available in digital format for analysis)

Source: Florida Department of Community Affairs, 2005a.

Evacuation and Shelters

As discussed in the previous sections, population growth in Okeechobee County has been slow, and this trend is projected to continue. As the population does increase in the future, though, the demand for shelter space and the length of time it takes to evacuate the County will increase. Currently, evacuation clearance times for Okeechobee County are estimated to be 10 hours for all categories of hurricanes, as shown in **Table 2.2**. These data were derived from 11 regional Hurricane Evacuation Studies that have been produced by FEMA, the U.S. Army Corps of Engineers, and Florida Regional Planning Councils. The study dates range from 1995 to 2004 and are updated on a rotating basis. According to Rule 9J-5, counties must maintain or reduce hurricane evacuation times. Some experts have suggested that counties should try to achieve 12 hours or less clearance time for a Category 3 hurricane. This is due to the limited amount of time between the National Hurricane Center issuing a hurricane warning and when the tropical storm-force winds make landfall. Okeechobee County is able to meet this recommendation for now, but with future growth and the limited road network of the region, it may be difficult to maintain this evacuation time if nothing is done to augment evacuation routes. Additionally, storm events requiring evacuation typically impact larger areas, often forcing multiple counties to issue evacuation orders and placing a greater number of evacuees on the major roadways, further hindering evacuation progress. Thus, it is important to not only consider evacuation times for Okeechobee County, but also for other counties in the region as shown in **Table 2.2**.

**Table 2.2 County Evacuation Clearance Times in Hours
(High Tourist Occupancy, Medium Response)**

County	Hurricane Category				
	1	2	3	4	5
Indian River	5.5	5.5	12	12	12
Martin	7.5	12	12	12.75	12.75
Okeechobee	10	10	10	10	10
St. Lucie	8.75	8.75	9	9	9

Note: Best available data as of 7/05

Source: State of Florida, 2005

(some counties may be in the process of determining new clearance times)

Coupled with evacuation is the need to provide shelters. If adequate space can be provided in safe shelters for Okeechobee County residents, then this could be a partial solution to increasing clearance times for evacuation. Currently, the State Shelter Plan reports that there is space for 3,243 people in the County’s shelters, and there are 16,237 more people that will need sheltering

in the case of a Category 5 hurricane. It is projected that by 2009 the deficit will increase to 17,942 people in need of space (FDCA, 2004). The County will need to address this deficiency but might also try to decrease the demand for public shelters by encouraging new homes to be built with safe rooms if they are outside of flood and surge zones. Residents who are not in a flood zone could shelter in place if they had a safe room that could withstand hurricane-force winds. Safe rooms could at least be a last option for residents who cannot evacuate in time, especially in the case of a tornado.

Existing Built Environment

While the concern for human life is always of utmost importance in preparing for a natural disaster, there also are large economic impacts to local communities, regions, and even the State when property damages are incurred. To be truly sustainable in the face of natural hazards, we must work to protect the residents and also to limit, as much as possible, property losses that slow down a community’s ability to recover from a disaster. **Table 2.3** presents estimates of the number of buildings in Okeechobee County by structure type that are at risk from each of the hazards being analyzed.

Flooding presents a low risk to property in the County according to this data, with 107 structures within a flood zone. However, a majority of these structures are mobile homes. According to the latest National Flood Insurance Program Repetitive Loss Properties list, there are 3 homes in unincorporated Okeechobee County that have had flood damage multiple times and received insurance payments but have not remedied the recurring problem. There also are 64 structures at risk from surge, as shown in **Table 2.3**.

Table 2.3 also shows 15,473 structures at risk from wildfire, with 38.8% of the structures at risk being single-family homes and 34.2% being mobile homes.

Table 2.3 Estimated Number of Structures at Risk from Selected Hazards

Structure Type	Flood	Wildfire (medium- high risk)	Surge
Single-Family Homes	14	6,011	18
Mobile Homes	68	5,299	33
Multi-Family Homes	2	418	4
Commercial	0	861	2
Agriculture	8	875	6
Gov./Institutional	15	2,019	1
Total	107	15,483	64

Source: Florida Department of Community Affairs, 2005a.

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 not only the people and property in a hazard area, but also the probability of occurrence that is necessary to understand the impacts to people and property. 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 in considering where to implement risk reducing comprehensive planning measures.

Analysis of Current and Future Vulnerability

The previous hazards analysis section discussed population and existing structures at risk from flooding and wildfire according to MEMPHIS estimates. This section demonstrates the County's vulnerabilities to these hazards spatially and in relation to existing and future land uses. The following maps and tabulations of existing land use within hazard areas are based on the 2004 geographic information system (GIS) shapefiles from the Okeechobee County Property Appraisers Office/ Florida Department of Revenue. Maps and tabulations of future land uses in hazard areas were developed using the Okeechobee County future land use map obtained April 2006.

Unfortunately, for this analysis there was no GIS coverage available of any type for floodplains in Okeechobee County. Based on a comparison of hardcopy FEMA Flood Insurance Rate Maps for Okeechobee County and the Future Land Use Map (FLUM) the following generalizations were made about flooding and future land uses. There are extensive areas of Okeechobee County that are in the 100-year floodplain, and a substantial portion of every FLUM category, including categories with urban or suburban intensities of land use, lies within the 100-year floodplain. Once flood zone data is available in a format that can be used in GIS analysis, the county could determine if it needs to amend its FLUM or place restrictions on development in these zones.

In **Attachment A**, maps present the land uses associated with high-risk wildfire zones. There are small areas scattered throughout the county that are susceptible to wildfire, however there is large concentration of these areas surrounding the City of Okeechobee and along Highway 441. Of the 30,053.4 acres within these wildfire zones, 14.8% is currently vacant, as shown in **Table 2.4**. Of those 4,437.4 undeveloped acres, 30.6% is designated for urban residential mixed use or rural estate in the future (**Table 2.5**). If homes are built in these risk areas, Okeechobee County's vulnerability to wildfire hazards will greatly increase. Additionally, 22.1% of the wildfire susceptible areas already have residential single-family or mobile home and commercial parking lot development, as seen in **Table 2.4**. Large-lot residential development is the most at risk since these homes typically are surrounded by wooded lots and often do not have enough defensible space to stop a wildfire from spreading throughout the neighborhood.

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

Existing Land Use Category		Flood Zones	Wildfire Susceptible Areas
Agriculture	Acres	NA	15,971.8
	%	NA	53.1
Attractions, Stadiums, Lodging	Acres	NA	0.7
	%	NA	0.0
Places of Worship	Acres	NA	50.4
	%	NA	0.2
Commercial	Acres	NA	111.5
	%	NA	0.4
Government, Institutional, Hospitals, Education	Acres	NA	1,375.5
	%	NA	4.6
Industrial	Acres	NA	43.7
	%	NA	0.1
Parks, Conservation Areas, Golf Courses	Acres	NA	1,209.8
	%	NA	4.0
Residential Group Quarters, Nursing Homes	Acres	NA	25.6
	%	NA	0.1
Residential Multi-Family	Acres	NA	101.4
	%	NA	0.3
Residential Mobile Home, or Commercial Parking Lot	Acres	NA	2,959.4
	%	NA	9.8
Residential Single-Family	Acres	NA	3,698.0
	%	NA	12.3
Submerged Land (Water Bodies)	Acres	NA	6.7
	%	NA	0.0
Transportation, Communication, Rights-of-Way	Acres	NA	20.5
	%	NA	0.1
Utility Plants and Lines, Solid Waste Disposal	Acres	NA	41.0
	%	NA	0.1
Vacant	Acres	NA	4,437.4
	%	NA	14.8
Total Acres	Acres	NA	30,053.4
	%	NA	100.0

NA= Not Available (FEMA FIRM maps not available in digital format for analysis)

Table 2.5 Total and Undeveloped Acres in Hazard Areas by Future Land Use Category for the Unincorporated County

Future Land Use Category		Flood Zones		Wildfire Susceptible Areas	
		Total	Undev.	Total	Undev.
Agriculture	Acres	NA	NA	14,700.7	832.6
	%	NA	NA	48.9	18.8
Commercial Activity Center	Acres	NA	NA	67.1	10.0
	%	NA	NA	0.2	0.2
Commercial Corridor Mixed Use	Acres	NA	NA	431.4	125.3
	%	NA	NA	1.4	2.8
Conservation	Acres	NA	NA	368.9	16.7
	%	NA	NA	1.2	0.4
Industrial	Acres	NA	NA	43.5	10.9
	%	NA	NA	0.1	0.2
Power Plant Site	Acres	NA	NA	72.0	0.0
	%	NA	NA	0.2	0.0
Public/Semi-Public Facilities	Acres	NA	NA	1,000.5	0.9
	%	NA	NA	3.3	0.0
Rural Activity Center	Acres	NA	NA	4,174.1	826.8
	%	NA	NA	13.9	18.6
Rural Estate	Acres	NA	NA	4,459.0	1,679.1
	%	NA	NA	14.8	37.8
Urban Residential Mixed Use	Acres	NA	NA	4,736.1	935.0
	%	NA	NA	15.8	21.1
Total	Acres	NA	NA	30,053.4	4,437.4
	%	NA	NA	100.0	100.0

NA= Not Available (FEMA FIRM maps not available in digital format for analysis)

Table 2.6 presents the total numbers of acres in a hazard zone in Okeechobee and how many of those acres are currently undeveloped. Again, flood data was not available digitally for this analysis. Okeechobee City does have a considerable amount of land at risk to wildfire as shown in **Table 2.6**. Of the 975.3 acres within a wildfire susceptible area, 27.1% is currently vacant and new development on these acres should consider the wildfire risk. Firewise techniques should be encouraged for new development throughout the city since there is not only wildfire fuels within the city boundaries but wildfire medium to high-risk zones also surround the city.

Table 2.6 Total and Vacant Incorporated Acres in Hazard Areas

Jurisdiction		Flood Zones		Wildfire Susceptible Areas	
		Total	Vacant	Total	Vacant
Okeechobee City	Acres	NA	NA	975.3	263.9
	%	NA	NA	100.0	27.1
Total Acres	Acres	NA	NA	975.3	263.9
	%	NA	NA	100.0	27.1

NA= Not Available (FEMA FIRM maps not available in digital format for analysis)



Local Mitigation Strategy

The LMS is an ideal repository for all hazard mitigation analyses, policies, programs, and projects for the County and its municipalities due to its multi-jurisdictional and intergovernmental nature. The LMS identifies hazard mitigation needs in a community and structural or non-structural initiatives that can be employed to reduce community vulnerability. Communities can further reduce their vulnerability to natural hazards by integrating the LMS analyses and mitigation objectives into their Comprehensive Plans.

An LMS prepared pursuant to the State's 1998 guidelines has three substantive components (FDCA, 2005b):

Hazard Identification and Vulnerability Assessment (HIVA). This section identifies a community's vulnerability to natural hazards. Under Florida rules, the HIVA is required to include, at a minimum, an evaluation of the vulnerability of structures, infrastructure, special risk populations, environmental resources, and the economy to any hazard the community is susceptible to. According to FEMA, LMSs revised pursuant to the Disaster Mitigation Act of 2000 (DMA 2000) criteria must include maps and descriptions of the areas that would be affected by each hazard, 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 monetary 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. The Guiding Principles typically contain 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 Post-Disaster Redevelopment Plans (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 LMS Goals and Objectives will guide the priority of the mitigation initiatives.

The Okeechobee County LMS (adopted in 2005) was used as a source of information in developing this profile and was also reviewed for any enhancements that could be made to allow better integration with other plans, particularly the local Comprehensive Plans.

Hazard Identification and Vulnerability Assessment

This section of the LMS was briefly reviewed for its ability to provide hazard data that can support comprehensive planning. The LMS uses detailed data on structures at risk for all of the major hazards discussed in this profile. It discusses populations at risk and correlates them to values of the structures located in these areas. The maps in the LMS show only the hazard areas and a Conceptual Future Land Use Map has been included for the county. 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

There is not a section of the Okeechobee LMS that directly fits the above-described Guiding Principles section. The Okeechobee LMS does not list policies from other plans that relate to hazard mitigation. It does, however, briefly mention the plans that were used in updating the LMS (Section II: The Planning Process, pg. 3). It lists the existing Okeechobee LMS as well as the Comprehensive Emergency Management Plan (CEMP). The Comprehensive Plan, by the way of the Future Land Use Map was also consulted. It would be much more useful if a list of the hazard-related policies from each jurisdiction's Comprehensive Plan were included in the LMS for reference. This would allow all jurisdictions and County departments access to this information that can be used to judge whether more integration is needed.

LMS Goals and Objectives

The LMS Goals and Objectives can be found in **Attachment B**. The following is a summary of how well the LMS has addressed mitigation issues that coincide with planning concerns.

Okeechobee County has six general goals listed in their LMS with no correlating objectives. These goals include education of the public, participation in the National Flood Insurance and Flood Mitigation Assistance Programs, protection of critical facilities, projects that benefit many residents, cost-effective mitigation projects, and sufficient shelter space through retrofitting public facilities. Public education is a good goal because the LMS is an ideal arena for creating public education programs and these initiatives are sometimes difficult to include in the Comprehensive Plan. No references are made to the Okeechobee County Comprehensive Plan or to the Land Development Code for the County. Referencing other plans and programs in the goals and objectives of the LMS lays a clear foundation for this plan to be integrated with other plans and for its committee to oversee programs that may involve many different departments of the County and municipalities. Also, creating mitigation goals that relate to future development is an effective strategy to augment mitigation projects for existing hazard problems.

Comprehensive Emergency Management Plan

The Recovery and Mitigation Annex of the 2005 Okeechobee County CEMP was reviewed for consistency with the other plans and evaluated in its effectiveness as a tool for planners. The Annex does a good job of summarizing the responsibilities of hazard mitigation among the different agencies and organizations within the County. The Okeechobee County CEMP does an exceptionally good job of outlining mitigation goals and objectives. It discusses all hazards to which the county is considered to vulnerable in terms of current and future exposure. In addition to this, the Okeechobee County CEMP outlines various mitigation recommendations to be considered by the county. These include topics such as public education and awareness, land use planning and growth management, rebuilding, recovery and redevelopment, floodplain management, building codes and ordinances and natural resources and the environment. These recommendations are very useful and should be incorporated into both the Comprehensive Plan and Local Mitigation Strategy. The risk assessment of the CEMP was not reviewed, however, it is suggested that this section be updated on a regular basis to be consistent with the risk assessment of the LMS.

Post-Disaster Redevelopment Plan

A PDRP for Okeechobee County was not available for review at the time this profile was drafted. If Okeechobee County has a current PDRP, this will be obtained and reviewed for the final version of this document.

National Flood Insurance Program/Community Rating System

Okeechobee County and the City of Okeechobee are participating communities in the National Flood Insurance Program. In addition, Okeechobee County participates in the Community Rating System and has a current class of 8.



Okeechobee County's Comprehensive Plan (adopted in 1992) was reviewed in order to see what the County has already done to integrate their LMS policies, and hazard mitigation in general, into their planning process. A list of the goals, objectives, and policies currently in the plan that contribute to hazard mitigation is found in **Attachment D**. The following is a summary of how well the plan addressed the hazards of this analysis.

Flooding Hazards

Flooding was addressed in the Comprehensive Plan in multiple policies. There were numerous policies for protecting the natural functions of floodplains and wetlands through the use of Specific Management Plans, setbacks, buffers, and clustering. The regional aspects of protecting natural drainage were also addressed through policies that called for consistency with the Resource Management Plans for the Lower Kissimmee River and Taylor Creek Drainage Basins and coordination with state and regional agencies referenced in these plans. The County also addresses existing flooding issues through a policy that calls for a study to correct drainage deficiencies.

Wildfire Hazards

There were no policies in the Comprehensive Plan that directly related to wildfire hazards. However, there was a policy stating that open burning of land clearing debris must take place only with the approval of the Florida Division of Forestry. There were also a few policies dealing with water conservation and protection of groundwater recharge areas which indirectly may help ensure water for fire fighting is available and could mitigate the impacts of a drought.

Other Hazard Mitigation Policies

The Comprehensive Plan also has two policies in its Housing Element that address emergency shelters for mobile home parks. These policies are great in requiring new or expanding mobile home or recreation vehicle parks to provide adequate on-site shelter space for all residents who reside there during the hurricane season. A policy also states that the County will include standards for these shelters in its development codes. Another policy in the Housing Element that indirectly relates to hazard mitigation, requires the demolition of documented historic housing units to be overseen by recognized historic preservation organizations. This is an important post disaster recovery issue since historic resources may be impacted in the rush to clean up after a hurricane.



For the LMS to be effective in the decision-making process of growth management, its objectives and policies must be integrated into the Comprehensive Plan. The Plan is the legal basis for all local land use decisions made. If hazard mitigation is to be accomplished beyond the occasional drainage project, these hazards must be addressed in comprehensive planning, where development can be limited or regulated in high-risk hazard areas just as sensitive environments are routinely protected through growth management policies. Mitigation of hazards is

considerably easier and less expensive if done when raw land is being converted into development. Retrofitting structure and public facilities after they have been built is significantly more expensive. However, if older neighborhoods or communities are scheduled to be revitalized or redeveloped, hazard mitigation needs to be an aspect considered and integrated into the project prior to the time of development approval.

Okeechobee County has begun this process of integrating hazard mitigation throughout its Plan's elements. The prior section summarized how the major hazards for the County have been for the most part well-addressed. There is, however, still some disconnection between the LMS objectives and initiatives, and the policies in the Comprehensive Plan. By tightening the connection between these documents, the County will find it easier to implement hazard mitigation, and there will be higher awareness of these issues within more departments of the County government. In the final draft of this profile, **Table 5.1** will present options for further integration as well as the basis for the recommendations found in the **Executive Summary**.

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

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- Florida Department of Community Affairs. 2004. *Statewide Emergency Shelter Plan*. Tallahassee, FL.
- Florida Department of Community Affairs. 2005a. *Mapping for Emergency Management, Parallel Hazard Information System*. Tallahassee, FL.
<http://lmsmaps.methaz.org/lmsmaps/index.html>.
- Florida Department of Community Affairs. 2005b. *Protecting Florida's Communities: Land Use Planning Strategies and Best Development Practices for Minimizing Vulnerability to Flooding and Coastal Storms*. Tallahassee, FL.
- Okeechobee County. 1992. *Okeechobee County Comprehensive Plan*.
- Okeechobee County. 2005. *Local Mitigation Strategy*.
- Okeechobee County. 2005. *Comprehensive Emergency Management Plan*.
- State of Florida. 2005. Hurricane Evacuation Study Database. Florida Department of Community Affairs, Division of Emergency Management.
- University of Florida, Bureau of Economic and Business Research. 2004. *Florida Statistical Abstract*. Gainesville, FL.
- U.S. Census Bureau. 2000. *State & County Quickfacts*. Retrieved in 2005 from <http://quickfacts.census.gov/qfd/index.htm>



Attachment B

Okeechobee County Local Mitigation Strategy Goals

Goal 1: Educate home and business owners on mitigation measures

Goal 2: Encourage participation in the National Flood Insurance and Flood Mitigation Assistance Programs

Goal 3: Complete projects that benefit as many residents as possible

Goal 4: Insure that critical services and facilities are protected

Goal 5: Insure that projects produce long-term, cost effective benefits

Goal 6: Provide sufficient shelter space in public facilities by retrofitting those facilities

Attachment C

Okeechobee County Comprehensive Plan Excerpts Related to Hazard Mitigation

Future Land Use Element

Policy L1.3: In the Commercial Corridor Mixed Use classification, a Site Development Plan shall be submitted to the County in conjunction with all development proposals, except those related to obtaining a permit to construct a single family residential dwelling. After approval, the Site Development Plan shall become a binding condition of the Final Development Order, and shall demonstrate that the following requirements have been satisfied:

d) That natural resources in the area, including wetlands, viable 100-year floodplains, ground waters, surface waters, and vegetative and wildlife communities designated as threatened, endangered or species of special concern, will not be adversely affected. Should the County require a Specific Management Plan to be prepared by the developer pursuant to Policy L5.2, the implementation of such management plan shall result in no net loss of wetlands, and shall include any necessary modifications to the proposed development, such as specific setbacks, buffers, or the clustering of development away from site resources, to ensure the protection, preservation or natural functions of site resources. [9J—5.006(3)(c)2,5,7J

Objective L5: Upon Plan adoption, Okeechobee County shall adopt and enforce standards that protect natural and historic resources. Natural resources shall be protected by the regulation of land use in proximity to public supply potable water wellfields and other environmentally sensitive lands, and by the management of stormwater runoff and drainage. [9J—5.006(3)(b)4]

Policy L5.2: Through adoption of land development regulations, including provisions for site plan review, cluster development and other techniques, Okeechobee County shall protect certain floodplains, wetlands, cones of influence, natural groundwater aquifer recharge areas, native vegetative communities and wildlife habitats. All proposals for development and redevelopment activities shall be evaluated by the County during a development review process, and shall be subject to the referenced land development regulations. Specifically:

a) The County shall require the identification of the extent to which any development or redevelopment is proposed to be placed in or on, to disturb, or to alter the natural functions of areas prone to 100-year frequency floods, as depicted by Zone "A" on Federal Emergency Management Agency Flood Insurance Rate Maps. If the County determines that a viable 100-year floodplain may be disturbed or altered, the County shall require the developer to provide an inventory related to the 100-year floodplain which may be encroached upon. This inventory shall be evaluated by the County during a phase of its development review process. Where it is determined that proposed development or redevelopment will encroach upon a viable 100-year floodplain, the County shall require a Specific Management Plan to be prepared by the developer which includes necessary modifications to the proposed development, such as specific buffers or clustering of development. All development activities shall observe 50 foot setback from the floodway of the respective

waterways. Permissible residential densities within a viable 100-year floodplain shall be no greater than one dwelling unit per 5 gross acres or no greater than one dwelling unit per 10 gross acres in areas designated as Agriculture. No industrial development shall be permitted within viable 100-year floodplains. Structures constructed within a viable 100-year floodplain must meet all local, state and federal agency permit requirements, must be flood-proofed with the building floor level at least one foot above the 100-year flood elevation, and shall not displace the floodwaters of a 100-year frequency flood;

b) The County shall require the identification of the extent to which any development or redevelopment is proposed to be placed in or on, to disturb, or to alter the natural functions of state or federally-defined wetlands; soils posing severe limitations to construction; or endangered or threatened species of wildlife and plants. If the County determines that one or more of the natural resources referenced above may be disturbed or altered, the County shall require the developer to provide an inventory related to the specific natural resource which may be encroached upon. This inventory shall be evaluated by the County during a phase of its development review process. Where it is determined that proposed development or redevelopment will encroach upon a referenced natural resource, the County shall require a Specific Management Plan to be prepared by the developer, which includes necessary modifications to the proposed development, such as specific setbacks, buffers, or clustering of development away from site resources, to ensure the protection, preservation or natural functions of the resource. The provisions of such management plans shall be consistent with the natural resource protection policies of the Conservation Element of this Plan;

c) The County shall protect the natural function of identifiable wetlands by: 1) avoiding encroachment; 2) minimizing the loss of wetlands when encroachment cannot be avoided; or 3) mitigating the loss of wetlands. Where it is determined that proposed development or redevelopment will encroach upon a defined wetland, the County shall require a Specific Management Plan to be prepared by the developer, which includes necessary modifications to the proposed development, such as specific setbacks, buffers, or clustering of development away from the wetland. The provisions of such management plans shall be consistent with the natural resource protection policies of the Conservation Element of this Plan. Wetlands destroyed by future development activities shall be restored or created in accordance with regulations established by the appropriate jurisdictional authority, specifically the South Florida Water Management District, the St. Johns River Water Management District, the Florida Department of Environmental Regulation or the Army Corps of Engineers. The County's land development regulations shall include appropriate criteria and standards for wetlands protection, such as: setbacks of a minimum of 25 feet; buffers; conservation easements; compensatory acre-for-acre on-site mitigation, or two-to-one off-site mitigation; drainage criteria; allowed and exempted uses; wetland function; and significant and insignificant effects of development on wetlands. The definition of wetlands to be used for regulatory purposes shall be derived from the definition of wetlands used by the South Florida Water Management District, the St. Johns River Water Management District, the Florida Department of Environmental Regulation, and the Army Corps of Engineers. The Generalized Wetlands Map, adopted as part of this Comprehensive Plan, is intended to serve as a guide to the possible location of wetlands.

Specific identification of wetlands may require a survey to be provided at the expense of the developer and in coordination with relevant agencies, if appropriate, to determine whether wetlands under the jurisdiction of the South Florida Water Management District, the St. Johns River Water Management District, the Florida Department of Environmental Regulation or the Army Corps of Engineers are present on a site;

Policy L5.3: Upon Plan adoption, buffers shall be used to separate incompatible land uses and to protect certain natural resources. The size, composition and location of buffers shall be set forth in the County's land development regulations, shall be based on the proposed land use or development activity, and shall be consistent with the policies of this Comprehensive Plan. Areas designated as buffers shall preserve all natural vegetative cover, except where drainage-ways and access paths are approved to cross the buffer. Buffers may be supplemented only with native trees, shrubs and ground covers. The issuance of a final development order by the County shall be contingent upon implementation of all stipulations within a site development plan, or a Specific Management Plan as set forth in Policy L5.2. The provisions of such management -plans shall be consistent with the natural resource protection policies of the Conservation Element of this Plan. [9J—S.006(3)(c)1,2,6]

Objective L6: Okeechobee County will ensure that proposed land use activities within the Kissimmee River study area are not inconsistent with the stated goal of the Resource Management Plan for the Lower Kissimmee River and Taylor Creek Drainage Basins, adopted August 21, 1985 and prepared pursuant to Chapter 380, Florida Statutes. {9J—5.006(3)(b)6]

Policy L.1: During 1992, Okeechobee County will review the Resource Management Plan for the Lower Kissimmee River and Taylor Creek Drainage Basin, and coordinate its activities with other local governments addressed in the Resource Management Plan. [9J—5.006(3Xc)1,2,6]

Policy L.2: Activities by Okeechobee County to implement the Resource Management Plan for the Lower Kissimmee River and Taylor Creek Drainage Basins will be those which support or coordinate with actions initiated by the State and regional agencies referenced in the Resource Management Plan. [9J—5.006(3)(c)1,2,6]

Policy L7.2: Okeechobee County shall adopt land development regulations which contain specific provisions to implement the adopted Comprehensive Plan. Improvements to the land development regulation process shall focus on efficiency and effectiveness through a streamlining of procedures. An assessment shall be made of integrating all appropriate Land Development Regulations into a unified ordinance. Land development regulations shall, at a minimum:

b) Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management. This shall be accomplished by continued adherence to South Florida Water Management District regulations;

e) Provide for the protection of environmentally sensitive lands, and provide for open space. "Environmentally sensitive lands" are defined as

wetlands, viable 100—year floodplains or critical habitat for plant or animal species listed by the Florida Department of Agriculture and Consumer Services (FDACS), the Florida Game and Freshwater Fish Commission (FGFWFC), or the United States Fish and Wildlife Service (USFWS) as endangered, threatened, or species of special concern. A Critical Habitat means the specific area within a geographic area occupied by plant or animal species listed by the FDACS, FGFWFC or USFWS as endangered, threatened or species of special concern on which are found those physical or biological features essential to the conservation of the species and which may require management consideration or protection. [9J—5.006(3)(c)(1,4)]

Housing Element

- Policy H1.4:** The principles and criteria for siting mobile homes shall be: to ensure mobile home residents adequate public facilities and services on a fair-share cost basis; to allow mobile homes in all residential future land use categories; to require that new mobile home parks be located on sites no smaller than 20 acres; to require that mobile home subdivisions be located on Sites no smaller than 40 acres; and to require that developers of new mobile home parks or subdivisions provide adequate hurricane shelter space for residents of such parks or subdivisions. No existing mobile home park or subdivision may be expanded unless adequate on—site hurricane shelter space is provided for current residents as well as new residents of the park or subdivision. Recreational vehicles and park model recreational vehicles are permissible only in recreational vehicle parks of no less than 20 acres in size. Developers of new recreational vehicle or park model recreational vehicle parks shall provide adequate hurricane shelter space for hurricane-season residents of the park. No existing recreational vehicle or park model recreational vehicle park may be expanded unless adequate on-site hurricane shelter space is provided for current as well as new hurricane-season residents of the park. [9J—5.010(3)(5)]
- Policy H1.5:** Upon Plan adoption, Okeechobee County will develop standards for providing adequate hurricane shelter space to mobile home residents, to be included in its land development regulations. [9J—5.010(3)(c)51]
- Policy H5.2:** The conservation, rehabilitation, or demolition of documented historic housing units shall be carried out in cooperation with recognized historic preservation organizations. [9J—5.010(3)(c)3]

Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element

- Policy S4.2:** Okeechobee County’s land development regulations shall be consistent with the provisions of the South Florida Water Management District water conservation program. At a minimum, the County’s regulations shall provide for: limiting permissible hours for lawn watering; requiring or providing information on xeriscape in new development; supporting leak-detection programs for facilities with significant unaccounted for water loss; or developing programs, such as public service announcements and availability of materials that discuss the importance of water conservation.

Objective S6: Okeechobee County, with funding assistance from the South Florida Water Management District, Florida Department of Environmental Regulation or other appropriate regional, state or federal agencies, shall undertake a surface water

management study to identify, and develop implementation strategies for the correction of, existing drainage deficiencies. The study shall also provide the basis for the improvement to, and expansion of, drainage facilities so as to ensure reasonable protection from flooding, prevention of degradation of receiving waters, and protection of natural drainage features. [9J—5.O11(2)(b)1,2,5]

Policy S6.1: Okeechobee County shall Continue working with the South Florida Water Management District and the Florida Department of Environmental Regulation to prepare and develop a county-wide surface water management plan which accomplishes the following: an inventory and mapping of existing drainage systems and basins; mapping of SWIM basins; evaluation to determine levels of service for flood protection, storage and water quality; identification of potential conservation areas; establishment of pre-development discharge criteria for each drainage basin, including the development of drainage backbone systems to maintain or improve existing levels of service for existing systems and proposed future systems; prioritization of basin improvements; and studying the feasibility of developing a stormwater utility. [9J—5.O11(2)(c)4]

Conservation Element

Policy C1.3: Open burning of land clearing debris shall take place only in conjunction with Department of Forestry approvals.

Objective C2: Beginning upon adoption of this Comprehensive Plan, Okeechobee County shall conserve and protect the quality and quantity of current and projected water resources, including wetlands, floodplains, prime Floridan aquifer recharge areas and public supply potable water wells by regulating land use activities that may adversely impact water quality. [9J.-5.013(2Xb)2]

Policy C2.4: Okeechobee County will practice conservation of water sources in accordance with the plans of the South Florida Water Management District in water shortage emergencies. [9J—5.013(2)(c)4]

Policy C2.6: All new development will maintain the natural functions of the 100 year floodplain of rivers and creeks so that the long term environmental and economic impact and recreation value of these areas is maintained. The use or storage of hazardous materials or wastes shall be regulated in the 100-year floodplains of rivers and creeks. [9J—5.013(2)(c)6]

Policy C2.11: The County shall protect the natural function of identifiable wetlands by: 1) avoiding encroachment; 2) minimizing the loss of wetlands when encroachment cannot be avoided; or 3) mitigating the loss of wetlands. Where it is determined that proposed development or redevelopment will encroach upon a defined wetland, the County shall require a Specific Management Plan to be prepared by the developer, which includes necessary modifications to the proposed development, such as specific setbacks, buffers, or clustering of development away from the wetland. The provisions of such management plans shall be consistent with the natural resource protection policies of the Conservation Element of this Plan. Wetlands destroyed by future development activities shall be restored or created in accordance with regulations established by the appropriate jurisdictional authority, specifically the South Florida Water Management

District, the St. Johns Water Management District, the Florida Department of Environmental Regulation or the Army Corps of Engineers. The County's land development regulations shall include appropriate criteria and standards for wetlands protection, such as: setbacks of a minimum of 25 feet; buffers; conservation easements; compensatory acre-for-acre on-site mitigation, or two-to-one off-site mitigation; drainage criteria; allowed and exempted uses; wetland function; and significant and insignificant effects of development on wetlands. The definition of wetlands to be used for regulatory purposes shall be derived from the definition of wetlands used by the South Florida Water Management District, the St. Johns River Water Management District, the Florida Department of Environmental Regulation, and the Army Corps of Engineers. The Generalized Wetlands Map, adopted as part of this Comprehensive Plan, is intended to serve as a guide to the possible location of wetlands. Specific identification of wetlands may require a survey to be provided at the expense of the developer and in coordination with relevant agencies, if appropriate, to determine whether wetlands under the jurisdiction of the South Florida Water Management District, the St. Johns River Water Management District, the Florida Department of Environmental Regulation or the Army Corps of Engineers are present on a site. [9J—5.013(2)(c)6]