

**BACKGROUND REPORT IN
SUPPORT OF DEVELOPMENT OF A
WETLAND BUFFER ZONE ORDINANCE**

JEA PROJECT NO.: 19270-485-01

Submitted to:

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December 1999

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2.0 IDENTIFICATION AND CLASSIFICATION OF ECOLOGICAL COMMUNITIES

The primary habitat classification system utilized for identifying ecological communities in St. Johns County is the *Florida Land Use, Cover and Forms Classification System* (FLUCCS) (Level 3) (DOT 1985). This standardized habitat classification system is frequently used throughout Florida, as well as in the St. Johns County draft Land Development Code. Geographic Information System (GIS) data depicting FLUCCS (Level 3) Land Use/Land Cover were obtained from the St. Johns River Water Management District (SJRWMD), who maintain a FLUCCS (Level 3) GIS database for each county in its district. The GIS Land Use/Land Cover map is depicted in Figure 1.

A few of the most significant upland and wetland FLUCCS categories mapped in St. Johns County and their associated distribution include the following:

- 2000 Agriculture - southeast portion of the county
- 4110 Pine Flatwoods - extensive throughout the county
- 4120 Longleaf Pine - Xeric Oak (i.e., Sandhill) - infrequent
- 4340 Upland Mixed Coniferous/Hardwood (i.e., Mesic Uplands) - infrequent
- 6150 River/Lake Swamp - Bottomland (i.e., Floodplains) - frequent throughout the county
- 6210 Cypress - infrequent
- 6300 Wetland Forested Mixed - extensive in the central portion of the county
- 6420 Saltwater Marsh - extensive along the coast

2.1 HABITAT TYPES

Many of the above habitat types have been used to assess wildlife utilization and associated spatial requirements in previous buffer zone studies (Brown et al. 1990a, Brown and Orell 1995) and were subsequently used to develop appropriate buffer widths for protecting wetland-dependent wildlife species. The habitat types used in the above-mentioned buffer studies are applicable to St. Johns County and were therefore adapted for this study. The habitat types used for assessing wildlife spatial requirements include hardwood swamp, cypress wetland, freshwater marsh, saltwater marsh, flatwoods, mesic hammock, and xeric upland. Upland habitats were included because they occur in association with wetlands within a landscape mosaic and provide important feeding and nesting habitat for many wetland-dependent wildlife species. Each of these habitat types are described below.

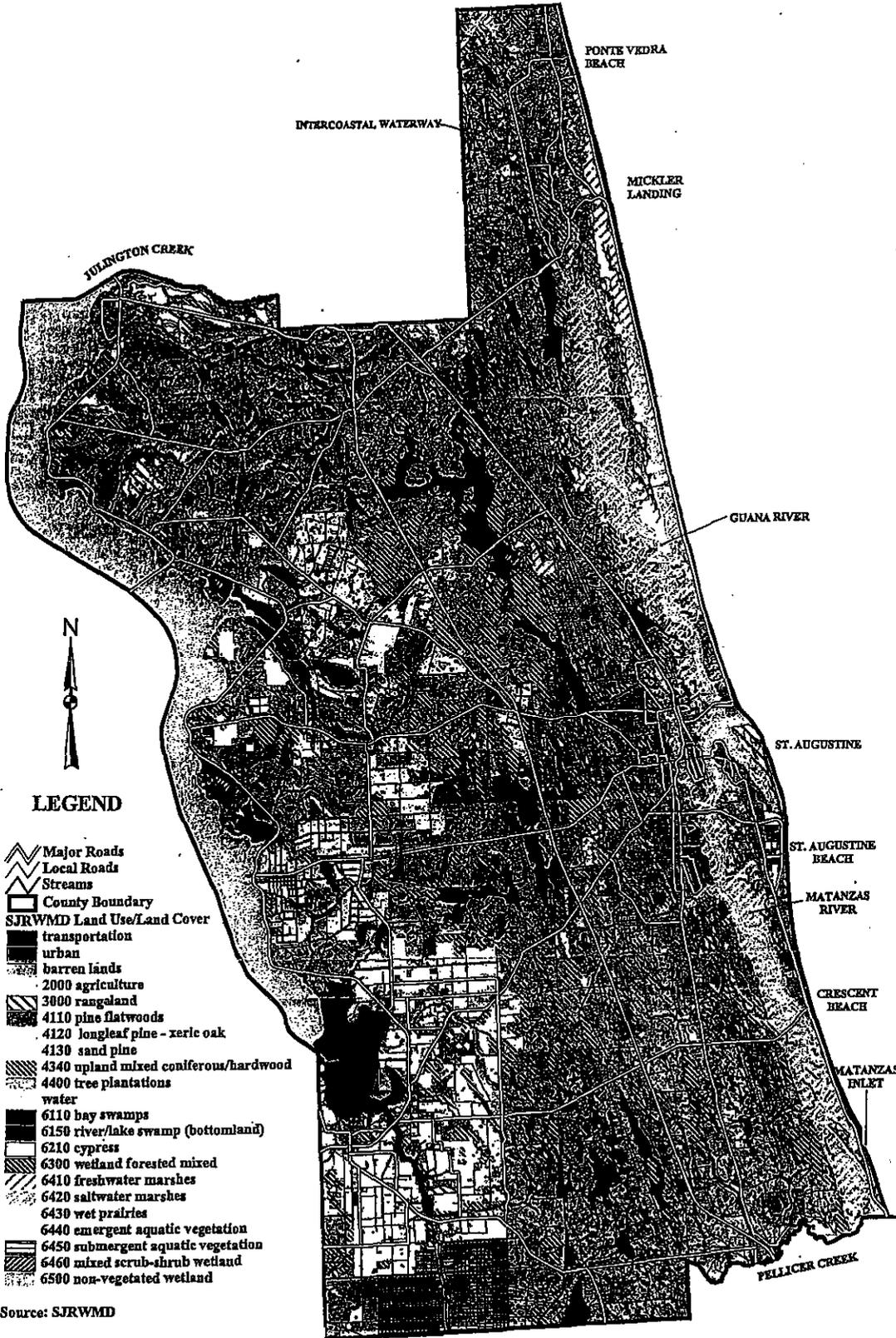
2.1.1 Cypress Wetlands

Cypress wetlands coincide with the FLUCCS category 6210 and are frequently associated with cypress domes and cypress strands in north Florida. They tend to be more recurrent in inland counties, whereas mixed hardwood swamps tend to be more frequent in St. Johns County. Pond cypress (*Taxodium ascendens*) is typically the dominant tree species in cypress wetlands, whereas red maple (*Acer rubrum*), water oak (*Quercus nigra*), sweetgum (*Liquidambar styraciflua*), swamp black gum (*Nyssa sylvatica* var. *biflora*), and bays occur as subdominants. These are still-water wetland forests which have water present for most of the year. This habitat generally occurs in depressions in upland areas of little topographic relief such as pine flatwoods. It seldom occurs in the floodplains.

and developments, where vegetation can trap sediments and attached pollutants before they are deposited into wetlands and watercourses.

Figure 1 Land Use/Land Cover (Level 3) Habitat Classification Map

Figure 1
Landuse/Land Cover (Level 3)
Habitat Classification Map



LEGEND

- Major Roads
- Local Roads
- Streams
- County Boundary
- SJRWMD Land Use/Land Cover
 - transportation
 - urban
 - barren lands
 - 2000 agriculture
 - 3000 rangeland
 - 4110 pine flatwoods
 - 4120 longleaf pine - xeric oak
 - 4130 sand pine
 - 4340 upland mixed coniferous/hardwood
 - 4400 tree plantations
 - water
 - 6110 bay swamps
 - 6150 river/lake swamp (bottomland)
 - 6210 cypress
 - 6300 wetland forested mixed
 - 6410 freshwater marshes
 - 6420 saltwater marshes
 - 6430 wet prairies
 - 6440 emergent aquatic vegetation
 - 6450 submergent aquatic vegetation
 - 6460 mixed scrub-shrub wetland
 - 6500 non-vegetated wetland

Source: SJRWMD

SCALE

2 0 2 4 6 Miles

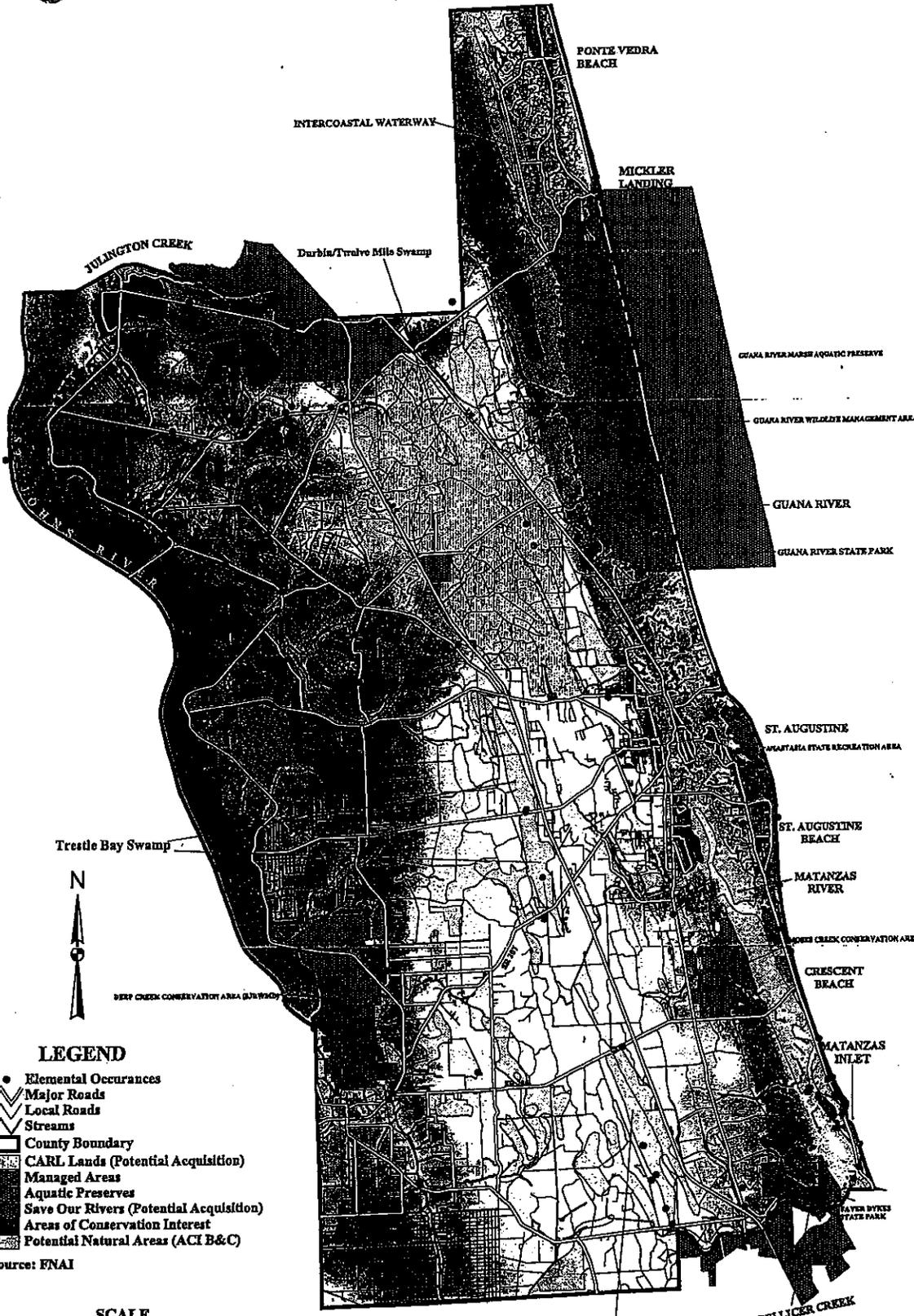
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Figure 2
Environmentally Significant Lands



LEGEND

- Elemental Occurrences
- ▬ Major Roads
- ▬ Local Roads
- ▬ Streams
- ▭ County Boundary
- ▨ CARL Lands (Potential Acquisition)
- ▩ Managed Areas
- ▧ Aquatic Preserves
- ▦ Save Our Rivers (Potential Acquisition)
- ▥ Areas of Conservation Interest
- ▤ Potential Natural Areas (ACI B&C)

Source: FNAI

SCALE

2 0 2 4 6 Miles

1:200000

FLORIDA



Figure 3
Existing & Proposed Conservation Lands

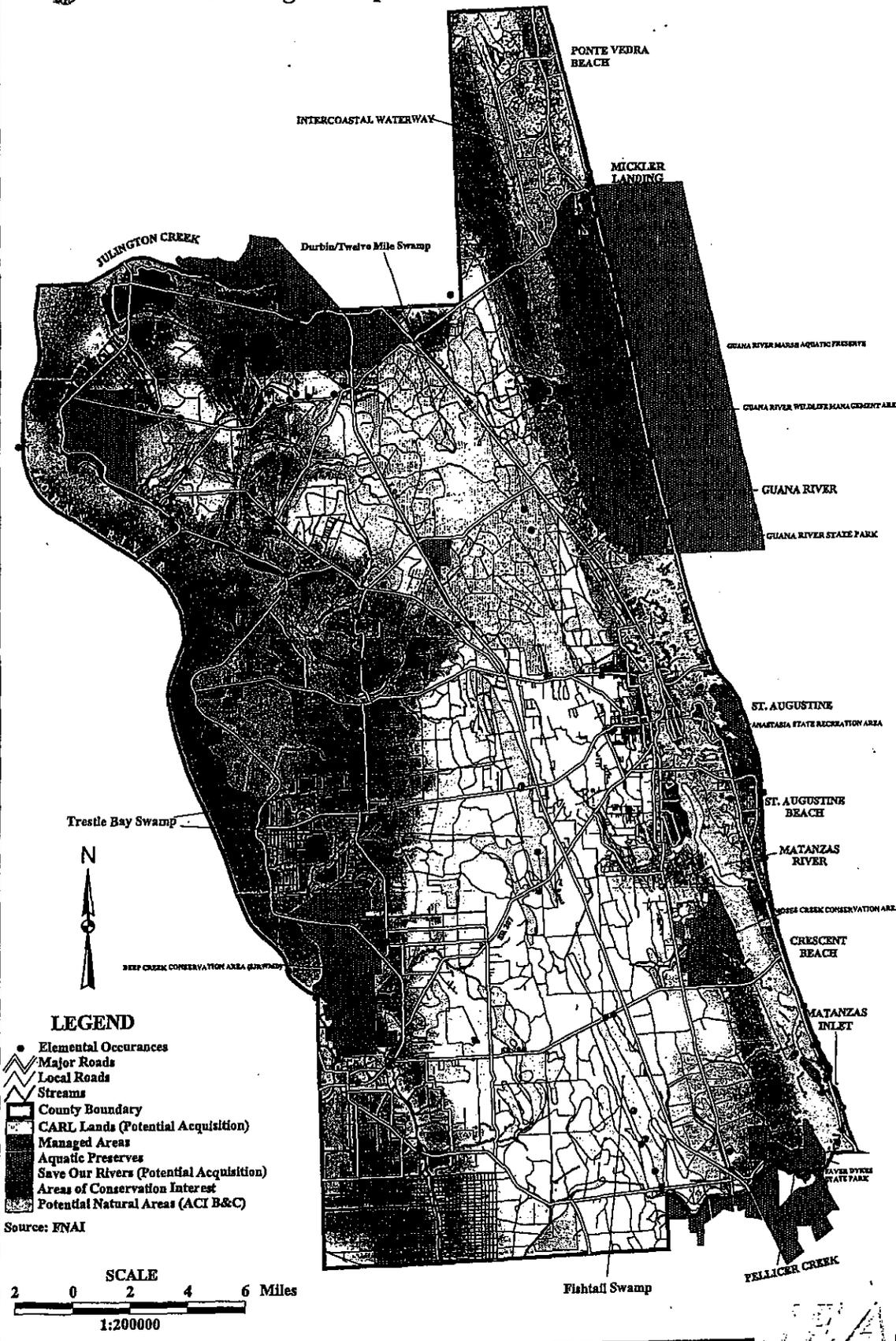
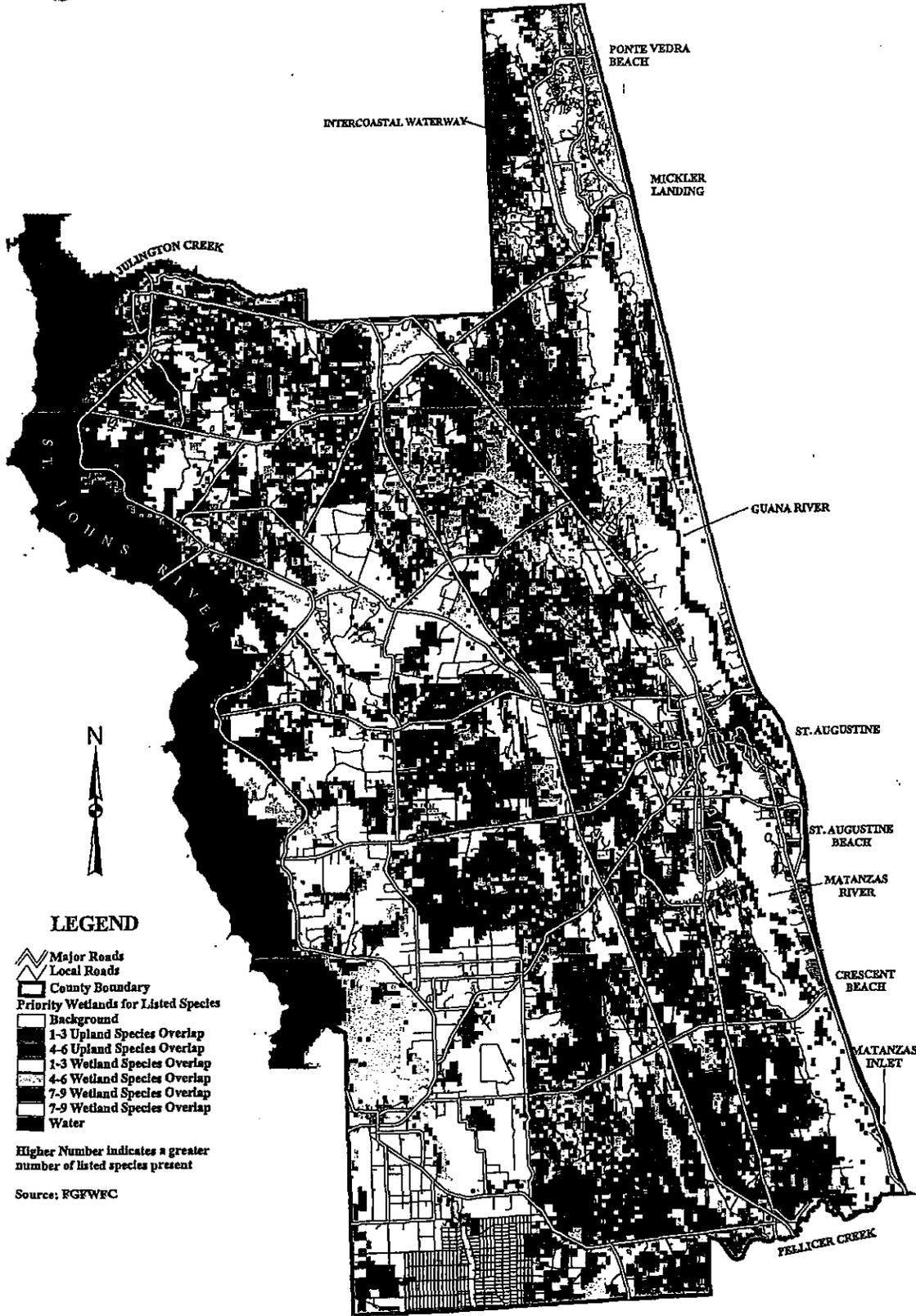


Figure 4
 Environmentally Sensitive Lands



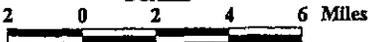
LEGEND

- Major Roads
- Local Roads
- County Boundary
- Priority Wetlands for Listed Species
 - Background
 - 1-3 Upland Species Overlap
 - 4-6 Upland Species Overlap
 - 1-3 Wetland Species Overlap
 - 4-6 Wetland Species Overlap
 - 7-9 Wetland Species Overlap
 - 7-9 Wetland Species Overlap
 - Water

Higher Number indicates a greater number of listed species present

Source: RGFWFC

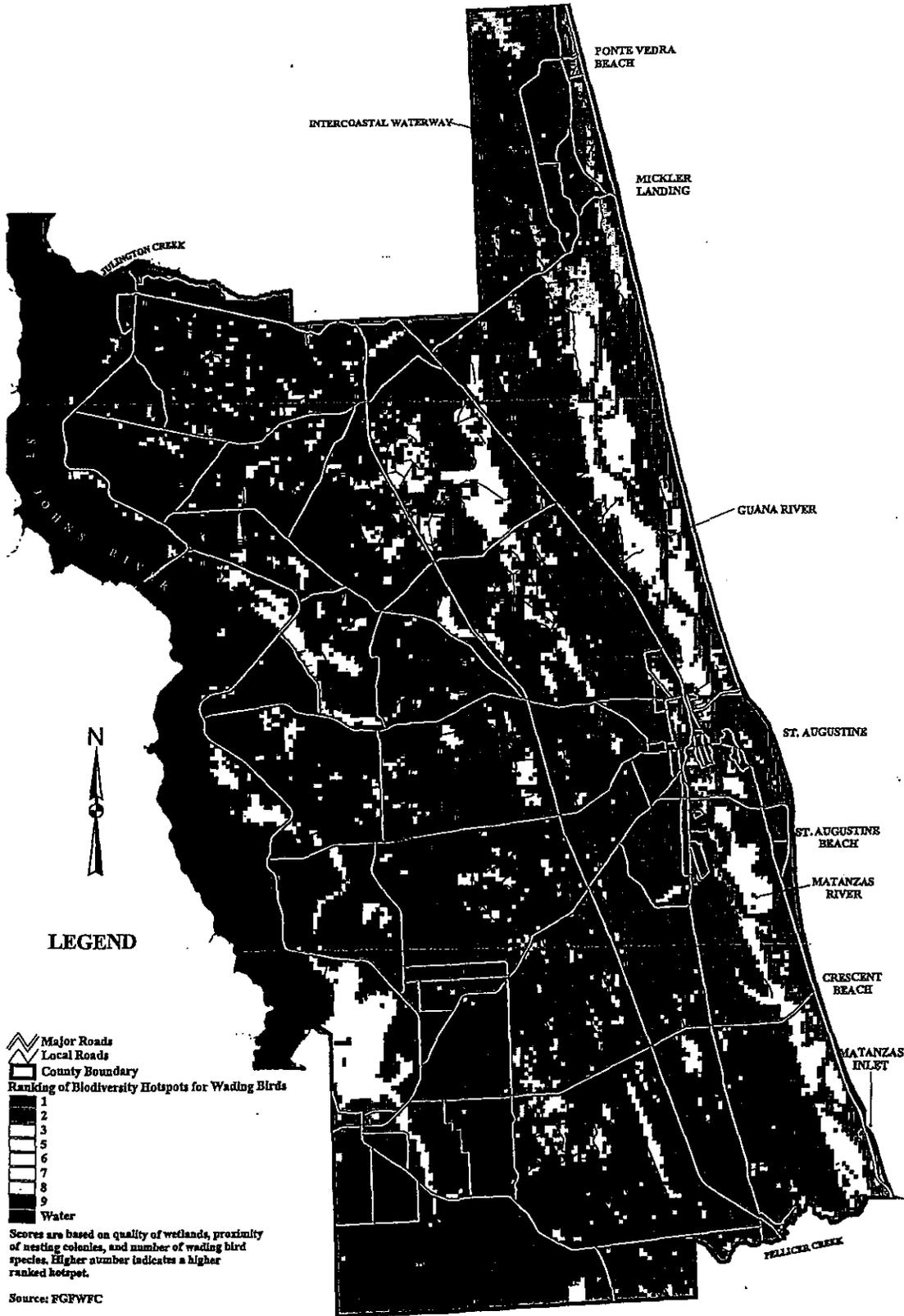
SCALE



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Figure 5
 Environmentally Sensitive Lands



LEGEND

- Major Roads
- Local Roads
- County Boundary
- Ranking of Biodiversity Hotspots for Wading Birds
- 1
- 2
- 3
- 5
- 6
- 7
- 8
- 9
- Water

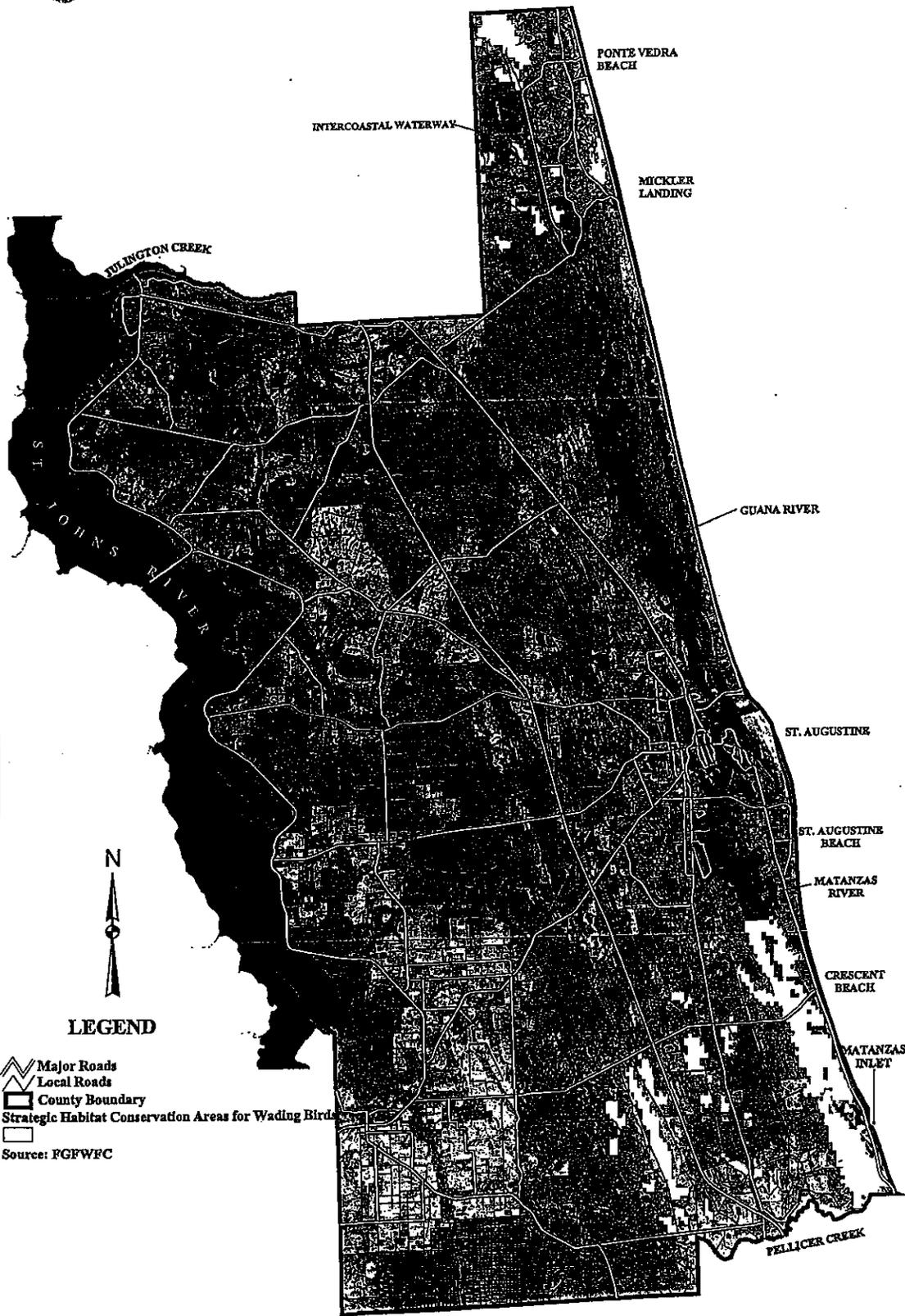
Scores are based on quality of wetlands, proximity of nesting colonies, and number of wading bird species. Higher number indicates a higher ranked hotspot.

Source: FGFWFC

SCALE
 2 0 2 4 6 Miles
 1:200000



Figure 6 Environmentally Sensitive Lands



LEGEND

- Major Roads
- Local Roads
- County Boundary
- Strategic Habitat Conservation Areas for Wading Birds

Source: FGFWFC

SCALE

2 0 2 4 6 Miles

1:200000

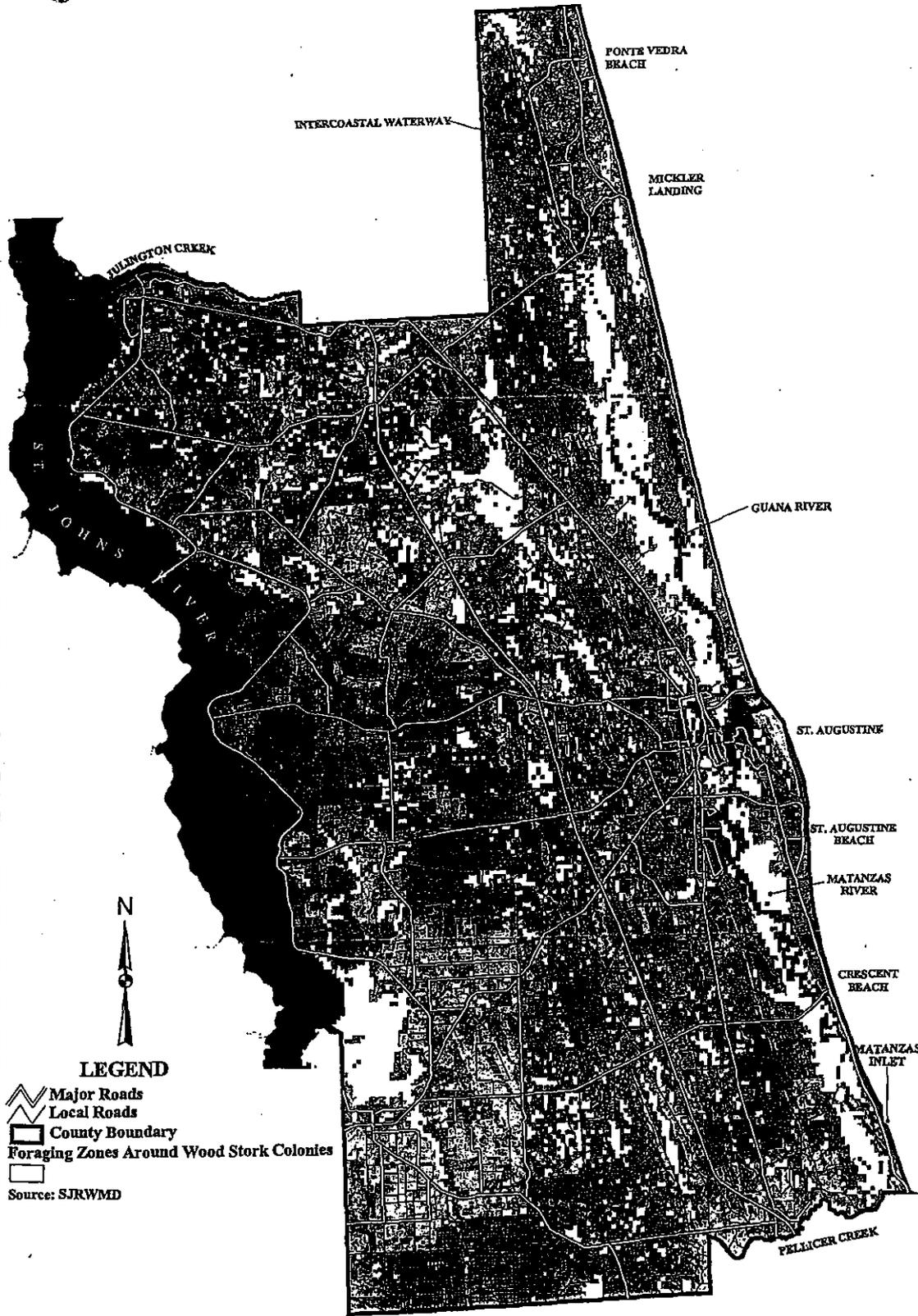
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SEA



Figure 7
Environmentally Sensitive Lands



LEGEND

- Major Roads
- Local Roads
- County Boundary
- Foraging Zones Around Wood Stork Colonies

Source: SJRWMD

SCALE
2 0 2 4 6 Miles

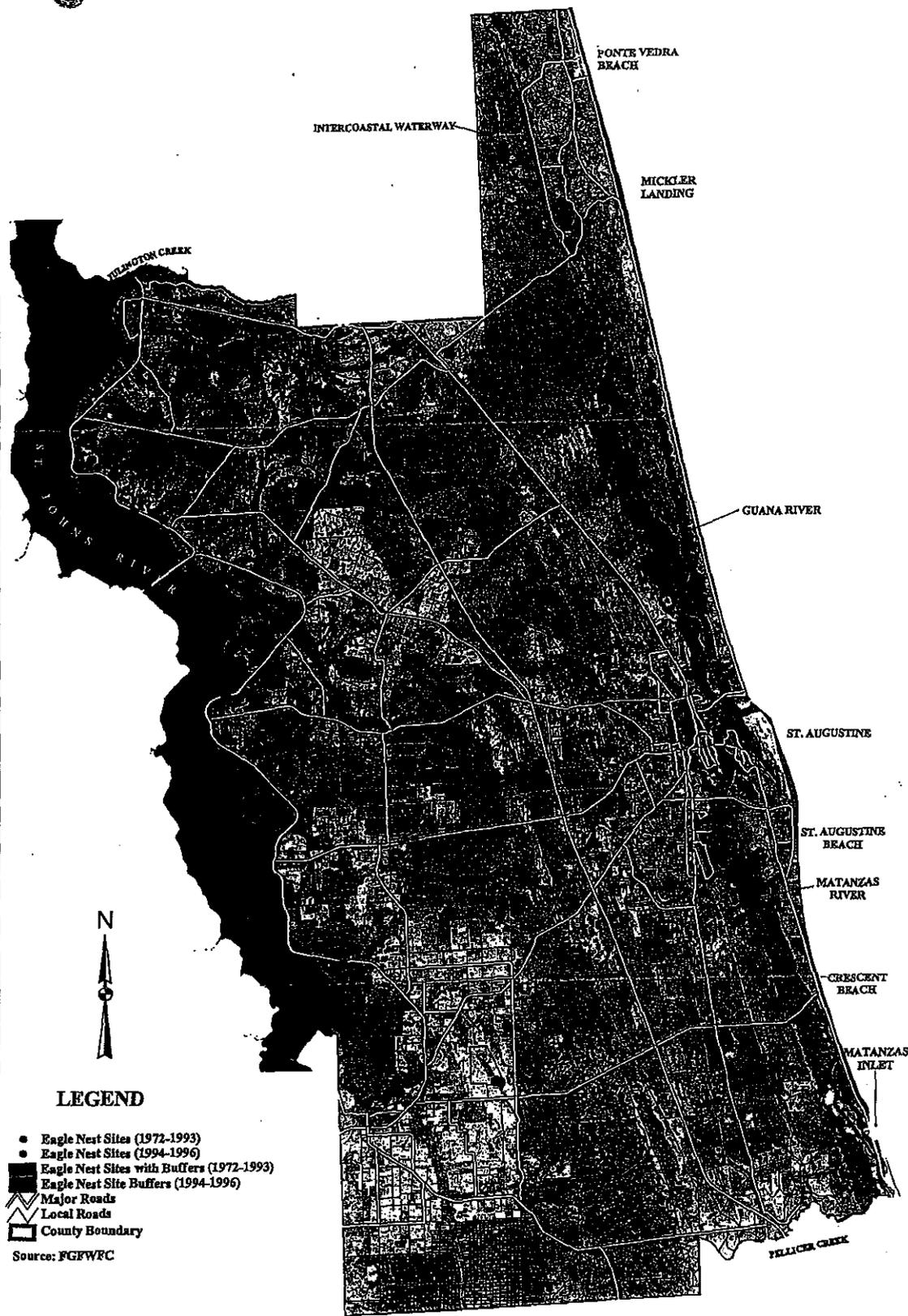
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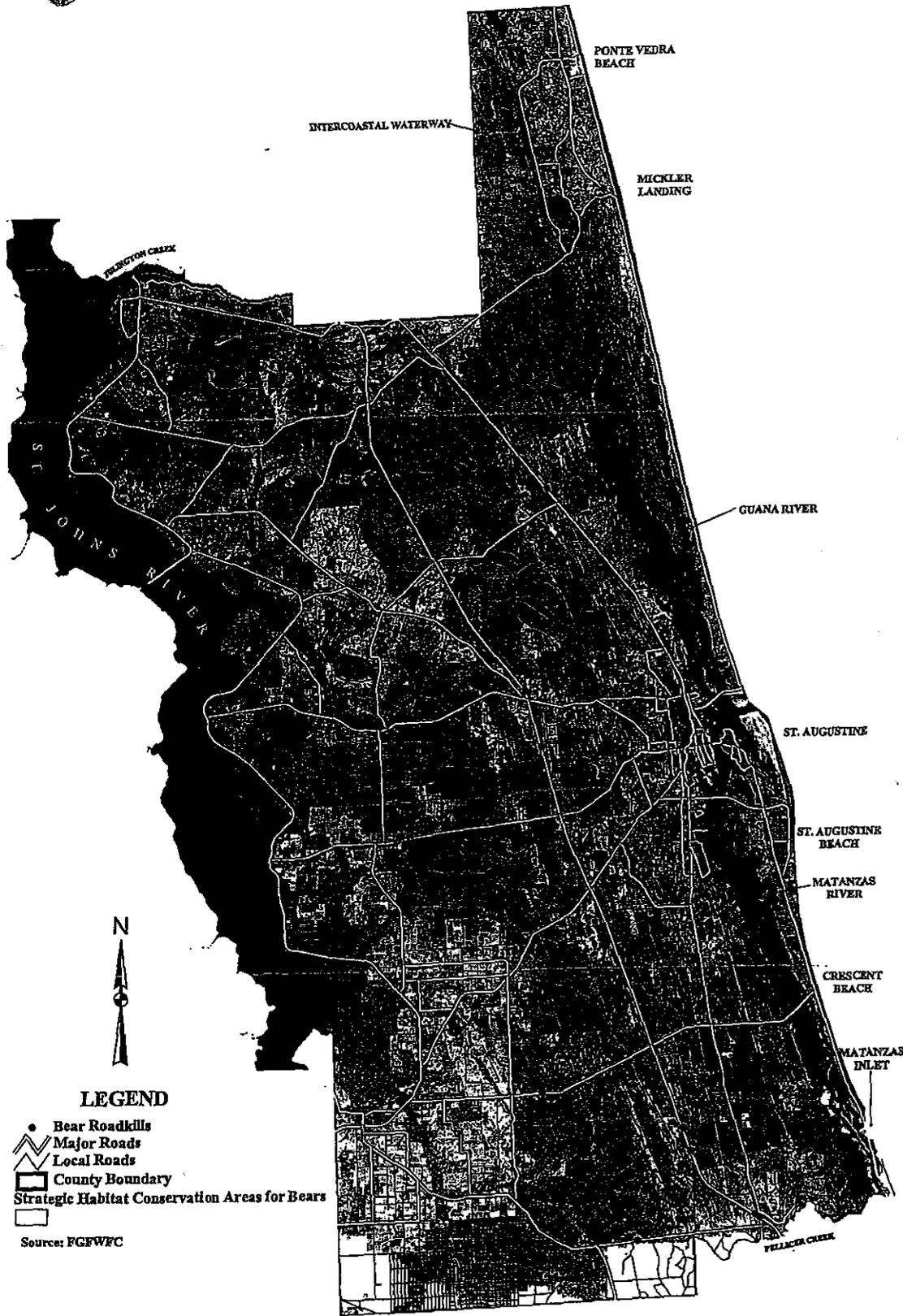
Figure 8 Environmentally Sensitive Lands



NEA



Figure 9
Strategic Conservation Areas for Bears



LEGEND

- Bear Roadkills
- Major Roads
- Local Roads
- ▭ County Boundary
- ▭ Strategic Habitat Conservation Areas for Bears

Source: FGFWFC

SCALE

2 0 2 4 6 Miles

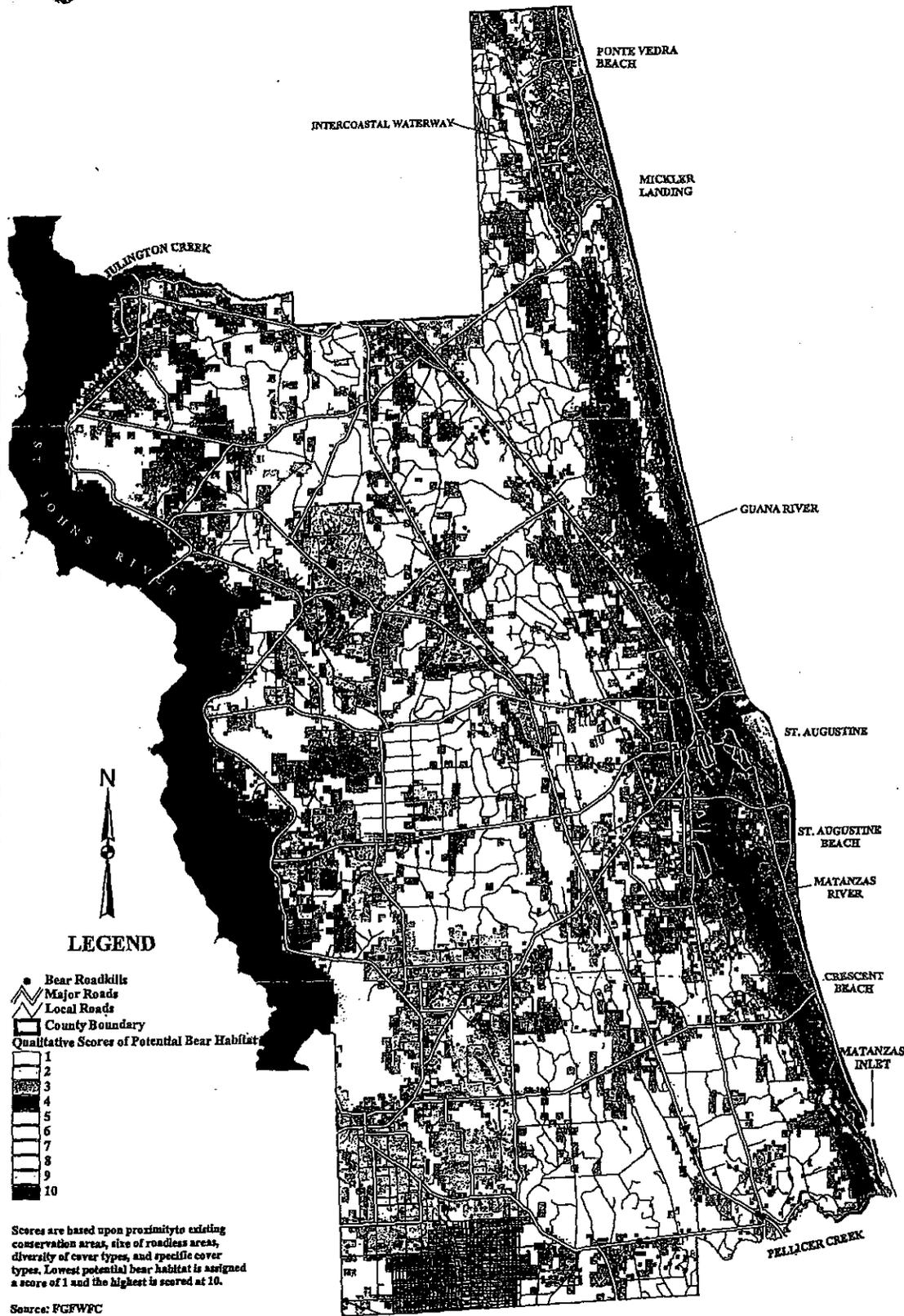
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Figure 10
Potential Bear Habiata

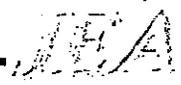
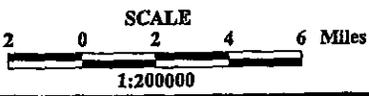


LEGEND

- Bear Roadkills
 - Major Roads
 - Local Roads
 - County Boundary
 - Qualitative Scores of Potential Bear Habiata
- | |
|----|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |
| 9 |
| 10 |

Scores are based upon proximity to existing conservation areas, size of roadless areas, diversity of cover types, and specific cover types. Lowest potential bear habitat is assigned a score of 1 and the highest is scored at 10.

Source: FGFWFC



2.1.2 Hardwood Swamps

This habitat type comprises several FLUCCS categories including river/lake swamp - bottomland (6150), wetland forested mixed (6300), and bay swamps (6110). The first category is frequently found in strands along many drainageways, watercourses, and areas influenced by seasonal flooding. The second and third category can be a floodplain wetland, contiguous wetland, or isolated wetland. They are all similar in that they support a diverse conglomeration of predominantly hardwood species, with some of the more common species including red maple, water oak, sweetgum, swamp black gum, and bays. Bay swamps are dominated primarily by one or more wetland bay species, such as loblolly bay (*Gordonia lasianthus*), swamp bay (*Persea palustris*), and/or sweet bay (*Magnolia virginiana*). Associated species include cypress, slash pine, loblolly pine, and dahoon holly (*Ilex cassine*). These various hardwood swamps are of great value for maintaining good water quality and quantity and for wildlife and wilderness values. Water quality is enhanced through the actions of sedimentation and uptake of nutrients by vegetation. During flood times when waters reach their highest elevations, the swamp fringe of lakes and rivers help to reduce suspended nutrients and organic matter and slow water flow due to the friction of trunk, stems, and roots. Hardwood swamps provide food, cover, nesting sites, and hibernating places for a variety of animals, but many animals spend only part of their lives in wetlands, moving to uplands or to other water bodies as water levels rise and fall (Myers and Ewel 1991). Hardwood swamps comprising floodplains, wetland forested mixed, and bay swamps are common throughout the county except along the coastal strand.

2.1.3 Freshwater Marsh

Instead of a forested wetland community, this habitat type consists of a marsh that is dominated by hydrophytic herbs. A shallow freshwater marsh (6410) appears as an open expanse of grasses, sedges, and rushes and is adapted to prolonged periods of flooding. Plant associations vary markedly along hydrological gradients, but species tolerances to inundation overlap broadly (Myers and Ewel 1991). Marsh systems will eventually succeed to a shrub or forested wetland in the prolonged absence of fire, or if the hydroperiod is permanently lowered. Wet prairies (6430) are included in this landscape habitat. Freshwater marshes and wet prairies are infrequent in St. Johns County. Similar to other wetlands, ephemeral marshes and wet prairies provide valuable wildlife habitat to a variety of amphibians such as oak toads, chorus frogs, little grass frogs, and several other frog and toad species (Brown et al. 1990) where their associated predators are excluded due to noncontinuous inundation.

2.1.4 Saltwater Marsh

Salt marshes (6420), which are characterized by grasses, sedges, and rushes, generally straddle Guana River, Tolomato River, Matanzas River, Moultrie Creek, Moses Creek, Pellicer Creek, and the Intracoastal Waterway in St. Johns County. Salt marsh soils are nearly level and are covered with salt or brackish water during daily high tides. They are very poorly drained, with mucky or sandy clay loams. Salt marsh vegetation is often zoned in accordance with average salinity and depth of flooding to which the zones are exposed. Black needlerush (*Juncus roemerianus*) and seashore saltgrass (*Distichlis spicata*) are tolerant of variable conditions and are found throughout the marsh. Smooth cordgrass (*Spartina alterniflora*) is found in regularly flooded areas and is often a dominant salt marsh plant. Marshhay cordgrass (*Spartina patens*), marsh elder (*Iva imbricata*), saltwort (*Batis*

maritima), and sea oxeye (*Borrchia* spp.) are typical of higher areas that are less frequently flooded. Saltwater marshes provide valuable habitat to a wide range of snails, crabs, amphipods, wading birds, and fish. Many commercially important fish species spend a large portion of their lives in saltwater marshes, adjacent estuaries, and tidal creeks.

2.1.5 Pine Flatwoods

Pine flatwoods (4110) are poorly drained uplands that represent the most extensive upland habitat in St. Johns County. Pine trees in the canopy and a thick shrub layer of saw palmetto (*Serenoa repens*), gallberry (*Ilex glabra*), and dwarf huckleberry (*Gaylussacia dumosa*) typify pine flatwoods. Slash pine (*Pinus elliottii*) is frequently the most common pine tree present; however, loblolly pine (*Pinus taeda*) and longleaf pine (*Pinus palustris*) can also occur. Private timber companies manage extensive acres of pine stands on pine flatwoods. Pine flatwoods can occur over a moderately wide hydrologic gradient, from the drier scrubby flatwoods to the wetter hydric flatwoods.

2.1.6 Upland Hammock

This upland habitat is a mesic upland that is comprised of a mixture of hardwoods and conifers. The upland mixed forest (4340) represents the corresponding FLUCCS code. This upland habitat tends to be intermediate in drainage between the poorly drained pine flatwoods and the excessively drained sandhills and scrubs. Dominant tree species include slash pine, water oak, live oak (*Quercus virginiana*), laurel oak (*Quercus haemisphaerica*), sweetgum, and saw palmetto. This habitat is more restrictive in distribution in St. Johns County than pine flatwoods; however, it is frequently found in the northwest portion of the county and is associated with the steeply incised ravines.

2.1.7 Xeric Uplands

Sandhill (4120) and scrub (4130) are xeric communities that characteristically support drought-tolerant species on deep, infertile sandy soils. Although these are distinctly different communities, they have been combined in this habitat to represent xeric communities that often occur adjacent to wetlands. Longleaf pine and sand pine (*Pinus clausa*) are the dominant conifers on sandhills and scrub, respectively. Turkey oak (*Quercus laevis*), blue-jack oak (*Quercus incana*), wiregrass (*Aristida beyrichiana*), and other drought-tolerant species flourish in these xeric communities and can become dominant or codominant in the absence of fire. The Florida Natural Areas Inventory (FNAI) has classified both sandhill and scrub communities as imperiled due to the severe development pressure on these locally rare communities. These two xeric communities support a rare suite of wildlife, including the endangered indigo snake that depends on gopher tortoise burrows during winter months and frequents adjacent wetland communities throughout the remainder of the year.

2.2 ENVIRONMENTALLY SENSITIVE LANDS

The county Comprehensive Plan, in its definition of terms, defines environmentally sensitive lands as jurisdictional wetlands that are regulated by the Florida Department of Environmental Protection (DEP) and SJRWMD, estuaries or estuarine systems as depicted on the Environmentally Sensitive Lands Map of the Future Land Use Map Series, areas designated pursuant to the Federal Coastal Barrier Resource Act (PL 97-348) and those beach and dune areas seaward of the Coastal

Construction Control Line; habitat areas that, after appropriate study and analysis, are determined to be necessary for the support of threatened or endangered species found to be actually using, or residing within the identified habitat area; or areas which because of (i) their unique ecological or environmental nature, or (ii) their diversity of ecological or environmental communities, and (iii) their significant potential for protection due to ownership patterns, development status, or other factors, are designated as environmentally sensitive lands by action of the County Commission. For this buffer zone analysis, we were directed to include as environmentally sensitive lands, all wetlands and their associated upland areas that include, but are not limited to, those located adjacent to OFWs, Class II waters, Class III waters, Aquatic Preserves, estuaries, shellfish harvesting areas, and all major rivers, and headwaters to major creeks and isolated wetlands.

Numerous pertinent GIS data layers were obtained and investigated in order to map the distribution and extent of environmentally sensitive lands in St. Johns County. GIS data layers were obtained from the SJRWMD, DEP, the Florida Game and Freshwater Fish Commission (FGFWFC), FNAI, and St. Johns County. The GIS maps are provided as Figure 1 through 10.

Jurisdictional wetlands are classified by dominant vegetation types according to the FLUCCS (Level 3) data provided by the SJRWMD (Figure 1). While this map provides an overall generalization of the vegetative communities in the county, field verification to substantiate precise habitats within the constraints of a project boundary is necessary.

Major rivers, such as the St. Johns River, Julington Creek, Guana River, Tolomato River, Matanzas River, and Pellicer Creek are depicted on the GIS maps (Figure 1 - 10). We were unable to find a GIS layer that depicted headwaters to major rivers and creeks or estuaries. However, where they originate within the county boundary, headwaters can be interpolated on the GIS maps as the origin of the creek or stream network. Estuaries are broadly defined as areas where sea water is diluted by water from rivers and streams. These areas can be interpolated on the GIS maps as junctures where streams join saltwater marshes (Figure 1), or where streams join Class II waters (Figure 2).

Significant waterbodies are depicted on Figure 2 and include Class I, II, and III waterbodies, OFWs, and Aquatic Preserves. Class I waters are surface waters that are used for potable water supply and meet drinking water quality standards. There are no Class I waters in St. Johns County. Class II surface waters are designated shellfish propagation or harvesting areas. Class II waters the county coincide with designated areas of Guana River, Tolomato River, Salt Run, Matanzas River, Pellicer Creek, and their connecting tributaries (Figure 2). Class III waters are all other surface waters that are used for recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife (Chapter 62-302.400, F.A.C.). Some water bodies have received dual classification designations, such as a Class II water body and OFW. Five areas have been designated as OFWs in the county and include surface waters in Anastasia State Recreation Area, surface waters in Guana River State Park, Guana River, surface waters in Faver-Dykes State Park, and surface waters in Ft. Mose (Figure 2). Aquatic Preserves include Guana River Marsh and Pellicer Creek. Class II waters (shellfish propagation and harvesting waters), OFWs, and Aquatic Preserves coincide with the unique and sensitive tidal areas located along the coastal side of the county.

Several more inland areas in the county have been identified based on unique vegetative communities, high ecological value, and important wildlife habitat, and are categorized as existing and proposed conservation lands (Figure 3). Areas such as Moses Creek, Deep Creek, and Stokes

Landing have been acquired by the SJRWMD for preservation and recreation (Figure 3). Other areas such as Trestle Bay Swamp, Fishtail Swamp, and Deep Creek have qualified as Potential Natural Areas based on a Natural Areas Inventory of Tiger Bay (Schultz and Orzell 1995).

Large areas that are relatively unimpacted and maintain a high environmental quality will generally support listed species (endangered, threatened, and species of special concern). The FGFWFC study entitled *Closing the Gaps in Florida's Wildlife Habitat Conservation System* (Cox et al. 1994) identified strategic habitat conservation areas within each county and biodiversity hotspots for a number of different wildlife species. Strategic habitat conservation areas are those areas recommended for additional protection based on meeting minimum conservation goals established by FGFWFC. Biodiversity hotspot maps depict areas where large numbers of selected species occur, areas where rare plants and animals occur, and key areas that support high biological diversity. GIS data layers depicting strategic habitat conservation areas and biodiversity hotspots were obtained from FGFWFC and produced for selected wildlife species. These maps are summarized below.

The FGFWFC compared the occurrences of listed species with quality of wetland systems and produced a map of priority wetlands for listed species (Figure 4). This map depicts the locations where multiple listed species overlap. A map of biodiversity hotspots for wading birds suggests that St. Johns County provides excellent habitat for a variety of wading birds species (Figure 5), many of which are listed by the FGFWFC and U.S. Fish and Wildlife Service (USFWS). These scores are based on quality of wetlands, proximity to nesting colonies, and number of wading bird species. A higher score indicates a higher ranked hotspot. Strategic conservation areas (i.e., areas recommended for additional protection) for wading birds coincide with wetlands and coastal marshes in the southeast and northeast corner of the county (Figure 6). The extensive wood stork foraging areas also suggests the high quality and prevalent wetland areas in St. Johns County (Figure 7). Bald eagles are a permanent resident in St. Johns County, where the most common nesting sights are located along the St. Johns River and Guana River (Figure 8). The southern end of the county has been identified by the FGFWFC as a strategic conservation area for black bears (Figure 9). This area is in need of protection to accommodate bears that have dispersed northward from the largest bear population in the Ocala National Forest (Cox et al. 1994). Frequent black bear sightings have also occurred in Durbin Swamp, Twelve Mile Swamp, and in the thick forested flatwoods and wetlands throughout the central ridge of the county (Figure 10). These GIS maps depict the valuable ecological resources that are present in the county along the coastal eastern side, the riverine western side, and the forested areas through the central ridge.

- Figure 2 Environmentally Significant Lands
- Figure 3 Existing and Proposed Conservation Lands
- Figure 4 Environmentally Sensitive Lands
- Figure 5 Environmentally Sensitive Lands
- Figure 6 Environmentally Sensitive Lands
- Figure 7 Environmentally Sensitive Lands
- Figure 8 Environmentally Sensitive Lands
- Figure 9 Strategic Conservation Areas for Bears
- Figure 10 Potential Bear Habitat

2.3 IMPERILED AND THREATENED HABITATS

The FNAI has published a state and global list of imperiled and threatened habitats of St. Johns County based on lack of abundance in the county and vulnerability to extinction. This list is referenced in the Comprehensive Plan and in the Draft Land Development Code. The state imperiled habitats are those habitats that are rare (6-20 occurrences or little remaining area) or because of some factor(s) makes them very vulnerable to extinction throughout their range (FNAI and FDNR 1990). The state threatened habitats are those habitats that are rare or uncommon in the state (on the order of 21 to 100 occurrences) (FNAI and FDNR 1990). A brief description of the state imperiled and threatened habitats in St. Johns County is provided on Table 2.1. It should be noted that the FNAI list of imperiled and threatened habitats in St. Johns County is not inclusive of all endangered or rare habitats in the county. For example, not listed as imperiled or threatened are the steep-sided ravines in the northwestern corner of the county that are unique, rare, support unusual flora, and are vulnerable to degradation and erosion from development. Additionally, seepage slopes are listed as imperiled for other counties in Florida but are not included on the St. Johns County list. This community has been documented as occurring in the county (L. Grant, K. John, pers. comm.) and probably should be included as imperiled in St. Johns County.

Table 2.1 Imperiled and Threatened Habitats in St. Johns County (Source: FNAI and FDNR 1990)

Habitat	Description of Habitat, Distribution, and Vulnerability Factors
Imperiled	
Beach Dune	<p>These are found along shorelines subject to high energy waves which deposit sand-sized grains to form the open beach. Beach dunes are subject to drastic topographic alterations during winter storms and hurricanes. Taking the brunt of storm surge, intact beach dunes are essential for protection of inland biological communities. In spite of their ability to withstand harsh maritime environments, plants on the beach dunes are extremely vulnerable to human impacts. A footpath or off-road vehicle trail can damage vegetation and destabilize dunes.</p>
Coastal Grassland	<p>This is a flat low area found behind the foredunes on capes, spits, and estuaries. It may be periodically flooded by saltwater and covered with sand and debris during major storms. Plant species will colonize expanses of newly deposited sands and can, over time and in the absence of large storms, succeed into coastal strand or flatwoods.</p>
Coastal Interdunal Swale	<p>These dynamic areas between sand dune ridges afford additional protection to inland biological communities during storm events by trapping sand and debris, thus reducing inland native vegetation from sand burial. They also provide a haven from high winds for some wildlife species.</p>
Coastal Strand	<p>Coastal strands are stabilized, wind-deposited coast dunes that are vegetated with a dense thicket of salt-tolerant shrubs and herbs. They are generally quite stable but are susceptible to severe damage if the vegetation is disturbed. Coastal strand is probably the most rapidly disappearing community in Florida. Because it is prime resort and residential property, coastal strands now occur as broken and isolated segments, rather than a long continuous strand as it historically was. Along with other coastal communities, coastal strand protects inland communities from the severe effects of storms.</p>
Maritime Hammock	<p>Maritime hammock is characterized as a narrow band of hardwood forest lying just inland of the coastal strand community. Various hardwood species combine to form a dense, wind-pruned canopy whose streamlined profile deflects wind and generally prevents hurricanes from uprooting the trees. This community occurs on old coastal dunes that have been stabilized long enough for the growth of a forest. Maritime hammock is prime resort and residential property because of its relatively protected location along the coast. Although it originally occurred in virtually continuous bands along the coast, it is now dissected into short strips by development and is rapidly disappearing.</p>

Table 2.1 Imperiled and Threatened Habitats in St. Johns County (Source: FNAI and FDNR 1990)	
Habitat	Description of Habitat, Distribution, and Vulnerability Factors
Sandhill	This community has been briefly described in Section 2.1. Sandhills are much more restricted in distribution now compared to historical distribution due primarily to development and agriculture.
Scrub	This community has also been briefly described in Section 2.1. Scrub communities and their many endangered and threatened species have rapidly been lost to development.
Threatened	
Basin Swamp	Basin swamps can overlap with some of the forested wetland communities listed in the FLUCCS categories and depicted on Figure 1. These include bay swamps (6110), bottomlands (6150), cypress (6210), and wetland forested mixed (6400). Basin swamps are vulnerable to manipulation of the hydroperiod, whereby an increased hydroperiod can lead to a demise of less water-tolerant species, and shortened hydroperiod which allow invasion of drier species. Many basin swamps have been degraded by timber harvest and have been drained or polluted by sedimentation and erosion.
Depression Marsh	These are typically small, isolated depressions that support a very different assemblage of species than that found in larger, more permanent wetlands. Depression marshes are considered extremely important in providing breeding or foraging habitat for many species of salamanders, toads, frogs, and wading birds. Depression marshes occurring as isolated wetlands within larger upland ecosystems are of critical importance to many additional wetland and upland animals.
Dome Swamp	Dome swamps typically develop in sandy flatwoods and in karst areas where subsidence has occurred and created a conical depression. Many dome swamps have been ditched and drained, which alters the hydrophytic vegetation associated with these wetlands.
Scrubby Flatwoods	Scrubby flatwoods are rare in St. Johns County and often occur intermingled with mesic flatwoods along slightly elevated relict sandbars and dunes.
Xeric Hammock	Xeric hammock is an advanced successional stage of scrub or sandhill. It develops as large trees on sites that have been protected from fire for 30 or more years. It generally occurs as isolated patches that rarely cover extensive areas. Mature examples are rare and are prime residential property, especially near the coast. Remaining tracts of xeric hammock require protection from fire and development.

3.0 REVIEW OF OTHER COUNTY ORDINANCES

A search was conducted to determine those municipalities that have adopted a wetland buffer ordinance. The search consisted primarily of counties; however, some cities were included as well. The task of reviewing city and county ordinances quickly became an arduous endeavor due to the endless stacks of regulations that had to be scrutinized for each municipality in order to decipher which buffer requirements were applicable to this project. Due to the numerous municipalities and regulatory documents associated with each, we limited our review to coastal counties and to some inland counties that have adopted pertinent buffer requirements. Thirty-nine county and nine city ordinances were reviewed and summarized. These counties and cities are listed below and are summarized in Appendix A.

<u>COUNTIES</u>		<u>CITIES</u>
Alachua	Levy	Chattahoochee
Bay	Manatee	Clermont
Brevard	Martin	Apopka
Broward	Monroe	Clearwater
Charlotte	Okaloosa	Oldsmar
Collier	Orange	Palatka
Dade	Palm Beach	St. Augustine
Dixie	Pasco	Ormond Beach
Duval	Pinellas	Port Orange
Flagler	Putnam	
Franklin	St. Johns	
Gadsden	St. Lucie	
Hernando	Santa Rosa	
Hillsborough	Sarasota	
Indian River	Seminole	
Jefferson	Taylor	
Lake	Volusia	
Lee	Wakulla	
Leon	Walton	

Of the 39 county ordinances reviewed, 13 have no adopted buffer requirement between wetlands and development (Table 3.1) but instead defer to state recommendations which require an average of 25 feet and minimum of 15 feet to prevent secondary impacts. (This is described in greater detail in Section 4.2). A buffer width of 50 feet is frequently mandated by many municipalities to protect wetlands; however, typically only the most significant or environmentally sensitive water bodies are afforded this level of protection (Table 3.1). The two exceptions are Gulf and Nassau Counties, which have adopted a 50-foot buffer to protect all wetlands in the county. Currently in St. Johns County, a 50-foot buffer applies only to the St. Johns River, Matanzas River, Guana River, Tolomato River, and water bodies or wetlands connected to those named rivers. A smaller buffer of 25 feet applies to all other wetlands in the county. Similarly, in Brevard County, a 50-foot buffer is stipulated only for Class II waters, OFWs, Aquatic Preserves, and conditionally approved shellfishing waters. The buffer width in Brevard County is greater for Class I waters (potable waters) and smaller for Class III waters. Likewise, Manatee County has adopted a 50-foot buffer

Table 3.1 Summary of Buffer Zone Ordinances for Various Municipalities (See Appendix A for a more detailed description of wetland ordinances) (Page 1 of 2)	
Buffer Width (feet)	County
None, defer to State guidelines	Broward, Charlotte, Collier, Dade, Duval, Jefferson, Lee, Levy, Monroe, Palm Beach, Pasco, Santa Rosa, Taylor
10	St. Lucy ($\geq 50\%$ of shoreline must be buffered by ≥ 10 feet of buffer)
15	Hernando (for lots cleared & platted before 8/90) Lake (> for isolated wetlands, > for other wetlands) Pinellas (for isolated wetlands & channels, > for other wetlands)
20	Leon
25	Brevard (for Class III waters, > for other wetlands) Flagler Gadsden Lake (> for rivers/streams & non-isolated wetlands with variable buffers) Okaloosa Putnam St. Johns (> for specifically named rivers & their associated wetlands) Volusia (> for OFWs and NRMAs) Walton
30	Bay Hillsborough (for conservation areas, > for preservation areas) Manatee (> for named areas and wetlands contiguous to named areas) Sarasota (> for water bodies)
35	Alachua (> for OFWs) Dixie (> for Suwannee River)

Attachment C

Table 3.1 Summary of Buffer Zone Ordinances for Various Municipalities (See Appendix A for a more detailed description of wetland ordinances) (Page 2 of 2)

Buffer Width (feet)	County
50	Brevard (for Class II, OFWs, Aquatic Preserves, & conditionally approved shellfish areas; < for Class III, > for Class I) Franklin (> for Critical Shoreline District & Pollution Sensitive Segments) Gulf Hillsborough (for preservation areas, < for conservation areas) Indian River (or 100 feet from MHW, whichever is greater; < for lots platted prior to 6/18/91) Lake (for rivers and streams) Manatee (for named waterways and wetland contiguous to named waterways, < for other wetlands) Martin (for isolated wetlands, > for non-isolated wetlands) Nassau (average width for all wetlands) Orange (> for Wekiva, Econ, and tributaries of Wekiva and Econ) Pinellas (< for isolated wetlands, creeks, and channels) St. Johns (< for wetlands not associated with St. Johns River, Matanzas River, Guana River, or Tolomato River) Sarasota (between water bodies & development, < for other wetlands) Seminole (average width) Volusia (only for OFWs and NRMAs, < for other wetlands)
75	Alachua (only for OFWs, < for other wetlands) Dixie (only for Suwannee River, < for other wetlands) Hernando (only for specific rivers and associated wetlands) Martin (< for isolated wetlands & > for nest/den areas)
100	Lake (for rivers and streams using a variable width buffer, < for other wetlands)
150	Franklin (only for Critical Shoreline District & Pollution Sensitive Segments, < for other wetlands)
200	Brevard (only for Class I, < for all other wetlands)
300	Martin (only for nesting/denning areas of threatened or endangered species)
550	Orange (only for main tributaries of the Econ River, Wekiva River and associated tributaries; < for other wetlands)
1,100	Orange (protection zone for main channel of the Econ River)

only for Terra Ceia Aquatic Preserve, Sarasota Bay, Little Manatee River, and inflowing watercourses within the Watershed Protection Overlay Districts. A 30-foot buffer is required in Manatee County for all other wetlands that are not contiguous with the above-named water bodies.

The majority of counties reviewed have designated a buffer width that is less than 50 feet, either as the standard width used for all wetlands or for the less important or less environmentally sensitive wetlands and associated water bodies. For instance, Flagler, Gadsden, Okaloosa, and Putnam Counties mandate a 25-foot buffer for all wetlands (Table 3.1). Alachua County requires a 35-foot buffer for all wetlands except OFWs, and Dixie County implements a 35-foot buffer for all wetlands except the Suwannee River. The smallest wetland buffer of 10 feet was found in St. Lucy County; however, many projects in this county follow state guidelines and implement a larger buffer of 25 feet for preventing secondary impacts.

Buffer widths larger than 50 feet were encountered for several counties. Four counties specify a 75-foot buffer width, including Alachua (only for OFWs), Dixie (only for the Suwannee River), Hernando (for specific rivers and associated wetlands), and Martin (for most wetlands; however, a smaller buffer for isolated wetlands and larger buffer for nesting/denning areas). A 150-foot buffer is used in Franklin County only for the Critical Shoreline District and Pollution Sensitive Segments. Brevard County sanctioned a 200-foot buffer for all Class I water bodies (potable water bodies), and Martin County just recently adopted a 300-foot buffer for nesting and denning areas. The largest buffer width encountered was 550 feet, which is in Orange County and applies to the Wekiva River and wetlands associated with the Wekiva River.

Buffer size requirements have typically been established by political acceptability rather than scientific merit. As described above, in the vast majority of buffer ordinances reviewed, the standard buffer width is 50 feet or less, while many counties simply defer to state guidelines of 25 feet. A larger buffer of 75 feet or more is the exception and is afforded only to some water bodies by some counties. In reviewing the vast set of wetland ordinances, very few references were made between scientific studies and buffer width. In Martin County, which most recently adopted a buffer ordinance, the buffer can extend up to 300 feet or the distance necessary to protect a nest or den of a threatened or endangered species. In determining the appropriate buffer distance necessary to protect dens or nests of listed species, the ordinance stipulates that the Growth Management Department consult scientific literature such as *Closing the Gaps in Florida's Wildlife Conservation System* (Cox et al. 1994), the Florida Natural Areas Inventory *Priority Wetlands for Listed Species*, and other pertinent guidelines. *Additionally, Buffer Zones for Water, Wetlands, and Wildlife in East Central Florida* (Brown et al. 1990a) was referenced during development of this ordinance and was the basis for adopting the 300-foot buffer. The other county which used scientific literature to establish a buffer width is Orange County. Although not specified directly in the ordinance, the buffer width of 550 feet for the Wekiva River, wetlands associated with the Wekiva River, and tributaries of the Econ River is adopted from results of *An evaluation of the applicability of upland buffers for the wetlands of the Wekiva Basin*, in which 536 feet was the width necessary to prevent harmful effects of development on individual wetland-dependent animals (Brown and Shaeffer 1987).

In many of the ordinances reviewed permitted activities are allowed within the buffer zone such as planting native vegetation, repair of permitted structures, pruning, removal of exotic and nuisance plant species, passive recreation activities (hunting, fishing, swimming), and walking trails.

Table 4.1 Description of Buffer Attributes and Corresponding Numerical Score as Presented in the Wetland Rapid Assessment Procedure (WRAP) (Miller and Gunsalus 1997)		
Buffer Description	Buffer Attributes	Numerical Score
No adjacent buffer	Buffer non-existent	0
Adjacent buffer averages \leq 30 feet, containing desirable plant species	<ul style="list-style-type: none"> ✓ Less than 30 feet average width ✓ Mostly desirable plant species which provide cover, food source, and roosting areas for wildlife ✓ Not connected to wildlife corridors ✓ > 300 feet but dominated (>75%) by invasive exotic or nuisance plant species 	1
Adjacent buffer averages 30 - 300 feet, containing predominately desirable plant species	<ul style="list-style-type: none"> ✓ 30 - 300 feet average width ✓ Contains desirable plant species which provide cover, food, and roosting areas for wildlife ✓ Portions connected with contiguous offsite wetland systems, wildlife corridors ✓ >300 feet but dominated (>75%) by undesirable noninvasive plant species (e.g., pasture grasses) 	2
Adjacent buffer averages > 300 feet containing predominantly desirable plant species	<ul style="list-style-type: none"> ✓ > 300 feet average width ✓ Contains predominantly desirable plant species (< 10% nuisance and no exotic species) for cover, food, and roosting areas for wildlife ✓ Connected to wildlife corridor or contiguous with off-site wetland system or areas that are large enough to support habitat for large mammals or reptiles 	3

Indirectly, buffer zones are also used in WRAP in the evaluation of water quality input and treatment. In this category, a surrounding land use of open space or natural undeveloped area receives the highest numerical score of 3.0, whereas land use activities such as row crops, improved pasture, roadways, and multifamily residential areas adjacent to a wetland receive a low score of 1.0. Additionally, land use activities with stormwater pretreatment facilities receive higher scores than activities that allow stormwater and sediments to flow directly into wetlands.

4.2 STATE REQUIREMENTS

Wetlands are regulated by DEP and the water management districts under Chapter 62-340, F.A.C. Split agency permitting responsibilities evolved during development of this rule, so that the water management districts review projects pertaining to development of general residential, commercial, industrial, institutional, and governmental projects; transportation projects; agricultural/silvicultural projects; and DEP projects. On the other hand, DEP reviews projects relating to solid, domestic, hazardous, and industrial waste; power plants and transmission lines; communication cables and lines; natural gas or petroleum exploration; marinas, ports and navigational dredging; all projects seaward of the coastal control line; mining except borrow pits; certain single family residences (< 5 acres); high speed rail and magnetic levitation projects; commercial film production; and water management district projects.

Buffer zones are generally addressed in the wetland Environmental Resource Permitting (ERP) process for preventing secondary impacts to wetlands. In the SJRWMD's *Applicant Handbook; Management and Storage of Surface Waters*, buffers with a minimum width of 15 feet and an average width of 25 feet are considered sufficient to not cause adverse secondary impacts to the habitat functions of wetlands associated with adjacent upland activities (Section 12.2.7). Wider buffer widths can be required if the wetland supports protected listed species and these species need greater buffer width for nesting, denning, or critically important feeding habitat. The buffers in those cases shall remain in an undisturbed condition, except for drainage features such as spreader swales and discharge structures, provided those features do not adversely impact wetlands. When an applicant elects to use different buffer widths or no buffer, then the applicant must provide reasonable assurance that no adverse secondary impacts (e.g., turbidity, sedimentation, habitat alteration) will occur in the wetland.

Secondary impacts are most often addressed in permitting large residential, commercial, or industrial developments. If adequate buffers cannot be implemented, then compensation in the form of wetland mitigation can be required to offset secondary impacts. So even if a wetland is not directly impacted (dredged or filled), impacts occurring within a buffer zone (average width of 25 feet) can still be considered secondary impacts to the wetland.

Other wetland buffers are required by state agencies although not directly related to wetland permitting. DEP's solid waste rules require a 200-foot buffer between a landfill footprint and all wetlands or water bodies. The 200-foot buffer does not necessarily have to be maintained in a natural undisturbed condition; in fact, clean debris (e.g., uncontaminated concrete, brick, glass, and ceramics) that is used as fill material can be stored in the 200-foot buffer.

4.0 REVIEW OF OTHER WETLAND REGULATIONS

Wetlands are regulated on a federal level by the U.S. Army Corps of Engineers (ACOE), at the state level by the DEP and water management districts, and in some cases, at a county and/or city level. Select county and city ordinances are described in Section 3.0 and Appendix A. The various levels of federal and state wetland regulations as applicable to wetland buffers are summarized in this section.

4.1 FEDERAL REQUIREMENTS

The ACOE regulates wetlands under Section 404 of the Clean Water Act and regulates navigable waters under Section 10 of the Rivers and Harbors Act of 1899. Section 404 authorizes discharge of dredged or fill material in "waters of the United States" including wetlands and other special aquatic sites, whereas Section 10 authorizes work in navigable waters. Neither Section 404 of the Clean Water Act nor Section 10 of the Rivers and Harbors Act regulate uplands. Consequently, buffer areas landward of wetlands or aquatic habitats are not required nor regulated at the federal level by the ACOE.

However, the ACOE has begun addressing upland buffer zones with the Wetland Rapid Assessment Procedure (WRAP) (Miller and Gunsalus 1997). The WRAP establishes a numerical ranking for individual ecological and anthropogenic factors (variables) that can strongly influence the ecological quality of wetlands. The ACOE has implemented the WRAP methodology to quantitatively evaluate functions in wetlands, functions that will be loss or altered due to development activities, and functions that will be enhanced through mitigation. Specifically, the ACOE uses WRAP to evaluate whether mitigation is necessary to offset wetland impacts, and if so, if the proposed mitigation plan will adequately compensate for loss of ecological functions and secondary and cumulative impacts incurred by the project.

One variable evaluated with WRAP is adjacent upland/wetland buffers. This variable is evaluated based on the adjacent buffer size and ecological attributes (i.e., sediment removal, nutrient uptake, cover, food source, and roosting areas) the buffer area provides for the wetland that is being assessed. The criteria for evaluating an adequate buffer size are based on quality of the wetland and intensity of the adjacent land use. The highest numerical score of 3.0 is assigned to those wetlands that contain a large buffer strip with high benefits to wildlife and natural areas. The lowest numerical score of 0.0 is assigned to wetlands with no buffer area. A buffer width of 300 feet is assumed to be sufficient to protect the wetland from adverse impacts of development. The 300-foot width is based on numerous technical studies that were summarized by Castelle et al. (1994). The buffer requirements and corresponding numerical score used in WRAP are summarized in Table 4.1.

4.2.1 Conditions Where State Regulatory Buffers Are Not Addressed

Buffers with a minimum width of 15 feet and an average width of 25 feet are recommended during state permitting for many projects in the permitting process. However, there are a number of situations in which wetland buffers are not addressed or implemented. These so called "loopholes" allow development activities to occur right up to the wetland edge. Single-family residences that occur solely in uplands do not address state buffer recommendations. There are ongoing examples of this in St. Johns County near Matanzas Inlet where several lots in coastal strand habitat (an imperiled habitat) have recently been cleared right down to the edge of the salt marsh. There is no buffer left between the cleared upland vegetation and salt marsh. Even larger projects such as residential developments, industrial developments, and new agricultural drainage systems do not address state buffer recommendations if they are below the ERP permitting thresholds, which is less than 40 acres in size, do not dredge or fill directly in wetlands, and have less than 12 acres of impervious surface area.

Another buffer zone "loophole" covers all projects that qualify for a Notice General Permit, even when these projects directly impact wetlands. Examples of select projects which qualify for a Notice General Permit include the following:

- Installation, alteration or maintenance of boat ramps, and associated accessory docks
- Minor bridge alteration, replacement, maintenance, and operation
- Minor activities within existing rights-of-way or easements
- Installation, maintenance, repair, and removal of underground cable, conduit, or pipeline
- Construction of aerial pipeline, cable, and conduit crossing of certain waters
- Subaqueous utility crossings of artificial waterways
- Minor silvicultural water management systems

Projects exempt from ERP permitting would obviously not be subjected to the minimum width of 15 feet and an average width of 25 feet buffer between construction and wetlands. Examples of select projects which are exempt from ERP permitting include the following:

- Repair or replacement of existing functional pipes or culverts for conveyance of stormwater
- Maintenance dredging of existing manmade canals, channels, basins, berths, and intake and discharge structures
- Installation of private docks ≤ 1000 square feet over wetlands or other surface waters, or ≤ 500 square feet over wetlands or other surface waters which are located in OFWs.
- Replacement or repair of existing docks and mooring piles
- Restoration of a seawall or riprap at its previous location or within 1 foot waterward of its previous location
- Construction of vertical seawalls in wetlands or other surface waters and the construction of riprap revetments, where such construction adjoins at both ends existing seawalls or riprap, follows a continuous and uniform construction line with the existing seawall or riprap, and is no more than 150 feet in length
- Activities necessary to preserve, restore, repair, remove, or replace an existing communication or power pole or line

5.0 REVIEW OF RELATED REPORTS AND STUDIES

A literature review was conducted to evaluate ecological studies that focused on buffer and transition zones between uplands and wetlands. We were especially interested in those studies which are pertinent to Florida. The first half of this literature review summarizes buffer zone studies that focused on specific areas within Florida. These were considered most applicable to development of buffers in St. Johns County as they were conducted in relatively close proximity, they addressed a similar suite of habitats and wildlife species, and they provided an analysis of buffers based on water quality, water quantity, and wildlife. The second half of this literature review summarizes other buffer studies that generally focused on only one wetland parameter (i.e., wildlife, water quality, or draw down). Many of these studies occurred outside of Florida.

5.1 EAST CENTRAL FLORIDA

Perhaps the most noteworthy study conducted on buffer zones in Florida is *Buffer Zones for Water, Wetlands and Wildlife in East Central Florida* (Brown et al. 1990a). This study targeted Brevard, Lake, Orange, Osceola, Seminole, and Volusia Counties. Three goals were identified in this study for determining buffer widths: (1) minimizing impacts from groundwater drawdown, (2) protecting against sedimentation and turbidity, and (3) protecting habitat needs of wetland-dependent wildlife. This study provides a step-by-step procedure so that buffers might be calculated by landowners with a minimum of training within the six county area of the East Central Florida Regional Planning Council (ECFRPC). Six landscape associations were identified in the region and include pine flatwoods/isolated wetlands, pine flatwoods/flowing water wetlands, pine flatwoods/hammocks/hardwood swamps, sandhill communities/isolated or flowing-water wetlands, pine flatwoods/salt marshes, and coastal hammocks with salt marshes. The buffer zones were developed for each general landscape association.

Results of this study suggested that protection of wetland-dependent wildlife was the driving factor in determining the appropriate buffer width. In other words, if the buffer zone is wide enough to protect wildlife species; then it is sufficiently wide enough to prevent impacts from groundwater drawdown and sedimentation and turbidity. The recommended buffer width to protect water quality, water quantity, and wildlife in the six county area of the ECFRPC ranges from 322 feet to 732 feet and is based on habitat type and habitat quality. A summary of buffer widths for East Central Florida is provided on Table 5.1.

Sandhill communities that occur between a proposed development and an adjacent wetland require the widest buffer zone because more than half of the wildlife species found in sandhill communities, including listed species, obtain their resources from the ground surface. The hognose snake was the indicator species chosen for sandhill communities, and spatial requirements for this species, based on average distance between captures, was 732 feet.

The above study provides specific methodology for calculating buffer distances for protecting groundwater quantity, quality, and wildlife habitat. Such factors as soil type, habitat type, seasonal high groundwater, distance between center of wetland and center of canal, slope of the surficial aquifer, drawdown of the drainage structure, fall velocity, and soil hydrologic group are used to calculate various buffer widths for groundwater quantity, quality, and wildlife habitat.

Table 5.1 Buffer Width for each Habitat in the East Central Florida Regional Planning Council (Brown et al. 1990a)

Habitat	Quality of Habitat	Buffer Width
Salt and Freshwater Marshes	High	322 feet
	Medium	322 feet and revegetate buffer into natural habitat
	Low	as wide as possible up to 322 feet
Cypress and Hardwood Swamps, Hammock, and Flatwoods	High	550 feet
	Medium	550 feet and revegetate buffer into natural habitat
	Low	as wide as possible up to 550 feet
Sandhills	High	732 feet
	Medium	732 feet and revegetate buffer into natural habitat
	Low	as wide as possible up to 732 feet

5.2 TOMOKA RIVER AND SPRUCE CREEK

A riparian habitat protection study was commissioned by the SJRWMD to address concerns for increased urbanization and associated effects on water quality and habitat for aquatic and wetland-dependent wildlife species. The study, conducted by the University of Florida Center for Wetlands (Brown and Orell 1995), researched current literature concerning Riparian Habitat Protection Zones and their applicability to the Tomoka River and Spruce Creek in Volusia County, Florida. The authors assessed the applicability of buffer widths on the Tomoka River and Spruce Creek from the buffers developed in the above mentioned study for the six county area in the ECFRPC (Brown et. al. 1990a). The buffer zone widths of 20 to 550 feet were applied to the remaining undeveloped portions of these two waterways. The authors recommended that for protection of aquatic and wetland-dependent wildlife species, a buffer width between 322 and 550 feet was needed for freshwater riverine systems and 322 feet for salt water (salt marsh) systems.

5.3 ECONLOCKHATCHEE RIVER

The SJRWMD contracted with the University of Florida Center for Wetlands to develop a basinwide management plan for the Econlockhatchee River (Brown et al. 1990b). Often referred to as the "Econ" River, it is located in the eastern portions of Orange, Seminole, and Osceola counties near the rapidly growing Orlando metropolitan area. As one of the few intact riverine systems in central Florida, its water, wetlands, and wildlife became the focus of intense scrutiny related to how best to protect its resources in the face of strong development pressure. A few of the management strategies that were recommended to protect the resources in the Econ basin included applying buffers or development set-backs to all wetlands within the basin, developing a landscape ordinance that requires the use of plants indigenous to natural communities, restricting removal of understory vegetation so that developed areas will blend into natural areas, providing a contiguous basin preserve that consists of large diverse habitat areas that are connected by natural corridors, and developing standards for stormwater control ponds that include the use of native emergent vegetation, littoral zones, and native vegetation along the shore so that these ponds also serve an ecological function. Numerical buffer zones were not calculated for the Econ River or its associated wetlands.

5.4 WEKIVA RIVER

Similar to the East Central Florida buffer study (Brown et al. 1990a), a study was conducted to define buffer zone widths that were sufficient to protect water and wildlife resources in the Wekiva River Basin (Brown and Schaefer 1987). Located in central Florida, the Wekiva River Basin is a unique natural ecosystem that lies in the zone where tropical and temperate floras overlap. The flow of numerous artesian springs from the Floridan aquifer, together with groundwater drainage from the surrounding watershed, have created a vast network of stream channels and associated floodplains, lakes, and sinkholes that support extensive areas of hydric and mesic habitats.

Four factors were used to determine the width of buffer zones to protect the water resources in the Wekiva River Basin and include the SJRWMD jurisdictional wetland line (40C-4 FAC), erodibility of soils in the zone immediately upland of the jurisdictional wetland line, depth of groundwater below the soil surface in the zone immediately upland of the wetland line, and habitat requirements of aquatic and wetland-dependent wildlife species. Equations were provided for calculation of buffer

widths based on soil erosion, groundwater draw down, and noise attenuation. For forested habitats, a buffer width of 536 feet was recommended as the minimum width necessary to prevent harmful effects of development on individual wetland-dependent animals. Orange County adopted a similar buffer width requirement and imposes a 550-foot buffer between development and the Wekiva River and its associated wetlands.

5.5 SEMINOLE COUNTY

Literature on the structural and functional aspects of freshwater wetland ecosystems was reviewed (Brown and Starnes 1983). Methods were also developed for evaluating wetland ecosystems found in Seminole County and for determining the compatibility of possible development activities within each wetland ecosystem. Both the Comprehensive Plan and Land Development Code for Seminole County were reviewed and made consistent with this concern for wetlands protection. Additionally, a review of local, state, and federal wetlands policy and protection measures were made. Recent literature on wetlands case law was also reviewed. Based on all reviews, the means for regulating development in wetland areas and areas adjacent to wetlands were developed. A model Wetlands Development Ordinance for Seminole County was drafted as the final task. Numerical buffer zones were not calculated for Seminole County wetlands.

5.6 OTHER STUDIES

The benefits of vegetative buffer strips in preventing or minimizing sedimentation, erosion, and pollution is well documented in riparian communities (Lowrance et al. 1984; Lowrance et al. 1986; Pinay and Decamps 1988) as well as in forestry settings (Borman et al. 1968; Riekert et al. 1980; Hollis et al. 1978). Vegetative buffer zones are often examined with regard to vegetation type and minimum width needed to protect water quality; however, recommended design criteria for buffer widths are highly variable. Karr and Schlosser (1977), relying on work of Timble and Sartz (1957), suggested a minimum width of buffers encountered in "municipal conditions" as 49 to 66 feet (15 to 20 m) for lowest (0 to 3 percent) slopes and as high as 262 feet (80 m) for slopes of 60 percent. Erman et al. (1977), in northern California studies of logged landscapes with and without streamside buffers, found that buffers were very important in minimizing erosion from logged lands, and that streams with narrow (less than 98 feet) buffers showed effects comparable to streams with no buffers. Furthermore, their research showed that streams with highest diversity indices had buffers greater than 164 feet (50 m) in width. The Florida Division of Forestry's Silviculture Best Management Practices (BMP) Manual (1979) recommends a Discretionary Zone for land occurring within 300 feet of a watercourse. This 300-foot wide buffer is considered the zone most influential to surface water quality. Recommendations are given for varying site sensitivities regarding the intensity level of activities, such as road construction, site preparation, and tree harvesting. After reviewing numerous buffer width studies, a buffer width of 300 feet is also suggested by Castelle et al. (1994) for protecting wetland functions.

An adequate buffer width between wetlands and drainage improvement structures is essential in minimizing water table drawdown in adjacent wetlands. Protecting the hydrology by not lowering the water table to accommodate development is probably the single most important factor affecting adjacent wetlands (Brown and Schaefer 1987). The impact of lowered water tables on adjacent wetlands is a reduction in hydrologic function, gradual replacement of wetland vegetation with upland species, and consequential loss of habitat values for aquatic and wetland-dependent wildlife

species. The long-term, wide-scale effects of drainage practices throughout the state have been discussed by Brown (1986) and are pervasive.

Wildlife habitat corridors have been shown to be important for sustaining wildlife populations, and buffer zone width is probably the most important variable affecting wildlife populations (Forman 1983). The maintenance of streamside strips of native buffer vegetation is an important management tool for maintaining gray squirrel populations within pine plantations (McElfresh et al. 1980). Turkeys have been successfully managed in a mosaic of poor habitat (short-rotation pine plantations) by maintaining hardwood and mature pine trees in travel corridors. These corridors allowed turkeys to move widely among foraging and roosting areas (Gehrken 1975).

In two studies conducted in Florida, set-back distances were calculated based on flight distance from human disturbance on 16 different species of waterbirds. In the first study, Rodgers and Smith (1995) determined that a set-back distance between 207 and 584 feet should be adequate to effectively buffer breeding bird colonies from human disturbance. Similarly, Rodgers and Smith (1997) concluded that a buffer between 220 and 413 feet should minimize disturbance to most species of waterbirds studied.

In a study conducted in maritime forests near St. Johns County on Amelia, Big and Little Talbot, and Ft. George Islands in Nassau and Duval counties, Cox (1988) reported that species richness of avifauna was greater in large hammocks, and several bird species showed a preference of either large or small hammocks. Species favoring large maritime hammocks were black and white warbler, ovenbird, northern parula, and summer tanager. Species favoring small areas were mourning dove, brown-headed cowbird, and fish crow. The brown-headed cowbird is a nest parasite that reduces the breeding success of some area-sensitive species, such as the painted bunting, a prized resident of St. Johns County. The fish crow is also a potential nest predator. Maritime hammocks, such as those found in St. Johns County, represent a narrowly distributed plant association that often contains a diverse assemblage of migratory bird species. Considering the linear, north-south orientation of maritime hammocks along the coast of northeastern Florida, the author concluded that it might be important to distribute several large protection areas across the limited distribution of maritime hammock habitat to serve as stepping stones for migratory species moving along a general north-south axis.

Several forest interior species are known to be excluded when corridor widths fall below a critical level, which is a function of edge effects and home range requirements (Brown and Schaefer 1987). Stauffer (1978) reported that bird species richness increased significantly with width of wooded riparian habitat, where some species were restricted only to the wider strips. With similar results, Tassone (1981) found that interior forest species such as Acadian flycatcher, American redstart, hooded warbler, and Louisiana waterthrush were infrequently found in corridors less than 164 feet (50 m) in width. Hairy and pileated woodpeckers required minimum strip widths of 164 to 197 feet (50 to 60 m), while the parula warbler required at least 262 feet (80 m). He suggested that leave strips be a minimum of 328 feet (100 m) on larger streams to take advantage of their intrinsic wildlife value. In Kentucky, Triquet et al. (1990) found that neotropical migrants were more abundant in corridors wider than 328 feet (100 m), whereas riparian areas less than 328 feet wide were inhabited mainly by resident or short-distance migrants. Similarly, Spackman and Hughes (1995) reported that corridor widths of 492 and 574 feet (150 and 175 m) were necessary to include 90 to 95 percent of the bird species, respectively, at most sites. Kilgo et al. (1998) concluded that

although narrow strips can support an abundant and diverse bird population in bottomland hardwood forests, vegetated buffer zones at least 1,641 feet wide are necessary to maintain the complete avian community of bottomland hardwood swamps.

When a buffer zone functions as a corridor (i.e., continuously connected to undisturbed native vegetation), it also has the potential to connect a diversity of habitat types in a landscape, which could provide more wildlife value to a region (Forman and Godron 1981, 1986; Weins et al. 1992; Turner et al. 1995). Corridors also can expand the distribution of wide-ranging animals or may provide avenues of escape from predators (Harris and Scheck 1991; Harrison 1992). Additional benefits can be gained from corridors by allowing individuals of some species, especially large mammals, to range more widely in order to meet their food requirements and to minimize inbreeding by allowing exposure to more individuals within a given species (Harris 1984, 1985). However, there are some disadvantages associated with wildlife corridors which should be considered (Simberloff and Cox 1987). Corridors increase the exposure of animals to humans, domestic animals, and predators (Soule and Simberloff 1986). In a residential development where domestic cats and dogs are not strictly controlled, wildlife species that congregate within corridors can be greatly impacted. Wildlife corridors located along highway rights-of-way can also lead to increased incidences of road kills (Harris 1985).

For riparian systems as well as other wetland and aquatic systems, recommended design criteria for buffer widths are highly variable. Additionally, few studies other than the buffer studies described above for East Central Florida (Brown et al. 1990a), Tomoka and Spruce Creek (Brown and Orell, 1995), and the Wekiva River Basin (Brown and Schaefer 1987) combined water quality buffer width determinations with buffer widths necessary to protect wetland-dependent wildlife species. In the Florida buffer zone studies described above, Brown et al. (1990a) found that a range of 322 to 732 feet was necessary to protect wetland-dependent wildlife species. The buffer width depended on wetland/upland associations and quality of the adjacent upland. Protection of wildlife species was the driving force in selecting the buffer zone width, as width to protect wetland-dependent wildlife exceeded the width necessary to protect water quality and water quantity. Similarly, Brown and Orell (1995) reported that 322 to 550 feet was necessary to protect wetland-dependent wildlife species in freshwater riverine systems of Tomoka River and Spruce Creek, whereas 322 feet was needed to protect wildlife in salt marsh habitats. Again, protection of wildlife species dictated the required buffer zone width along Tomoka River and Spruce Creek. Likewise, Brown and Schaefer (1987) recommended a 536-foot buffer to protect individual wetland-dependent wildlife species in forested segments of the Wekiva River.

6.0 REVIEW OF LEGAL IMPLICATIONS

6.1 AUTHORITY TO ADOPT WETLAND BUFFER ORDINANCE

6.1.1 Local Government Comprehensive Planning and Land Development Regulation Act

Florida's Local Government Comprehensive Planning and Land Development Regulation Act¹ (also known as the Growth Management Act) establishes an integrated planning process designed to promote orderly development and to regulate impacts to environmental resources. The Growth Management Act requires that local government comprehensive plans be consistent with the goals, objectives and policies of the State Comprehensive Plan² and the Comprehensive Regional Policy Plan of the relevant Regional Planning Council. The Act also requires that local land development regulations be adopted which are consistent with and implement the goals, objectives, and policies of the local government's comprehensive plan.³

Florida's State Comprehensive Plan was adopted in 1984 and established broad goals and policies which provide guidance for Comprehensive Regional Policy Plans and local government comprehensive plans. The State Comprehensive Plan includes wetland protection goals and policies within the following elements: Water Resources,⁴ Coastal and Marine Resources,⁵ Natural Systems and Recreational Lands,⁶ and Land Use.⁷

A related chapter of the Florida Statutes requires that each of Florida's 11 Regional Planning Councils adopt regional plans that are consistent with the State Comprehensive Plan, and that address goals and policies which are appropriate to the regions covered by the regional planning councils.

Local Government Comprehensive Plan

The Growth Management Act requires local governments to prepare or amend comprehensive plans which address a number of elements related to the orderly growth of the local jurisdiction. A local plan must be consistent with the State Comprehensive Plan and the applicable comprehensive regional policy plan, and must maintain internal consistency among its own elements. The local planning agency is required to evaluate, appraise, and update the local comprehensive plan at least

¹FLA. STAT. Chapt. 163, Pt. II (1997).

²FLA. STAT. Chapped. 187 (1997).

³FLA. STAT., §163.3202 (1997).

⁴FLA. STAT., §187.201(8)(a), (b)4., 8., 10. (1997).

⁵FLA. STAT., §187.201(9)(a), (b)4., 6., 7. (1997).

⁶FLA. STAT., §187.201(10)(a), (b)1., 2., 3., 5., 7. (1997).

⁷FLA. STAT., §187.201(16)(a), (b)2., 6. (1997).

once every five years, in a report to the local governing body and the Florida Department of Community Affairs (DCA).

Pursuant to the standards and requirements of the Growth Management Act, each local government comprehensive plan must include the following elements: capital improvements; future land use; traffic circulation; sanitary sewer, solid waste, drainage, potable water and natural groundwater aquifer recharge; conservation; recreation and open space; housing; intergovernmental coordination; and coastal management, if applicable.⁸

St. Johns County's adopted comprehensive plan⁹ includes many goals, objectives, and policies directed to the conservation and protection of wetland resources. Within the Land Use Element, Policy A.1.7.3 requires the county's land development regulations to include provisions that "protect environmentally sensitive land from the impacts of development to assure their conservation, and to ensure their availability for future generations."¹⁰ Policy A.1.7.13 states that, at a minimum, the county's land development regulations must contain provisions for protection of environmentally sensitive lands and regulation of areas subject to seasonal and periodic flooding.¹¹ Similarly, Policy A.1.10.3 requires the county to offer a residential density bonus for protection of uplands adjacent to wetlands under the provisions of the Optional Density Factor bonus system.¹²

Within the Coastal/Conservation Management Element, Policy G.1.5.3 states that the county "shall protect or enhance Coastal Area water quality, for wildlife propagation, fishing, shellfishing, recreations, navigation and other related activities, and shall improve Class II and Class III waters by requiring new development to meet the standards and requirements of the county's environmentally sensitive lands land development regulations to be adopted pursuant to Policy G.2.2.2."¹³ Similarly, Objective G.2.2 (Floodplains, Wetlands and Upland Communities and Surface Water) states that the county "shall protect floodplains, wetlands, forests, and surface waters within the county from development impacts to provide for maintenance of environmental quality and wildlife habitats."¹⁴

Policy G.2.2.2 requires the county to "protect environmentally sensitive lands or areas through the adoption of land development regulations which, as necessary or appropriate, address the alternative types of protection needed by the type of environmentally sensitive land or area addressed by the

⁸FLA. STAT., §163.3177 (1997).

⁹ST. JOHNS COUNTY COMPREHENSIVE PLAN 1990-2005 (as amended through August 28, 1998).

¹⁰*Id.* at AA-11.

¹¹*Id.* at AA-12.

¹²*Id.* at AA-15.

¹³Policy G.1.5.3; *id.* at GG-10.

¹⁴Objective G.2.2; *id.* at GG-19.

particular land development regulation.”¹⁵ For wetlands, estuaries, and OFWs, such land development regulations must establish buffers between those areas and upland development and must address any additional drainage requirements or standards to maintain natural hydroperiods and other conditions as may be required by the type and nature of the wetland or water body.¹⁶

Many threatened and endangered species are dependent on wetland habitats at critical points in their life cycles. Objective G.2.6 of the Comprehensive Plan states that the county “shall protect habitats of populations of existing threatened and endangered species.”¹⁷ Policy G.2.2.2 requires the development of land development regulations which include standards and procedures for the protection or acquisition of specific habitat areas which have been identified as necessary for the support of an existing threatened or endangered species population.¹⁸

Similarly, Policy G.2.2.8 requires the county to provide technical support to the FGFWC and the SJRWMD in inventorying, assessing, and mapping of existing fish and wildlife habitat and significant upland communities. Within one year of the completion of the inventories, the county must amend its Comprehensive Plan to incorporate the identified areas and implement suggested protective measures.¹⁹

Concurrently with the inventories provided for in Policy G.2.2.8, the county must identify environmentally sensitive lands and must amend the Comprehensive Plan as necessary to designate these areas for protection, preservation, or acquisition.²⁰ In addition to pursuing the acquisition of these areas through state and local funding mechanisms,²¹ the county is required to protect such areas through application and enforcement of the land development regulations outlined in Objective G.2.2 and supporting policies.²²

Adoption of Land Development Regulations

The Growth Management Act requires that within one year of the date it submits its comprehensive plan for review by the DCA, a local government must adopt or amend and enforce land development regulations that are consistent with and implement the comprehensive plan.²³ Thus, the goals,

¹⁵Policy G.2.2.2; *id.* at GG-19.

¹⁶*Id.* at GG-20.

¹⁷Objective G.2.6; *id.* at GG-27.

¹⁸Policy G.2.2.2; *id.* at GG-20.

¹⁹Policy G.2.2.8; *id.* at GG-21.

²⁰Policy G.2.5.1; *id.* at GG-26.

²¹Policy G.2.5.2; *id.*

²²Policy G.2.5.3; *id.*

²³FLA. STAT., §163.3202 (1997).

objectives, and policies of the St. Johns County Comprehensive Plan, as related to wetlands and environmentally sensitive lands, provide the basis for adoption of a wetland buffer ordinance. The Act requires that any existing development regulation which is not consistent with the plan must be amended to be consistent. During any interim period, in which unamended regulations remain inconsistent with the adopted comprehensive plan, the plan itself will govern any action taken in regard to an application for a development order. The regulations must be specific and at a minimum must do the following:

- Regulate the subdivision of land.
- Regulate use of land and water for those categories of land use included in the land use element; ensure compatibility of adjacent uses and provide for open space.
- Protect potable water wellfields.
- Regulate areas subject to seasonal and periodic flooding and provide for drainage and stormwater management.
- Ensure protection of environmentally sensitive lands designated in the comprehensive plan.
- Regulate signage.
- Provide that public facilities and services meet the standards of the capital improvements element and are available when needed, or that development orders and permits are conditioned on the availability of facilities to serve the proposed development. Local governments are not allowed to issue a development order or permit which results in a reduction in the level of services for the affected public facilities below the level of services provided in the local comprehensive plan.
- Ensure safe traffic flow, considering needed parking.²⁴

After its review and consultation process, if the DCA determines that a local government has not adopted or amended the required land development regulations, it may file suit in circuit court to require adoption of the regulations.²⁵ The wetland buffer zone ordinance that is the subject of this project will serve to satisfy the requirements of this provision of the Growth Management Act.

6.1.2 Police Power

Local government authority to regulate land use and development for environmental purposes is derived from the police power, the term given to the general governmental power to protect the health, safety, morals, and general welfare of citizens within a jurisdiction.²⁶ Florida has delegated this power to local governments through its constitution. The range of purposes addressed by the

²⁴*Id.*

²⁵FLA. STAT., §163.3202 (4) (1997)

²⁶*Village of Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926); *Nollan v. California Coastal Comm'n*, 483 U.S. 825, 843 (1987) (Brennan, J., dissenting) (*citing* *Agins v. Tiburon*, 447 U.S. 255 (1980); *Penn Central Transp. Co. v. New York City*, 438 U.S. 104 (1978)).

police power is broad, and land use regulations have been consistently recognized as appropriate exercises of the power.²⁷

When the police power is used in a way designed to protect the natural environment, the test is not whether there is a clear and present danger to the environment which justifies the regulation, but whether the local government could have reasonably determined that the legislation is necessary or desirable for its intended purpose. Thus, a buffer zone ordinance to control water quality and stormwater runoff or protect wildlife habitat would be rationally related to the public health or welfare. As expressed in one Supreme Court decision:

The concept of the public welfare is broad and inclusive. The values it represents are spiritual as well as physical, aesthetic as well as monetary. It is within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled.²⁸

6.2 POTENTIAL LIMITATIONS ON ESTABLISHMENT OF WETLAND BUFFER ZONE ORDINANCE

Though the police power is wide-ranging, certain provisions of the Fifth and Fourteenth Amendments to the U.S. Constitution place limits on governmental use of the police power. These provisions include those prohibiting the taking of private property for public use without just compensation;²⁹ prohibiting the deprivation of life, liberty or property without due process;³⁰ and guaranteeing all people the equal protection of the laws.³¹ Generally, a land use regulation reflecting local exercise of the police power may only be imposed for a valid public purpose, using means which are reasonably related to those purposes, and in a manner that does not impose excessive costs on citizens.³²

6.2.1 Due Process

The due process clauses of the Fifth and Fourteenth Amendments to the U.S. Constitution prohibit governmental entities from depriving a landowner of property "without due process of law."³³

²⁷Village of Euclid v. Ambler Realty Co., 272 U.S. 365 (1926).

²⁸Berman v. Parker, 348 U.S. 26, 32-33 (1954).

²⁹U.S. CONST. amend. V, cl. 4 (made applicable to the states by way of the due process clause of the Fourteenth Amendment).

³⁰U.S. CONST. amend. V, cl. 3; amend. XIV, sec. 1.

³¹U.S. CONST. amend. XIV, sec. 1.

³²See, Lawton v. Steele, 152 U.S. 133, 137 (1894) (...[I]t must appear, first, that the interests of the public...require [governmental] interference; and, second, that the means are reasonably necessary for the accomplishment of the purpose, and not unduly oppressive upon individuals.)

³³U.S. CONST. amends. V and XIV.

Generally, due process analysis includes consideration of the closely related concepts of “procedural due process” and “substantive due process.”

Procedural due process must be followed when an individual is deprived of a recognized property interest as a result of “state action.”³⁴ Actions of local governments are state action.³⁵ In local land use matters, “procedural due process” is not required for legislative action such as the adoption of policies or ordinances that affect a large group of citizens.³⁶ However, counties must observe the requirements of Sec. 125.66, FLA. STAT., relative to the process for enacting an ordinance.

Procedural due process does require that the application of an ordinance or regulation, including a rezoning,³⁷ provide notification to landowners of proposed action. The application of ordinances must also provide landowners possessing an applicable property interest the opportunity to address the local decision making body in a fairly conducted public hearing.³⁸ The more severe the potential deprivation, the more formal must be the procedures.³⁹ The structuring of the proposed buffer zone ordinance must address these procedural requirements.

In general terms, “substantive due process” requires consideration of the reasonableness of a regulation. As interpreted by the courts, this is a three-part analysis. Regulations must be for (1) a valid public purpose, (2) using means which are reasonably related to those purposes, and (3) which are not unduly oppressive on individuals.⁴⁰ Failure to meet one or more of these standards may leave the local government open to a charge that the regulation is invalid as an arbitrary and capricious exercise of power. Courts normally defer to legislative determinations of reasonableness, and begin with a presumption that all legislative enactments are valid.⁴¹ If the means of regulation chosen by the government is “fairly debatable,” the enactment will ordinarily stand. Analysis of the third factor, whether the application of an ordinance is unduly oppressive on individuals, is generally the same as that used for determining whether there has been an unconstitutional “taking,” discussed *infra*.

6.2.2 Equal Protection

³⁴Board of Regents v. Roth, 408 U.S. 564, 569 (1972).

³⁵Edmondson v. Jordon, 415 U.S. 651 (1974).

³⁶Bi-Metallic Inv. Co. v. Board of Equalization, 239 U.S. 441 (1915).

³⁷City of Gainesville v. GNV Investments, Inc., 413 So.2d 770 (Fla. 1st DCA 1982).

³⁸Irvine v. Duval County Planning Commission, 504 So.2d 1265 (Fla. 1st DCA 1986).

³⁹Little v. Streater, 452 U.S. 1 (1981).

⁴⁰See, Lawton v. Steele, 152 U.S. 133, 137 (1894); see also, Kaiser Development Co. v. City & County of Honolulu, 649 F. Supp. 926, 943 (D. Hawaii 1986), citing Williamson v. Lee Optical, 348 U.S. 483, 487-88 (1955), *aff'd*, 898 F.2d 112 (9th Cir. 1990).

⁴¹Parking Facilities, Inc. v. City of Miami Beach, 88 So.2d 141 (Fla. 1956).

The equal protection clause of the Fourteenth Amendment provides that "No state shall... deny to any person within its jurisdiction the equal protection of the laws."⁴² If a regulation is alleged to impact a landowner because of race, or other suspect class, or if a fundamental right is involved, the landowner may bring a "facial challenge" to the regulation. Courts will strictly scrutinize whether the regulation is necessary to promote a compelling state interest.⁴³ The remedy for a facial challenge is an injunction on the enforcement of the regulation.⁴⁴

If the claim does not involve race, suspect class or a fundamental right, the courts will ask whether there is a rational relationship between the classification and a legitimate governmental objective.⁴⁵ This is essentially the same test as applied in the area of substantive due process. The remedy for this type of "as applied" claim is an injunction against the unconstitutional application of the regulation. Generally, in the context of local land use regulation, this requires that landowners who are similarly situated must be similarly treated.⁴⁶

6.2.3 Takings

Generally

Governmental regulation of land use, including the establishment of buffer zones, must address issues related to the takings clause of the U.S. and Florida Constitutions. The Fifth Amendment to the U.S. Constitution, applied to state and local governments through the Fourteenth Amendment, prohibits the government from taking private property without just compensation.⁴⁷ This provision is manifestly applicable to cases in which the government exercises its power of eminent domain to take property for a public purpose. It is also applicable in cases of "inverse condemnation," when government physically occupies land or imposes regulations which constitute a permanent physical invasion of the land.⁴⁸

⁴²See also, Article I, §2, FLA. CONST. ("All natural persons are equal before the law.").

⁴³Eide v. Sarasota County, 908 F.2d 716, 722 (11th Cir. 1990).

⁴⁴*Id.*

⁴⁵*Id.*

⁴⁶See, Executive 100, Inc. v. Martin County, 922 F.2d 1536, 1541 (11th Cir. 1991), *cert. den.* 112 S.Ct. 55 (landowners brought equal protection challenge, alleging that defendants treated them differently from other similarly situated landowners along an interstate, without any reasonable basis).

⁴⁷U.S. CONST. amend V. ("[N]or shall private property be taken for public use, without just compensation."). See also, Art. X, § 6(a), FLA. CONST. ("No private property shall be taken except for a public purpose and with full compensation therefor....").

⁴⁸See, *eg.*, First English Evangelical Lutheran Church v. County of Los Angeles, 482 U.S. 304 (1987); Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1028-29 (1992).

The takings clause is also potentially applicable when governmental regulation of private property has the effect of significantly restricting an owner's exercise of the "bundle of rights" that comprise property ownership. As expressed by Justice Holmes in *Pennsylvania Coal Co. v. Mahon*, "while property may be regulated to a certain extent, if regulation goes too far it will be recognized as a taking."⁴⁹

The Supreme Court has not developed a clear approach to this analysis, emphasizing instead that the question requires a case by case balancing of public and private interests. This was first expressed in *Penn Central Transportation Co. v. New York City*,⁵⁰ when Penn Central challenged New York City's landmark preservation law. Under this law, the City of New York designated Grand Central Terminal as a landmark. As a result, Penn Central could not make any changes to the exterior of the terminal without prior approval of a Landmarks Preservation Commission. Penn Central proposed alternative plans to build either a fifty-three story or a fifty-five story addition on top of the terminal. The Commission rejected both plans on the basis that they would aesthetically degrade the landmark, and Penn Central challenged the law as a taking.⁵¹

The Supreme Court, rejecting the challenge to the law, stated that it would not put forth a "set formula" for determining takings, but would instead "engage in essentially ad hoc, factual inquiries."⁵² The court identified a number of factors that are relevant in determining whether a regulation is a taking, including: (1) the character of the government action, (2) the economic impact of the regulation, and (3) the extent to which the action interferes with investment-backed expectations.⁵³ Applying these factors, the Court upheld the ordinance, noting that Penn Central could still use the property for its original purpose and that a reasonable return was available on the land.⁵⁴ It did not however, clarify how the factors relate to each other. Though it appeared to give more weight to the degree of interference with investment-backed expectations, the Court did not clarify what that term means or how it should be applied.

In recent years, certain Supreme Court decisions seem to have expanded takings claims in land use contexts. A careful reading of the decisions indicates that they have limited application to the issues in a takings analysis;⁵⁵ only one of the cases addressed the typical regulatory takings issue.

⁴⁹*Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393, 415 (1922).

⁵⁰*Penn Central Transportation Co. v. City of New York*, 438 U.S. 104 (1978).

⁵¹*Id.* at 115-19.

⁵²*Id.* at 124.

⁵³*Id.*

⁵⁴*Id.* at 136.

⁵⁵The relevant finding in the 1987 case of *First English Evangelical Lutheran Church of Glendale v. County of Los Angeles*, 482 U.S. 304 (1987), is that in cases where a taking is found, just compensation is required for the time between the adoption of a regulation and the final determination that a taking occurs. Prior to this case, if landowners successfully challenged a

The most pertinent recent Supreme Court case addressing the regulatory takings issue is the 1992 decision of *Lucas v. South Carolina Coastal Council*.⁵⁶ The plaintiff landowner had bought two beachfront lots and, consistent with laws applicable at the time, planned to build single-family homes. Subsequently, South Carolina adopted legislation intended to protect sensitive areas along the coast. The effect of the legislation was to prohibit the construction of any permanent habitable structure on the plaintiff's land.⁵⁷ The trial court found that, as a result, the property was made "valueless," and that a taking had occurred. In reversing, the South Carolina Supreme Court held that even in cases with great economic impact a taking would not be found if the law was enacted "to prevent serious public harm."⁵⁸

regulation, they were usually limited to invalidating the restriction, and could obtain compensation only if the government failed to repeal its regulation. The Court held that if a regulation was eventually found to be a taking, just compensation was required for the period from enactment to repeal.

Another 1987 Supreme Court case, *Nollan v. California Coastal Commission*, 383 U.S. 825 (1987), dealt with the question of whether a taking occurs when development approval is conditioned on a landowner first providing a dedication of land, where that dedication is unrelated to the impacts of the development. When coastal landowners requested a permit to demolish one house and build another, the permit that was granted was conditioned on a dedication of their land between the high tide line and the seawall.

The Court held that there must be an "essential nexus" between the dedication and the state interest that would initially justify the denial of the permit. The state's expressed concern was that a larger house would interfere with visual access to the beach for people on the road and create a psychological barrier to using the beach. The Court found no nexus between these concerns and the required easement: "It is quite impossible to understand how a requirement that people already on the public beaches be able to walk across the Nollans' property reduces any obstacles to viewing the beach created by the new house." 383 U.S. at 838.

In *Dolan v. City of Tigard*, 512 U.S. 374 (1994), the Court added that there had to be "rough proportionality" between the required exaction and the negative impacts of a development. In this case, the landowner requested a permit to greatly increase the size of a store and add a paved parking lot. The planning commission granted the permit but required that the owner dedicate part of the property as a greenway within the city's floodplain and that she dedicate a 15-foot strip of land next to the floodplain as a path for pedestrians and bicycles. The Court invalidated the dedications as not meeting a test of "rough proportionality." The essential lesson of *Nollan* and *Dolan* is that exactions must be somewhat closely related to the impacts of a development.

⁵⁶505 U.S. 1003 (1992).

⁵⁷*Id.* at 1008-09.

⁵⁸*Lucas v. South Carolina Coastal Council*, 304 S.C. 376, 383, 404 S.E.2d 895, 899 (1991).

In reversing the state Supreme Court, the U.S. Supreme Court held that a land use regulation that deprives an owner of all “economically viable” use of the land is a taking,⁵⁹ but also recognized a fairly narrow common law nuisance exception to this standard.⁶⁰

The *Lucas* decision affirmed that in deciding taking cases, the Court engages in “ad hoc, factual inquiries,” but the decision also recognized two types of categorical takings. One is when the government “physically invades” or requires that a member of the public be allowed to enter the property. In these cases a taking will almost always be found, “no matter how minute the intrusion, and no matter how weighty the public purpose behind it.”⁶¹ The second type of categorical taking is “where regulation denies all economically beneficial or productive use of land.”⁶² A loss of all economic viability cannot be supported by simply asserting important public interests, but can be justified only where the regulation is aimed at preventing a common law nuisance.⁶³ The Court noted that most cases of this type do not result in a loss of all economic viability.⁶⁴

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In making its “ad hoc” inquiry, the Supreme Court has identified three factors of particular importance in determining whether government action works a taking: (1) the character of the

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⁶⁰505 U.S. at 1027-32.

⁶¹*Id.* at 1015. *See also*, *Loretto v. Teleprompter Manhattan CATV Corp.*, 458 U.S. 419, (1982).

⁶²505 U.S. at 1015.

⁶³*Id.* at 1029-31.

⁶⁴*Id.* at 1017.

⁶⁵*Id.* at 1019 n.8.

⁶⁶*Id.* at 1015.

⁶⁷*Id.* at 1017-18 (quoting *Penn Central Transportation Co. v. New York City*, 438 U.S. at 124, and *Pennsylvania Coal Co. v. Mahon*, 260 U.S. at 415).

government action; (2) the economic impact of the regulation; and (3) the extent to which the action interferes with reasonable investment-backed expectations.⁶⁸

If the government's action can be characterized as a physical invasion of the property, a court will be more likely to find a taking.⁶⁹ If the action can be characterized as eliminating substantial rights held in property, such as the right to possess, use, and dispose of the property, and the right to exclude others, courts may also be more likely to find a taking.⁷⁰

The Court determines the economic impact of a regulation by comparing the value of the property before and after the regulation's interference with the property.⁷¹ However, the fact that property value is diminished as a result of government regulation does not necessarily amount to a compensable taking.⁷² The denial of a development permit may create a taking if the effect of the denial is to prevent all economically viable use of the land in question.⁷³ Where regulations restrict or prohibit the destruction of wetlands on a site, the existence of developable uplands within the parcel may provide enough economic value to defeat a takings claim.⁷⁴

In analyzing whether a regulation effects a taking, courts will also consider the impact of the action on the property owner's reasonable investment-backed expectations.⁷⁵ Reasonable investment-backed expectation analysis looks at what property rights, both economic and non-economic, the regulation takes away. In *Penn Central*,⁷⁶ the Court held that because a New York City landmark law did not interfere with current uses of the parcel and allowed a reasonable return on the original investment made in the property, the law did not interfere with plaintiff's investment-backed expectations.

The Court in *Penn Central* noted that the law would still allow the landowners to use the property as it had been used for over sixty years, and that *Penn Central* would still be able to obtain a "reasonable return" on its investment. The decision also noted that the regulation's stated rationale

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⁷⁴*See Deltona Corp. v. United States*, 657 F.2d 1184, 1192 (Ct.Cl.1981).

⁷⁵438 U.S. at 124.

⁷⁶438 U.S. 104.

would benefit the owners of the terminal in that it “benefit[s] all New York citizens and all structures, both economically and by improving the quality of life in the city as a whole.”

One of the most cited Florida cases on regulatory takings is *Graham v. Estuary Properties*.⁷⁷ In *Estuary Properties*, a development company owned 6,500 acres of coastal land which included extensive wetlands and mangroves in between the developable portion of the land and various bays and inlets. The company requested a permit to clear the mangroves and build a canal, and wanted to place the fill in low areas to increase the amount of developable land. The Board of County Commissioners denied the permit, and the company filed suit on the basis that the permit denial constituted a taking without just compensation.⁷⁸ In analyzing the case, the Florida Supreme Court looked at several factors: (1) whether there was a physical invasion of the property; (2) whether the regulation precluded all economically reasonable use of the property; (3) whether the government action conferred a public benefit or prevented a public harm; (4) whether the government action promoted the health, safety, welfare, or morals of the public; (5) whether the regulation was arbitrarily or capriciously applied to the property; and (6) the extent to which the regulation curtailed investment-backed expectations.⁷⁹

The *Estuary Properties* decision was not decided on the fourth or fifth factors, but on a Fifth Amendment takings claim for just compensation based on the other factors.⁸⁰ The first factor used by the court considered whether the government physically invaded the developer’s property. No actual physical invasion was involved, but the company attempted to argue that denying the dredge and fill permit and maintaining the mangroves for recreational fishing was essentially a physical occupation.⁸¹ It also argued that if the denial of the dredge and fill permit conferred a benefit to the public, it was similar to an exercise of eminent domain requiring compensation.

Addressing the third factor, the court noted that the act of regulating property simply to achieve a public benefit can be a taking, but that the line between the prevention of a public harm and the creation of a public benefit is not clear.⁸² It agreed that preventing the destruction of the mangroves could be seen as conferring a benefit on the public because the filtration provided by a mangrove ecosystem helps maintain the quality of water in the waterways.⁸³ However, this was a maintenance of the status quo which did not create a new public benefit or enhance the existing position of the

⁷⁷399 So. 2d 1374 (Fla. 1981).

⁷⁸*Id.* at 1380.

⁷⁹*Id.* at 1380-81.

⁸⁰*Id.* at 1380-83.

⁸¹*Id.* at 1381.

⁸²*Id.* at 1381-82.

⁸³*Id.* at 1379.

public.⁸⁴ Thus, the court determined that the permit denial prevented a public harm and was a valid exercise of the police power as opposed to a physical invasion.⁸⁵

In examining the second factor, whether the governmental action precluded all economically reasonable use of the property, the court noted that when government action makes property useless, the owner must receive compensation equivalent to that he would receive if the property were taken by eminent domain.⁸⁶ Here, the developer attempted to argue that denial of the dredge and fill permit made the project impracticable, and that there was no remaining economically feasible use of the property.⁸⁷ The court noted that property owners are not necessarily entitled to the highest and best use of the property if that use creates a public harm.⁸⁸ It also noted that a landowner does not have an absolute right to change the natural condition of the land when the purpose of the change is not appropriate to the natural state of the land, and the proposed change would injure others.⁸⁹ Since at least 526 acres of the total acreage remained suitable for development, and since the part of the property that was restricted had no independent development potential, the court held that the permit denial did not preclude all economically feasible use, and that no regulatory taking had occurred.⁹⁰

Applying the sixth factor, the effect of the government action on a landowner's expected return on investment, the court determined that this required consideration of whether the developer had a vested right to dredge and fill the property.⁹¹ The right must be in existence at the time of purchase and must be supported by some type of government legitimation such as a statute.⁹² The court determined that in this case, such support did not exist, and characterized the developer's investment-backed expectation as mere speculation.⁹³ Based on its analysis, the court held that the county's denial of the dredge and fill permit did not rise to the level of a taking.⁹⁴

⁸⁴*Id.* at 1382.

⁸⁵*Id.* at 1382-83.

⁸⁶*Id.* at 1380-82.

⁸⁷*Id.* at 1382.

⁸⁸*Id.* at 1381-82.

⁸⁹*Id.*

⁹⁰*Id.*

⁹¹*Id.* at 1383.

⁹²*Id.*

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⁷⁴*See Deltona Corp. v. United States*, 657 F.2d 1184, 1192 (Ct.Cl.1981).

⁷⁵438 U.S. at 124.

⁷⁶438 U.S. 104.

The Federal Circuit has held that a taking may occur even when a regulation prohibits the landowner from less than all economically beneficial use. In *Florida Rock Industries, Inc. v. United States*,⁹⁵ a corporation purchased a 1,560-acre parcel of wetlands with the intent of mining it for limestone, and destroying the surface wetlands in the process.⁹⁶ After the purchase but before mining had begun, the Army Corps of Engineers promulgated regulations requiring owners of wetlands to obtain section 404 Clean Water Act permits before dredging or filling. The corporation was denied a permit to mine ninety-eight of the 1,560 acres on the basis of anticipated damage to the wetlands, and it filed suit alleging that the permit denial was an uncompensated regulatory taking.⁹⁷

The court took note of the *Penn Central* test, balancing the economic impact of the regulation on the claimant, the extent to which the regulation interferes with the claimant's investment-backed expectations, and the character of the government's action. However, it ruled that if a regulation has an effect which is equivalent to a permanent physical occupation, it amounts to a compensable taking.⁹⁸

Regulations that prohibit less than all economically beneficial use of land and result in only a partial deprivation of value may not satisfy the categorical taking test.⁹⁹ The court looked at when a partial reduction in value results in a compensable taking under the Fifth Amendment¹⁰⁰ by asking what percentage of a property's economic use must be destroyed by a regulation before a compensable taking occurs and how to determine that percentage.

The court concentrated on whether the government acted in a responsible way by "limiting the constraints on property ownership to those necessary to achieve the public purpose, and not allocating to some number of individuals, less than all, a burden that should be borne by all."¹⁰¹ The test focused on the owner's loss of economic use of the property resulting from the regulation and if the owner received compensating benefits from the regulation.¹⁰² There was also consideration of whether other economically realistic uses for the property remained available.

The record did not clearly establish that the corporation was deprived of all economic use of its land.¹⁰³ In order to determine whether the deprivation was sufficient to effect a taking, the court

⁹⁵18 F.3d 1560 (Fed. Cir. 1994).

⁹⁶*Id.* at 1570.

⁹⁷*Id.*

⁹⁸*Id.* at 1565.

⁹⁹*Id.*

¹⁰⁰*Id.* at 1568-71.

¹⁰¹*Id.* at 1571.

¹⁰²*Id.*

¹⁰³*Id.* at 1572-73.

remanded the case to find the value of the land after imposition of the regulation. Thus, the decision indicates that even in cases where a regulation doesn't completely extinguish the value of property, a partial taking may have occurred and compensation may be required.¹⁰⁴

In *Ciampitti v. United States*,¹⁰⁵ the U.S. Court of Claims ruled that the denial of a Clean Water Act Section 404 permit did not result in a taking where the plaintiff purchased the property in 1983, had knowledge of the restrictions applicable to the property, and agreed to purchase the regulated wetlands as part of a package deal that included developable uplands. The court ruled that since the plaintiff had ample warning of the likelihood that the wetlands could not be developed, the permit denial did not interfere with the plaintiff's reasonable investment-backed expectations.

A similar analysis followed in *Deltona Corp. v. United States*.¹⁰⁶ There, the Court of Claims noted that a stiffening of regulations applied by the Corps of Engineers' under the Clean Water Act, resulting in a denial of a Section 404 wetlands permit, had "substantially frustrated" plaintiff's reasonable investment-backed expectations. However, the denial did not effect a taking because economically viable uses remained for the property. When the development company acquired the property, it was aware of the need to obtain permits and knew that the standards and conditions for the issuance of permits could change. The court held that property owners cannot establish a taking simply by demonstrating that they have been "denied the ability to exploit a property interest that they heretofore had believed was available for development."¹⁰⁷

*Reahard v. Lee County*¹⁰⁸ is a Florida case which dealt with the designation of property as a resource protection area under a local comprehensive plan. In addressing the question of whether the landowner had been denied all or substantially all economically viable use of his property, the court required analysis of the economic impact of the regulation and the extent to which the regulation has interfered with investment-backed expectations.¹⁰⁹ According to the court, a proper analysis of these factors would address a number of questions:

- The history of the real property, including when it was purchased, how much was purchased, where it is located, the nature of the title, the composition of the property, and how it was initially used.
- The history of development and use of the real property, including what was developed on the property and by whom, if it was subdivided and how and to whom it was sold, whether plats were filed or recorded, and whether infrastructure and other public services or improvements may have been dedicated to the public.

¹⁰⁴*Id.*

¹⁰⁵22 Cl.Ct. 310, 321 (1991) (*Ciampitti II*).

¹⁰⁶657 F.2d 1184 (1981).

¹⁰⁷*Id.* at 1193. (citing *Penn Central*, 438 U.S. at 130).

¹⁰⁸968 F.2d 1131 (1992), *cert. denied* 115 S. Ct. 1693 (1995).

¹⁰⁹968 F.2d 1131, 1136 (1992).

- The history of environmental protection and land use controls and other regulations, including how and when the property was classified, how use, density or development was proscribed, and what changes in classifications occurred.
- How a development changed when title passed.
- The present nature and extent of the real property, including its natural and altered characteristics.
- The reasonable expectations of the landowner at the time of acquisition of the property, or immediately prior to the implementation of the regulation or action at issue, whichever is later, under the regulations then in effect and under common law.
- The reasonable expectations of the neighboring landowners under state common law.
- The diminution in investment-backed expectations of the landowner, if any, after passage of the regulation.

Existence of Property Interest

A taking claim requires that the landowner hold a legitimate interest in the property “taken,” as of the time of the governmental action.¹¹⁰ *Plantation Landing Resort, Inc. v. United States*¹¹¹ is an illustration of one aspect of the issue. In *Plantation*, over 50 acres of the plaintiff’s 59-acre proposed project was below mean high water and could only be privately owned if the plaintiff had a valid reclamation permit from the state. The relevant permit had been obtained but had expired, and the court held that this had extinguished the property interest. Similar types of issues are potentially applicable to the interpretation of a wetland buffer zone ordinance, where the wetland in question is contiguous to a tidal waters or to navigable inland waters.¹¹² A different case is represented by development rights which have vested as a result of a permit issuance or development order. In these situations, the subsequent establishment of a wetland buffer zone may be more likely to result in a taking, depending in part on which rights had vested and whether the ordinance allows for an equitable adjustment of those rights.

In *Smith v Clearwater*,¹¹³ the court examined a local ordinance which rezoned as “aquatic lands” wetlands previously zoned as a general business district, a classification which had permitted single-family uses or multiple-dwelling uses with density restrictions. The court held that the ordinance did not constitute a “taking.” The “aquatic lands” classification essentially restricted the allowable uses to recreation or to relatively uneconomic residential development. An application was pending to develop high-rise dwellings on higher portions of the land which were also rezoned to a single-dwelling classification. Effectively, in the context of applicable state and federal regulations and the physical attributes of the land, the owners’ development was restricted to single dwellings in a density even less than that generally permitted by the rezoning ordinance. The court observed that although there would not be many economic uses for the wetlands in the face of aquatic zoning, there

¹¹⁰Lacey v. United States, 595 F.2d 614, 619 (Ct.Cl.1979).

¹¹¹30 Cl.Ct. 63 (1993).

¹¹²Generally, areas below mean high water line (tidally influenced areas) and below ordinary high water line (nontidal navigable waters) are sovereign lands owned by the state.

¹¹³383 So. 2d 681 (Fla. 2d DCA1980).

was not much the owners could have done with them without such zoning. Except for a 30-foot strip above the high-water mark, all of the property involved was submerged and it was unlikely that the owners would have been able to obtain permission to fill the land.¹¹⁴

Another aspect of this question is how the subject property is defined, and whether it must be considered as a whole or can be segmented in order to influence the analysis and “create” takings of certain segments. If the owner of a property affected by a buffer zone can segment a larger property and argue that the segmented parcel will lose all economic viability as a result of the ordinance, he may be successful in a takings claim. A footnote in the *Lucas* decision indicated that the issue is still open,¹¹⁵ but courts normally will not segment the property in looking at economic impact. Although a regulation may affect only one part of a property, in determining economic viability, the relevant unit of analysis is the entire contiguous property.¹¹⁶ As stated by the Court in *Penn Central*:

“Taking” jurisprudence does not divide a single parcel into discrete segments and attempt to determine whether rights in a particular segment have been entirely abrogated. In deciding whether a particular governmental action has effected a taking, this Court focuses rather both on the character of the action and on the nature and extent of the interference with rights in the parcel as a whole....¹¹⁷

6.2.4 Bert J. Harris, Jr., Private Property Rights Protection Act

In addition to considerations of due process, equal protection and traditional takings analysis under the Fifth and Fourteenth Amendments, governmental regulations intended to protect wetlands must also address the requirements and restrictions represented by property rights legislation recently adopted by the Florida legislature.

Generally

¹¹⁴*Id.* at 685. *See also*, *Moviematic Industries Corp. v. Board of County Commissioners of Metropolitan Dade County*, 349 So.2d 667 (Fla. 3d DCA 1977) (no taking found where property was downzoned from an industrial classification to one that allowed one single family residential unit on each minimum five-acre lot).

¹¹⁵“Regrettably, the rhetorical force of our ‘deprivation of all economically feasible use’ rule is greater than its precision, since the rule does not make clear the ‘property interest’ against which the loss of value is to be measured. When, for example, a regulation requires a developer to leave 90% of a rural tract in its natural state, it is unclear whether we would analyze the situation as one in which the owner has been deprived of all economically beneficial use of the burdened portion of the tract, or as one in which the owner has suffered a mere diminution in value of the tract as a whole.” 505 U.S. at 1016-17 n.7.

¹¹⁶*See Penn Central Transportation Co. v. New York City*, 438 U.S. at 130-31 (1978); *Keystone Bituminous Coal Ass’n v. DeBenedictis*, 480 U.S. 470 (1987); *Concrete Pipe & Products v. Construction Laborers Pension Trust of Southern Cal.*, 508 U.S. 602, 644 (1993).

¹¹⁷*Penn Central Transportation Co. v. New York City*, 438 U.S. 104, 130-31 (1978).

In 1995, the Florida legislature adopted the Bert J. Harris, Jr., Private Property Rights Protection Act (Act),¹¹⁸ which purports to create a new cause of action for landowners complaining of government interference with property rights. It provides that:

when a specific action of a governmental entity has inordinately burdened an existing use of real property or a vested right to a specific use of real property, the property owner of that real property is entitled to relief, which may include compensation for the actual loss to the fair market value of the property caused by the action of government, as provided in this section.¹¹⁹

As expressed in the statute, the intent of the legislature was to create "a separate and distinct cause of action from the law of takings"¹²⁰ and to provide "for relief, or payment of compensation, when a new law, rule, regulation, or ordinance...as applied, unfairly affects real property."¹²¹

The Act does not provide a cause of action for the application of a law adopted before May 11, 1995, at the adjournment of the legislative session.¹²² It does not apply to an ordinance, rule or regulation adopted, or formally noticed for adoption before May 11, 1995.¹²³ The amendment of an existing ordinance or comprehensive plan could fall within the scope of the Act "to the extent that the application of the amendatory language imposes an inordinate burden apart from the law, rule, regulation, or ordinance being amended."¹²⁴ Thus, the proposed St. Johns County wetland buffer ordinance could be reviewed under the provisions of the Act.

If a court determines that an inordinate burden has been imposed on the landowner, the remedy "may include compensation for the fair market value for the actual loss to the fair market value of the real property"¹²⁵ created by the government action. The Act requires that a jury determine the fair market value of the property. The amount of compensation due is equal to the difference between the fair market value of the property prior to the government action, including the owner's reasonable investment-backed expectations, and the current fair market value after the government action,

¹¹⁸FLA. STAT. §70.001 (1997).

¹¹⁹*Id.* §70.001(4)(a).

¹²⁰*Id.* §70.001(1).

¹²¹*Id.*

¹²²*Id.* §70.001(12).

¹²³*Id.*

¹²⁴*Id.* The Act excludes actions by the federal government, or actions by state or local governments "when exercising the powers of the United States or any of its agencies through a formal delegation of Federal authority." *Id.* §70.001(3)(c).

¹²⁵*Id.*

including the government's settlement offer and ripeness decision.¹²⁶ This compensation does not include business damages for development or uses which are prohibited.¹²⁷

Settlement Procedure

The Act establishes a mandatory settlement procedure. At least 180 days before filing suit in circuit court under the act, a landowner must give the governmental entity notice, including a valid appraisal supporting the claim of an "inordinate burden," and demonstrating the loss in fair market value to the property.¹²⁸ During the 180-day period, the governmental entity must make a written settlement offer which would resolve the claim,¹²⁹ along with a written "ripeness decision"¹³⁰ detailing permitted uses of the property.¹³¹ The landowner may file suit in circuit court after the ripeness decision has been issued or upon the expiration of the 180-day notice period.¹³²

The settlement offer may include the following changes:

- An adjustment of land development or permit standards or other provisions controlling the development or use of land.
- Increases or modifications in the density, intensity, or use of areas of development.
- The transfer of developmental rights.
- Land swaps or exchanges.
- Mitigation, including payments in lieu of onsite mitigation.
- Location on the least sensitive portion of the property.
- Conditioning the amount of development or use permitted.
- A requirement that issues be addressed on a more comprehensive basis than a single proposed use or development.
- Issuance of the development order, a variance, special exception, or other extraordinary relief.
- No changes to the action of the governmental entity.¹³³

¹²⁶*Id.* §70.001(6)(b).

¹²⁷*Id.*

¹²⁸*Id.* §70.001(4)(a). Landowners affected by government action which falls within the scope of the Act have one year in which to file suit. *Id.* §70.001(11). This one-year period does not begin to run until after any administrative appeals have been completed. *Id.*

¹²⁹*Id.* §70.001(4)(c).

¹³⁰"Ripeness decision" in this context constitutes the "last prerequisite to judicial review." *Id.* §70.001(5)(a).

¹³¹*Id.* §70.001(5)(a).

¹³²*Id.*

¹³³*Id.* §70.001(4)(c).

Creative use of these mitigating features in the proposed buffer zone ordinance will reduce the likelihood of successful claims that the ordinance “inordinately burdens” a particular property. If the property owner rejects the government’s settlement offer and ripeness decision and files suit, the circuit court judge must examine the existing use of the property,¹³⁴ and determine whether the owner has an additional vested right to a specific use of the property.¹³⁵ Then, considering the proposed settlement offer and ripeness decision, the judge will decide whether the “action of the governmental entity”¹³⁶ has inordinately burdened the real property.

Inordinate Burden

Relative to the adoption and implementation of a wetland buffer zone ordinance, the most significant issue raised by the Act is what constitutes an “inordinate burden.” The statutory definition describes two types of “inordinate burdens.” The first is an action which directly restricts or limits the use of real property to the extent that the owner is permanently unable to attain “reasonable investment-backed expectations” for an existing use or vested right to a specific use of the property as a whole.¹³⁷ The second inordinate burden is one in which the owner is left with “unreasonable existing or vested uses such that he bears permanently a disproportionate share of the burden imposed for the good of the public...”¹³⁸ Temporary impacts and governmental action to remediate a “public nuisance at common law or a noxious use of private property” are not included in the definition of “inordinate burden.”¹³⁹

The primary question is what degree of regulation or what diminution of value will constitute an “inordinate burden” under the statute. No caselaw under this provision has developed which bears on the definition in the context of a wetland buffer ordinance. Though the Act is intended to provide

¹³⁴“Existing use” means an actual, present use or activity on the real property, including periods of inactivity which are normally associated with, or are incidental to, the nature or type of use or activity or such reasonably foreseeable, nonspeculative land uses which are suitable for the subject real property and compatible with adjacent land uses and which have created an existing fair market value in the property greater than the fair market value of the actual, present use or activity on the real property. *Id.* §70.001(3)(b).

¹³⁵“The existence of a ‘vested right’ is to be determined by applying the principles of equitable estoppel or substantive due process under the common law or by applying the statutory law of this state.” *Id.* §70.001(3)(a).

¹³⁶“Action of a governmental entity” is a “specific action...which affects real property, including action on an application or permit.” *Id.* §70.001(3)(d).

¹³⁷*Id.* §70.001(3)(e).

¹³⁸*Id.*

¹³⁹*Id.*

a separate cause of action from present takings jurisprudence,¹⁴⁰ it is unlikely that courts will be able to draw a bright line between the new cause of action and takings jurisprudence. Given the history and logic of traditional takings analysis, courts hearing cases under the Act will find it difficult to ignore such precedents when determining whether property has been “inordinately burdened” by government regulations. Though the courts will be dealing with this question in a *de novo* sense, reference can be made to the summary analysis of takings jurisprudence in Section II. C. of this memo to assist in anticipating the direction the analysis might take.¹⁴¹

According to the Act, an “inordinate burden” is placed on private property whenever the owner is “permanently unable to attain the reasonable, investment-backed expectations” for the use of the property.¹⁴² “Investment-backed expectations” was first introduced as a factor in takings jurisprudence by the United States Supreme Court in *Penn Central Transportation Co. v. New York City*.¹⁴³ However, the role this factor should play, and its relative importance, were never made clear. The Court’s subsequent decision in *Keystone Bituminous Coal Association v. De Benedictis* focused primarily on whether the regulation advanced a legitimate state interest, and whether it denied the owner “economically viable use of his land.”¹⁴⁴ The Act also reflects some of the perspective in the *Florida Rock* case, in that compensation may be required even when government action does not amount to a full diminution in value.¹⁴⁵

A second question involves when determining when “reasonable, investment-backed expectations” as to the use of land arise. One Federal Claims Court decision held that “the relevant date for determining plaintiff’s historically rooted expectancies...[should be] the dates on which the plaintiffs themselves acquired title to their properties.”¹⁴⁶ Where land is already subject to government regulation, a buyer’s expectations concerning the property should account for this existing regulation of the property. Interpretation of reasonable investment-backed expectations should not allow recovery by land speculators who gamble against the market.

The Act supports this interpretation by providing that “existing use” should mean actual present use of the land and “reasonably foreseeable, nonspeculative land uses” appropriate to the property and its surroundings.¹⁴⁷ Speculators who have purchased land with knowledge of existing land use

¹⁴⁰FLA. STAT. §70.001(1) (1997) (“...[S]ome laws, regulations, and ordinances of the state and political entities in the state, as applied, may inordinately burden, restrict, or limit private property rights without amounting to a taking....”).

¹⁴¹*See supra*, notes 47-117, and accompanying text.

¹⁴²FLA. STAT. §70.001(3)(e).

¹⁴³438 U.S. 104, 124 (1978).

¹⁴⁴480 U.S. 470, 485 (1987).

¹⁴⁵FLA. STAT. §70.001(1) (1997).

¹⁴⁶*Preseault v. United States*, 27 Cl. Ct. 69, 88 (1992).

¹⁴⁷FLA. STAT. §70.001(3)(b).

restrictions should have much less success arguing that developing the land in a manner that exceeds those restrictions is a “reasonable” expectation.

At this point in the interpretation of the Act it is impossible to predict whether every diminution in value of a property as a result of future government regulation will meet this test of inordinately burdening the use of property, or whether it will be possible for some regulation to “burden” the property without that burden becoming inordinate. Those advocating increased protection of property rights interpret the Act to provide relief beginning with the loss of the first dollar of fair market value.¹⁴⁸ However, this argument is opposed to the traditional state court evaluation of whether government action has resulted in a regulatory taking.¹⁴⁹ The *Florida Rock* case is somewhat illustrative, but the decision only acknowledged that something less than a complete diminution of value caused by government action could result in a compensable taking of private property. It did not determine exactly how much diminution is necessary in order to effect a taking.¹⁵⁰ While the Act incorporates the concept of partial takings, there has been no judicial interpretation of how much diminution constitutes a compensable loss.

Existing Use

There are two types of “existing use” defined in the Act. The first is “an actual, present use or activity on the real property.”¹⁵¹ This includes “periods of inactivity which are normally associated with, or are incidental to, the nature or type of use or activity.”¹⁵² The second includes land uses which are reasonably foreseeable and nonspeculative, suitable for the subject real property, compatible with adjacent land uses, and which have created an existing fair market value in the property greater than the fair market value of the actual present use or activity.¹⁵³

Though the second type of “existing use” has the potential to create problems for local governments, in the context of protection for upland/wetland systems it may not be as restrictive, since many development projects will not meet tests of “suitability” and “compatibility.” Local government definition of such terms, as incorporated into the comprehensive plan and land development code may become important in assisting a court in reviewing a claim under the Act.

¹⁴⁸See Robert C. Downie, II, *Property Rights: Will Exceptions Become the Rule?*, 69 FLA. B. J., Nov. 1995, at 71.

¹⁴⁹*Id.*

¹⁵⁰18 F.3d at 1570.

¹⁵¹*Id.* §70.001(3)(b).

¹⁵²*Id.*

¹⁵³*Id.*

The Act's definitions of "reasonably foreseeable" and "nonspeculative" uses were intended to incorporate concepts from eminent domain valuation law.¹⁵⁴ In this area of law, courts will sometimes accept appraisal testimony regarding highest and best use based in part on the appraiser's determination of whether zoning changes or other land use changes were reasonably foreseeable. It is possible that land uses included in the future land use element of the local comprehensive plan may be sufficient to demonstrate that a proposed development proposal is reasonably foreseeable and not speculative, since the zoning would be expected to follow the plan. Thus, in certain cases, regardless of the inclusion of an area in a wetland buffer zone, if the future land use classification for that area is not compatible with the purposes of the buffer zone, a proposed use which matches the future land use classification may be found to be "reasonably foreseeable." In these cases, tests of "suitability" and "compatibility" will take on additional importance.

Vested Rights

The Act protects "vested rights" to a specific land use.¹⁵⁵ Under a vested rights approach, a landowner's expectations are considered to be reasonable when in reliance on government assurances, he makes a substantial change in his position relative to a development.¹⁵⁶ The action in reliance upon a government assurance or approval works to "vest" the landowner's rights to the development. Rights that have "vested" can create expectations that are protected by the takings clause.¹⁵⁷ In order for an owner's rights to vest, Florida courts have required that three conditions be met: (1) a property owner's good faith reliance (2) on some act or omission of the government and (3) a substantial change in position or the incurring of excessive obligations and expenses so that it would be highly inequitable and unjust to destroy the right he acquired.¹⁵⁸

For example, where a landowner spent substantial amounts to install water service to his land in reliance upon the existing plan that allowed multi-family housing, a county was estopped from denying building permits for the development.¹⁵⁹ Where property had long been zoned for residential use, and that use appeared on the county comprehensive plan, and where residential usage predominated over agricultural, landowners had a vested right in the continuation of residential

¹⁵⁴See, David L. Powell, et al., *Florida's New Law to Protect Private Property Rights*, 69 FLA. B.J. 12, 17 (Oct. 1995).

¹⁵⁵FLA. STAT. §70.001(2) (1997).

¹⁵⁶See *Compass Lake Hills Development Corp. v. Florida Dept. of Community Affairs*, 379 So.2d 376 (Fla. 1st DCA 1979); *City of Ft. Lauderdale v. Division of Local Resource Management*, 424 So.2d 102 (Fla. 1st DCA 1982).

¹⁵⁷*Resolution Trust Corp. v. Town of Highland Beach*, 18 F.3d 1536 (11th Cir. 1994).

¹⁵⁸*Hollywood Beach Hotel Co. v. City of Hollywood*, 329 So. 2d 10, 15 (Fla. 1976); *Franklin County v. Leisure Properties, Ltd.*, 430 So. 2d 475, 479 (Fla. 1st DCA 1983).

¹⁵⁹*Franklin County*, 430 So. 2d at 479.

or saturation.¹⁶⁵ The formally delineated wetland boundary is binding on all other governmental entities for the duration of the permit.

Chapter 62-340, F.A.C. sets out five methods or tests for determining wetland boundaries based on analyses of a combination of vegetation and soils, vegetation and hydrology, soils and hydrology, a prima facie soils test, and an altered site provision.¹⁶⁶ The rule also includes a vegetation list that classifies the plants in order of affinity to hydrologic conditions.¹⁶⁷ If the vegetation or soils of an upland or wetland area have been altered by natural causes or man-induced factors, such that the boundary between wetlands and uplands cannot be delineated reliably by the listed tests, there must be evidence of hydric soils or other hydrologic evidence for these areas to be considered wetlands.¹⁶⁸ This evidence is to be based on the most reliable information available, and it can include such things as aerial photos, remaining vegetation, or topographical inconsistencies.¹⁶⁹ Specific exemptions are provided for wastewater treatment and stormwater treatment facilities, as well as wetlands created by mosquito control activities.¹⁷⁰

¹⁶⁵ R. 62-340.100(1), FLA. ADMIN. CODE (Feb. 1995).

¹⁶⁶ R. 62-340.300-.600, FLA. ADMIN. CODE (Feb. 1995).

¹⁶⁷ R. 62-340.450, FLA. ADMIN. CODE (Feb. 1995).

¹⁶⁸ R. 62-340.300(3)(a), FLA. ADMIN. CODE (Feb. 1995).

¹⁶⁹ *Id.*

¹⁷⁰ R. 62-340.700, 62-340.750, FLA. ADMIN. CODE (Feb. 1995).

usage.¹⁶⁰ However, courts have also held that the mere existence of a present right to a certain land use based upon a zoning ordinance is not a sufficient "act" of the government to base a vested right or equitable estoppel claim to prevent enforcement of later zoning restrictions.¹⁶¹ A subsequent purchaser does not automatically inherit vested rights by merely purchasing the land, but must be able to demonstrate his own entitlement to the vested rights or the benefit of estoppel.¹⁶²

6.3 WETLAND DEFINITION/DELINEATION

One of the issues in establishing a valid wetland buffer ordinance will be how to define wetlands and delineate their landward boundaries. Florida law provides a statutory definition of wetlands which is to be used statewide by the Department of Environmental Protection, the water management districts, local governments, and any other state, regional, or local governmental authority needing to define wetlands for regulatory purposes.¹⁶³

Wetlands are legislatively defined in the Florida Statutes as:

those areas that are inundated or saturated by surface water or groundwater at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils. Soils present in wetlands generally are classified as hydric or alluvial, or possess characteristics that are associated with reducing soil conditions. The prevalent vegetation in wetlands generally consists of facultative or obligate hydrophytic macrophytes that are typically adapted to areas having soil conditions described above. These species, due to morphological, physiological, or reproductive adaptations, have the ability to grow, reproduce or persist in aquatic environments or anaerobic soil conditions. Florida wetlands generally include swamps, marshes, bayheads, bogs, cypress domes and strands, sloughs, wet prairies, riverine swamps and marshes, hydric seepage slopes, tidal marshes, mangrove swamps and other similar areas. Florida wetlands generally do not include longleaf or slash pine flatwoods with an understory dominated by saw palmetto.¹⁶⁴

Once an area has been defined as a wetland, Florida also specifies a unified delineation methodology for demarcating the landward extent of that wetland. Florida Administrative Code Chapter 62-340 provides that the landward extent of jurisdictional wetlands is to be determined by the dominance of plant species, soils and other hydrologic evidence indicative of regular and periodic inundation

¹⁶⁰Metropolitan Dade County v. Brisker, 485 So. 2d 1349, 1351 (Fla. 3d DCA 1986).

¹⁶¹Pasco County v. Tampa Dev. Corp., 364 So. 2d 850, 853 (Fla. 2d DCA 1978).

¹⁶²Franklin County, 430 So. 2d at 480; Jones v. First Virginia Mortgage & Real Estate Inv. Trust, 399 So. 2d 1068, 1074 (Fla. 2d DCA 1981).

¹⁶³The Army Corps of Engineers maintains its own wetland definition and delineation methodology for the purposes of federal wetland permitting decisions.

¹⁶⁴FLA. STAT. § 373.019(22) (1997); R. 62-340.200(19), FLA. ADMIN. CODE (Feb. 1995).

7.0 SUMMARY

A diverse assemblage of high quality habitats occur in St. Johns County, including some which are listed as imperiled or threatened habitats. These high quality habitats also support a suite of wildlife species, including many which are threatened or endangered. Incumbent upon the county is the need to provide additional protection to these environmentally sensitive lands, especially in the wake of high developmental pressure. The county plans to develop a buffer ordinance that will provide additional environmental protection to environmentally sensitive lands, as well as allow the county to be in compliance with its comprehensive plan. This additional environmental protection will preserve the aesthetic appeal of the county, as well as protect wildlife species, water quality, and hydrologic conditions.

Thirty-nine county and nine city ordinances were reviewed and summarized regarding their existing buffer zone requirements (Tables 3.1 and 7.1). Many of the counties have not adopted a buffer ordinance but instead defer to the state recommendation of 25 feet (average and 15 feet minimum) for preventing secondary impacts. Of the counties reviewed that have an adopted buffer ordinance, almost half of the counties (17) mandate a buffer width of 30 feet or less. An almost equal number of counties (18) stipulate a buffer width of between 35 and 100 feet. Only four counties mandate a buffer width greater than 100 feet. Many counties mandate multiple buffer widths depending on the type of wetland (isolated or contiguous), and its designation (OFW or Aquatic Preserve), or if it is a specified water body (i.e., Suwannee River in Dixie County). Therefore, there is considerable overlap in the numbers provided above such that one county (e.g., Martin County) may mandate a 50-foot buffer for isolated wetlands, 75 feet for contiguous wetlands, and 300 feet for wetlands with listed species.

The state recommendation for buffer zones is 25 feet average and 15 feet minimum for those projects that could cause secondary impacts to wetlands. Mitigation is often required for impacts to the buffer zone to compensate for potential secondary impacts. There are many projects where state regulatory buffers are not required, such as for single-family residences with no wetland impacts, projects below the ERP permitting threshold (<40 acres in size, no dredge or fill directly in wetlands, and < 12 acres of impervious surface area), projects which qualify for a Notice General Permit, and projects which are exempt from ERP permitting. Example projects which are not required by the state to implement a buffer are listed in Section 4.2.

At the federal level, the ACOE only regulates navigable waters and wetlands. Consequently, buffer areas landward of wetlands or aquatic habitats are not required nor regulated at the federal level by ACOE. However, the ACOE has begun addressing upland buffer zones in the WRAP analysis. A buffer width of 300 feet is considered to be sufficient to protect wetlands from adverse impacts of development and is therefore assigned the highest numerical value of 3.0. A buffer width less than 30 feet is considered inadequate for wetland protection and is assigned a low numerical score of 1.0. The absence of a buffer receives a score of 0. These buffer widths of 30 and 300 feet were derived from a summary of buffer studies that was compiled by Castelle et al. (1994).

Scientific studies of buffer zones were reviewed and summarized in this Background Report. A special emphasis was placed on Florida studies as they were considered most applicable to the development of buffers in St. Johns County due to their close proximity, similarity of habitats and wildlife species, and more thorough analysis of buffer parameters. The Florida buffer studies

combined water quality parameters with buffer widths necessary to protect wetland-dependent wildlife species. In the East Central Florida buffer study, a range of 322 to 732 feet was determined to be necessary to protect wetland resources (Brown et al. 1990a). Similarly, Brown and Orell (1995) reported that 322 to 550 feet was necessary to protect wildlife species in freshwater riverine systems of Tomoka River and Spruce Creek, whereas 322 feet was needed to protect wildlife in salt marsh habitats. Likewise, 536 feet was recommended for protection of wetland resources in forested segments of the Wekiva River (Brown and Shaefer 1987).

Other scientific studies have shown that relatively wide buffers (150 to over 300 feet) are necessary to protect wetland resources. In general, wider buffers are needed to protect wetland-dependent wildlife, whereas more narrow buffers will adequately protect water quality and water quantity. An exception is for steep slopes, where a wider buffer is necessary to counteract potentially high erosive forces. A comparison of buffer widths for county, state, and federal agencies, as well as other scientific studies is provided on Table 7.1. One important observation regarding Table 7.1 is that the majority of county buffer requirements and the state buffer recommendation is 50 feet or less. Conversely, the buffer recommendation based on scientific studies is in general clustered around 300 feet. There is quite a discrepancy between the low buffer requirement mandated by municipalities and the high buffer requirement necessary to protect wetland resources.

The final section of the Background Report addresses legal implications of adopting a buffer zone ordinance. Such issues as the county comprehensive plan, adoption of land development regulations, potential limitation of establishing a buffer ordinance, equal protection, takings, ad hoc factual inquiry, settlement procedure, inordinate burden, and vested rights are discussed.

Table 7.1 Summary of Buffer Widths from Local Ordinances, State Regulations, Federal Regulations, and Scientific Studies	
Buffer Width (feet)	Related ordinance, regulation, or study
None, defer to State recommendation	Broward, Charlotte, Collier, Dade, Duval, Jefferson, Lee, Levy, Monroe, Palm Beach, Pasco, Santa Rosa, and Taylor Counties
10	St. Lucie County
15	Hernando, Lake, and Pinellas County
20	Leon County
25	Brevard, Flagler, Gadsden, Lake, Okaloosa, Putnam, St. Johns, Volusia, and Walton County Average buffer width used for state permitting to prevent secondary impacts to wetlands
30	Bay, Hillsborough, Manatee, and Sarasota County ≤ 30-foot buffer considered insufficient to protect wetlands, and is used at the federal level for wetland permitting evaluation by the ACOE (referenced in Miller and Gunsalus 1997)
35	Alachua and Dixie County
49 - 66	Minimum buffer for low slopes to protect water quality (Karr and Schlosser 1977)
50	Brevard, Franklin, Gulf, Hillsborough, Indian River, Lake, Manatee, Martin, Nassau, Orange, Pinellas, St. Johns, Sarasota, Seminole, and Volusia County
75	Alachua, Dixie, Hernando, and Martin County
100	Lake County
150	Franklin County
164	Buffer to support several interior bird species (Tassone 1981)
164 - 197	Buffer to support hairy and pileated woodpeckers (Tassone 1981)
200	Brevard County
207 - 584	Recommended set-back distance for 15 species of breeding colonial birds (Rodgers and Smith 1995)
220 - 413	Recommended buffer for 16 species of water birds (Rodgers and Smith 1997)
262	Buffer for high slopes to protect water quality (Karr and Schlosser 1977) Buffer to support parula warbler (Tassone 1981)

Table 7.1 Summary of Buffer Widths from Local Ordinances, State Regulations, Federal Regulations, and Scientific Studies	
Buffer Width (feet)	Related ordinance, regulation, or study
300	<p>Martin County</p> <p>≥300-foot buffer considered sufficient to protect wetlands, and is used at the federal level for wetland permitting evaluation by the ACOE (referenced in Miller and Gunsalus 1997)</p> <p>Zone considered by Florida Division of Forestry to be most influential to surface water quality</p>
322	<p>Buffer width to protect saltwater and freshwater marshes in East Central Florida (Brown et al. 1990a)</p> <p>Buffer width to protect saltwater marshes along Tomoka River and Spruce Creek (Brown and Orell 1995)</p>
322 - 550	Buffer width to protect freshwater riverine systems associated with Tomoka River and Spruce Creek (Brown and Orell 1995)
328	<p>Buffer to protect intrinsic wildlife species on larger streams (Tissone 1981)</p> <p>Buffer for neotropical migrant birds (Triquet et al. (1990)</p>
492	Buffer for protection of 90% of bird species (Spackman and Hughes 1995)
536	Buffer width to protect wetland-dependent wildlife along the Wekiva River (Brown and Schaefer 1987)
550	<p>Orange County</p> <p>Buffer width to protect forested wetlands in East Central Florida (Brown et al. 1990a)</p>
574	Buffer for protection of 95% of bird species (Spackman and Hughes 1995)
732	Buffer to protect wetlands adjacent to sandhill communities in East Central Florida (Brown et al. 1990a)
1641	Buffer necessary to maintain the complete bird population of bottomland hardwood swamps (Kilgo et al. 1998)

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Wetland/Upland Buffer Ordinance - Summaries from Various Local Florida Governments									
Code	Required Buffer (ft.)							Allowable activities in buffer	Comments
	All wetlands	Isolated wetlands	Creeks, channels, ditches, canals, waterways ¹	Retention ponds adjacent to wetlands	Mean high water mark in tidal areas, normal high water on lakes ²	Outstanding Florida Water (OFW)	Natural Resource Management Area (NRMA)		
ALACHUA COUNTY	≥35 ft. (except OFW's)					≥75 ft.		Exemptions to development are extensive and are listed in Sec. 359.04	Width of buffer is determined on a case-by-case basis after site inspection by the Office of Environmental Protection
BAY COUNTY	30 ft.					30 ft. in Ecosystem Management Areas (see map)		PS, TR, Wetland crossings to connect dry, upland parcels, provided that natural water flow between wetlands is not disrupted	
BREVARD COUNTY	200 ft. from MHW line for Class I waters; 50 ft. from MHW line for all Class II waters, OFW's, aquatic preserves and conditionally approved shellfishing waters; 25 ft. from MHW line for Class III waters, except conditionally approved Class III shellfishing waters							Class I waters: REC, TR, PS, PN; no more than 20% of the lot width or 25 linear feet, whichever is greater, of any shoreline protection buffer of a project or parcel, or the offshore emergent vegetation associated with it, may be altered for reasonable access; Class II and III waters, OFW's, aquatic preserves: TR, PS, PN, RE; allowable alteration as above in areas without mangroves	Vegetated buffers between light sources and the beach are enforced for marine turtle protection; less stringent buffers for residential lots platted or established by deed on the official record books prior to September 8, 1988 (see Section 62-3668(8))
BROWARD COUNTY	No local ordinances - defer to SFWMD regulations where permitting is required from them, which is a minimum of 15 ft., average 25 ft.; ERP provides mechanism through which more stringent buffers can be applied on a case-by-case basis, depending on the type and quality of wetland							Projects exempt from licensing are explained in Section 27-335. Projects eligible for general permits are listed in Section 27-336. Criteria for issuance or denial of an environmental resource license is detailed in Section 27-337. All licensing is through the Department of Natural Resource Protection	
CHARLOTTE COUNTY	No local ordinances - defer to SWFWMD regulations, which is a minimum of 15 ft., average 25 ft.; ERP provides mechanism through which more stringent buffers can be applied on a case-by-case basis, depending on the type and quality of wetland							Not specified; decided on case-by-case basis	Information per telephone conversation with Planning Department and SWFWMD
COLLIER COUNTY	County adopted SFWMD regulations of minimum of 15 ft., average 25 ft. when the WMD operated under Section 7 guidelines. The county stayed with the old regulations, even though with the ERP, WMD can now impose more stringent buffer requirements. The only way the 15-25 ft. requirement can be waived with the county is through the ERP process, WMD approves a structural barrier in lieu of the distance requirement.							Not specified; decided on case-by-case basis	Information per telephone conversation with Planning Department and SWFWMD

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PR = pruning

RE= removal of exotic and nuisance pioneer plant species

REC = passive recreation activities (hunting, fishing, swimming)

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Code	Required Buffer (ft.)							Allowable activities in buffer	Comments
	All wetlands	Isolated wetlands	Creeks, channels, ditches, canals, waterways ¹	Retention ponds adjacent to wetlands	Mean high water mark in tidal areas, normal high water on lakes ²	Outstanding Florida Water (OFW)	Natural Resource Management Area (NRMA)		
DADE COUNTY	No specific buffer zone ordinance, but defers to federal, state, and South Florida Water Management District laws. A Coastal Resources Management Line establishes protection and preservation of all wetlands seaward of said line. The Environmentally Endangered Lands Program (EEL) addresses acquiring lands which function as an integral and sustaining component of an existing natural system.								Comprehensive Environmental Impact Statement review criteria are defined in Sec. 24-3. Permits Classes (I-VI) for activities in varying situations are defined in Sec.24-58.1 and Sec. 24-58.2. Biscayne National Park Buffer Development Review Committee was established to develop a Comprehensive Development Master Plan regarding protection measures
DIXIE COUNTY	35 ft.					75 ft. along Suwannee River		None specified	Information from phone conversations with the Planning Department can be found in Land Development Regulations
DUVAL COUNTY	No local ordinance; defer to SJWMD buffer of average 25 ft.							None specified	Information from telephone conversations with the Planning Department
FLAGLER COUNTY	25 ft.							PR, PN, RE, TR, reasonable access to water body, construction of minor drainage structures (swales or outfall pipes)	
FRANKLIN COUNTY	50 ft. of wetlands and shorelines				150 ft. in areas defined as Critical Shoreline District or the Pollution Sensitive Segment	50 ft.		PS, Principle and accessory water-dependent structures in commercial fishing district, aerobic treatment systems landward of Critical Habitat Zone as specified in Section VI.	

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GADSDEN COUNTY City of CHATTAHOOCHEE	25 ft. from DEP or NFWMD jurisdictional line, whichever is greater						25 ft. (Conservation Area)	REC, PS, TR	30 ft. landward of Mosquito Creek and 50 ft. landward of Apalachicola River average water lines
GULF COUNTY	50 ft. of the wetlands edge.							Activities presumed to have an insignificant adverse effect on the beneficial functions of Protected ESA's (see details in Section 4.01.04 for each type of Protection Zone)	
HERNANDO COUNTY	No specific wetland buffer ordinance, with the exception of a Riverine Protection Buffer for specific river systems and associated wetlands. Buffer in these areas is 75 ft. for new construction and lots that were platted prior to August 1990 that had existing natural vegetation; 15 ft. for lots cleared and platted prior to August 1990.							REC, PS, TR, RE, PN, PR (trees with dbh of <4 inches may be taken for view of water through window)	Information was gathered by telephone.
HILLSBOROUGH COUNTY							30 ft. for Conservation Areas ³ and 50 ft. for Preservation Areas ³	PS, Sprinkler system, utility line, landscaping (no removal of native vegetation), stormwater-related structure, grade finishing to provide a gradual slope between the setback line and the Environmentally Sensitive Area (ESA), limited use of semi-pervious paving material, retaining walls, golf cart paths; specific approval for construction of a swimming pool provided there is no encroachment within 15 ft. of a Conservation Area ³ and 25 ft. of a Preservation Area ³	Septic tanks, septic tank drainfields and swimming pools are prohibited. No setback is required landward of a seawall constructed pursuant to the approval of appropriate regulatory agencies. Requirements for phosphate mining can be found in Sec. 8.02.08.

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INDIAN RIVER COUNTY	Minimum of 10 sq. Ft. of native vegetation buffer for each linear foot of wetland or deepwater habitat. Upland edge buffer located such that no less than 50% of total shoreline is buffered by minimum width of 10 ft. Of upland habitat. 50-ft. buffer from wetland boundary or 100 ft. from mean high water, whichever is greater; 50 ft. for lots platted before 6/18/91.						Con-1 (Public lands conservation district) and Con-2 (Estuarine wetlands conservation district): None specifically addressed in code. Con-3 (St. Sebastian River xeric scrub conservation district): 100 ft. from mean high water mark or river or 50 ft. landward of jurisdiction wetland along any river or tributary, whichever is greater; special exception for records existing prior to June 18, 1991 (Sec. 911.12 (e)).	See Matrix in Sec. 911.12 for permitted activities and special exceptions for the three conservation districts. For shoreline protection buffer: docks, boat ramps, pervious walkways and elevated walkways for reasonable access to waterway.	
JEFFERSON COUNTY	No local ordinances - defer to NFWFMD regulations, which decides downstream protection corridor and upland buffer requirements on a case-by-case basis depending on the size and quality of wetland, soils, slope of surrounding area, etc.						Decided on a case-by-case basis	Information from phone conversation with the County Planning Department and NFWFMD office.	
LAKE COUNTY	Non-isolated: 25 ft., variable buffer for ESA's: min: 15 ft.; avg: 50 ft. Rivers and Streams: 50 ft.; variable buffer for ESA's: min: 35 ft.; avg: 100 ft.	15 ft., variable buffer for ESA's: min: 10 ft.; avg: 25 ft.			Shoreline protection: 50 ft. with exception of existing lots that cannot meet the standard (avg. shoreline and wetland setback used)		TR, RE, boardwalks, fishing piers, boat docks, stormwater management facilities to enhance or maintain functions of wetland or buffer, protection of nesting, feeding, or habitat areas for Designated Species, or support the Propagation of other native species; protection of archeological or historical site; erosion control measures; wildlife monitoring stations	BMP's should be used for agricultural and silvicultural activities; septic tank and drainfield setback from ordinary high water line of lakes and wetlands: 100 ft. Existing principle structures may be used to establish an average shoreline and wetland setback where existing structures do not conform.	

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CITY OF CLERMONT			20 ft. for those over 25 ft. wide at top of bank or >4 ft. deep; 10 ft. for smaller ditches	15 ft. for any city-dedicated retention area			25 ft. (zoned Preservation)	Distinct water-dependent structures	
LEE COUNTY	No specific buffer ordinance for wetlands, only a maximum density requirement of one dwelling unit per 20 acres, with some exceptions listed in Table 1(a), Chapter XIII of the Comprehensive Plan (information has not been received from county yet).								The Plan contains very general language in the goals of protecting of wetlands and conservation lands
LEON COUNTY	Vegetation cannot be disturbed within 20 ft. of the perimeter boundary of a wetland, except for certain specified conditions.						ESA's with significant grade areas (10-20%) where soil type threatens erosion: 50% of site must be left natural (including grade areas and shall be placed to proved downhill buffers, protect forested areas, and buffer protected features such as wetlands). All ESA's should apply BMP's in 25 ft. buffer.	Best Management Practices (BMP's) for Silvicultural Activities. Special buffers outlined in Section 10-191 for ESA's in Zone A (wetland and floodplain ecotone from elevation 89 ft. NGVD or water's edge, whichever provides more area of protection), Zone B (transitional ecotone from elevation 100 ft. to 110 ft. NGVD), Lake Protection Area (based on Lake Jackson basin boundary); see Section 10-192 for other zoning definitions for lake systems.	
LEVY COUNTY	No local ordinances - defer to SWFWMD regulations, which is a minimum of 15 ft., average 25 ft.; ERP provides mechanism through which more stringent buffers can be applied on a case-by-case basis, depending on the type and quality of wetland							Not specified; decided on case-by-case basis	Information from phone conversations with the County Planning Department and SWFWMD
MANATEE COUNTY	30 ft. for wetlands not contiguous with Terra Ceia Aquatic Preserve, Sarasota Bay, Little Manatee River, or inflowing watercourses within the Watershed Protection Overlay Districts and that are not upland cut ditches					50 ft. for Terra Ceia Aquatic Preserve, Sarasota Bay, Little Manatee River, or inflowing watercourses within the Watershed Protection Overlay Districts		TR, PS, RE, limited clearing of vegetation for stormwater management, boat launch areas no more than 10 ft. wide unless approved by Director, approved mosquito or aquatic weed control, protective barriers to limit access to the wetland or its buffer.	Information from the Land Development Code

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MARTIN COUNTY	For natural creeks, which are water bodies connected to waters of the state and their connections.	50 ft.	Lots on man-made canal as of February 20, 1990, may be reduced to 25 ft. with certain provisions (page 22)	75 ft.	75 ft.; specific criteria for Shoreline Protection Zone (Indian, Loxahatchee, and St. Lucie Rivers and its navigable tributaries and estuaries) on page 18.		Wetlands of Special Concern proposed 300 ft. buffer for nesting and denning areas (referenced UF Center for Wetlands Study titled <u>Buffer Zones for Water, Wetlands and Wildlife in the East Central Florida Region</u>).	PS (page 34), RE, PN, elevated walkways	Additional setbacks from wetland buffer and upland preserves of 10 ft. new construction of primary structures and five ft. for accessory structures (pool decks, screen enclosures, driveways); 200 ft. between buffer and lake excavation unless impermeable barrier is used); no wetland drawdown allowed; 200 ft. between buffer and disposal of hazardous material; graded areas landward of buffers shall not exceed a slope of one foot vertical to four ft. horizontal and must be properly stabilized;.

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MONROE COUNTY	No buffer specified, but structure design types are strictly defined in Sec. 9.5-345 (m).						Development permitted in the Mainland Native Area District shall comply with applicable regulations of the Big Cypress National Preserve. No development in wetlands unless enclosed, elevated structures on pilings or poles. Commercial Fishing Area District setbacks may be varied on a case-by-case basis.	On manmade canals: TR, utility pilings, fences, public boat ramps and elevated docks, unenclosed gazebos; Scarified canal shorelines only: boat ramps + above; Shoreline setback area: specific allowed activities lengthy and outlined in Sec. 9.5-286; Shorelines identified as having turtle nesting areas: none; docks, piers, and walkways over submerged lands, wetlands, or mangrove habitat shall be elevated such that the land or water underneath is not altered and remains vegetated.	Measures of financial relief may be available to secure wetlands and other lands with beneficial uses under certain conditions (Sec. 9.5-172). Environmental design criteria are specific to 19 habitats and can be found in Sec. 9.5-345, but are not specifically related to buffers with the exception of the Beach-Berm Complex. Outdoor waterfront lighting within 25 ft. of any water body shall be cutoff lights and shall not exceed 18 ft. above grade. No outdoor lighting shall be permitted within 300 ft. of any shoreline which is capable of serving as or is listed as a turtle nesting site.
NASSAU COUNTY	Widths can vary around wetland to average out to 50 ft.; evaluated on a case-by-case basis							None; buffer should be left undisturbed	Information from phone conversations regarding the Comprehensive Plan
OKALOOSA COUNTY	25 ft.								

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ORANGE COUNTY	Upland buffers averaging 50 ft. in width with ≥ 25 ft. minimum in width shall be required for Class I ¹ and Class II ² Conservation Areas and, where feasible, they shall connect with each other and with larger natural systems. A buffer of 50 ft. from normal high water elevation of all surface water bodies; 150 ft. setback from normal high water elevation of all surface water bodies.						Critical Areas of the Econlockhatchee River Basin ⁴ : ≥ 1100 ft. landward of the river main channel, 550 ft. landward of the stream's edge of major tributaries, and ≥ 50 ft. landward of edge of wetlands abutting the main river channel and named tributaries; 550 ft. from landward limit of waters of the state or edge of the Wekiva River, or from the landward edge of wetlands associated with it.	Created forested or herbaceous wetlands, passive recreation when proven they shall not adversely affect aquatic and wetland-dependent wildlife, water quality, groundwater table or surface water levels (Wekiva River and Critical Areas of the Econ River), Retention areas in the Critical Areas of the Econ River only.	75 ft. from the control elevation for all artificial water bodies for septic tanks.
City of APOPKA	50 ft.								
PALM BEACH COUNTY	No wetland jurisdiction, with the exception of one isolated subdivision, and there are no buffer requirements. SWFMD requirements of minimum 15 ft., average 25 ft. or, if under ERP process, may be evaluated on a case-by-case basis							Not specified	Information from phone conversation with the County Environmental Resources Management Department
PASCO COUNTY	No local ordinances - defer to SWFWMD regulations, which is a minimum of 15 ft., average 25 ft.; ERP provides mechanism through which more stringent buffers can be applied on a case-by-case basis, depending on the type and quality of wetland							Not specified; decided on case-by-case basis	Information from phone conversation with the County planning department and SWFWMD

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PINELLAS COUNTY	50 ft. (except those listed under other categories)	15 ft.	15 ³ (those not designated as preservation land use areas)	15 ft. from edge of wetlands to top of bank of retention pond				Width may be reduced by $\leq 1/4$ if \geq that width is added in another portion of buffer or by buffer enhancement upon approval by County Administrator; maintenance of creeks, channels, canals, ditches, or other waterways; docks, provided they do not extend more than 300 ft. waterward of the seawall or mean high water line and provided that no docking facility encroaches closer than 150 ft. to the centerline of the intracoastal waterway; those activities not listed in the comments section as prohibited.	No development, redevelopment, or fill shall be allowed within the 25-year floodplain or 100-year floodway of any natural flood storage area. Prohibited activities structures, roads, utilities, exotic vegetation planting, removing native vegetation (including mowing or trimming except for sake of health, welfare, and safety), filling, excavation, maintenance of livestock, storage, and portable buildings.
City of CLEARWATER	25 ft. (except NRMA's)	25 ft.	25 ft. from lands within 15 ft. of top of bank ⁴ of those which contain jurisdictional wetlands				25 ft. (zoned Preservation)	PS, PR, RE, width may be reduced by $\leq 1/4$ if \geq that width is added in another portion of buffer	
City of OLDSMAR		15 ft.	15 ^{4a}	15 ⁴ ft.				Buffer width may be reduced through buffer banking or buffer enhancement (see Code)	
PUTNAM COUNTY City of Palatka	25 ft.							Structures, grading, filling, dredging, vegetative removal or alteration of hydroperiod by variance only; single-family homes on existing recorded lots not part of a larger common development plan, maintenance of existing roads and drainage structures, recreational uses, silvicultural activities applying BMP's; other activities approved prior to August 27, 1992.	

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I. JOHNS COUNTY City of ST. AUGUSTINE	25 ft. except adjacent to the St. Johns River, Matanzas River, Guana River, Tolmato River, or water bodies connected to these named rivers, the buffer is 50 ft. Where unavoidable wetland impacts occur, the buffer can be <25 ft.								
T. LUCIE COUNTY	≥10 ft.; most projects require SFWMD permit, which requires a more stringent buffer							PN	
SANTA ROSA COUNTY	Only references state and federal guidelines, which are very generic and without specific setback distances.							Docks, piers, mooring devices that do not extend seaward from the property line more than 300 ft. or 15% of open water span at the point of installation, whichever is less. All construction, including dolphin poles and/or moored watercraft shall be set back from the center line of the canal a distance equal to 25% of the canal width. For Polynesian Isles Subdivision canal system, setback will be 25 ft. from the centerline of the canal; there are separate guidelines for construction in Navarre Beach Canals (Section 6.08.12)	Clearing not allowed within 20 ft. of waterline of canals, unless a retaining wall is installed. Shoreline or Beach Protection Zones (1 and 2) buffers are defined in Article 12; setbacks from landward boundary of Zone-1 is ≥50 ft. and from landward boundary of Zone-2 is 45 ft. Setback from the waters of Santa Rosa Sound is 50 ft.
ARASOTA COUNTY	30 ft., except water bodies			50 ft. vegetated buffer under subdivision regulations between water bodies and development				No development in mangroves and scrubby flatwoods, unless with stipulations to protect the resource. Special protection shall be provided for mesic hammocks along the Myakka River and its tributaries; wider buffers may be required. The County shall adopt and implement a shoreline protection ordinance of amend existing ordinances soon to address additional concerns (Sec. D, page 19). All information is from the Comprehensive Plan, Chapter 2.	

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SEMINOLE COUNTY	50 ft. average with exception of listings under NRMA column				See comments under Orange County NRMA		See comments under Orange County	Information per telephone conversation with Planning Department	
TAYLOR COUNTY	No local ordinances - defer to SRWMD regulations; which are decided on a case-by-case basis with a minimum of 25 ft., preferably 35 ft. or wider depending on quality/function of wetland						Case dependent	Information per telephone conversation with Planning Department and SRWMD	
VOLUSIA COUNTY	25 ft. (except OFW's and NRMA's)					50 ³ ft.	50 ⁴ ft.	PR, PL, TR, RE	
City of Ormond Beach (Tomoka River and tributaries only)							50 ft. from upland/wetland edge or 120 ft. from mean high water line, whichever is greater for Tomoka and Little Tomoka Rivers; 50 ft. from upland/wetland edge or 60 ft. from mean high water line for tributaries to the Tomoka River.		
City of Port Orange	25 ft.						TR, PS (those that do not have significant adverse effects on natural buffer function), PL, PR, RE, REC	Exemptions: wetlands ¼ acre or smaller, provided that entire wetland areas on project do not exceed this area	
WAKULLA COUNTY	50 ft. from mean high water line of any body of water ¹⁰ .						P-1 and P-2 preservation zones (to protect ESA's and to limit construction in wetlands, floodplains and other areas generally unsuitable for development): 50 ft.	TR; development activity with approval of proposed site plan in accordance with other terms and provisions of code.	Prohibited activities include improvements of buildings, structures, pools, street pavements, curbs and gutters, street signs, accessory buildings, storage sheds, septic tanks, and other similar improvements.

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WALTON COUNTY	25 ft. for wetlands and called secondary wetland protection zone.							Secondary Wetland Protection Zone (25 ft. landward of waters of the state): TR, PS, clearing of native vegetation shall be limited to 10% of total area in zone; restrictions on development are very specific and lengthy for each of the zones identified in the previous column and can be found in Section 4.02.06 (pages 5-35)	Certain wetland impacts, where unavoidable or where properly mitigated, shall be permitted (Section 4.01.02(A)(2-4)); density transfer from wetland to upland zones is allowed to encourage development in uplands only

ENDNOTES

1. Those connected to the waters of the state as defined in the Florida Administrative Code
2. The established CCCL set by the Florida Department of Environmental Protection must also be observed by all coastal counties
3. Environmentally sensitive areas are Conservation Areas and Preservation Areas, as defined in the Comprehensive Plan. Conservation Areas include the following types of wetlands (w), natural water bodies (nwb), and uplands (u): freshwater marshes (w), wet prairies (w), hardwood swamps (w), cypress swamps (w), natural shorelines other than natural beaches and dunes (w), Class III Waters (w, nwb), and significant wildlife habitat (w, nwb, u). Preservation Areas include the following types of wetlands, natural water bodies and uplands: coastal marshes (w), mangrove swamps (w), marine grassbeds (w, nwb), natural beaches and dunes (w, u), Class I and II Waters (w, nwb), aquatic preserves (w, nwb), essential wildlife habitat (w, nwb, u), and natural preserves (w, nwb, u).
4. Class I Conservation Areas shall mean those wetland areas which meet any of the following criteria:
 - (1) Have a hydrological connection to natural surface water bodies; or
 - (2) Lake littoral zone; or
 - (3) Are large isolated uninterrupted wetlands 40 acres or larger; or
 - (4) Provide critical habitat for federal and/or state listed threatened or endangered species
5. Class II Conservation Areas shall mean those wetland areas which meet any of the following criteria:
 - (1) Consist of isolated wetlands or formerly isolated wetlands which by way of man's activities have been directly connected to other surface water drainage; and are greater than or equal to 5 acres; or
 - (2) Do not otherwise qualify as a Class I Conservation Area.
6. River corridor protection zone that includes the main river channel of the Big Econlockhatchee River (Econ River) and its major tributaries (Econlockhatchee River Swamp, Fourmile Creek, Little Creek, Turkey Creek, Green Branch, Cowpen Branch, Hart Branch, and Long Branch). The stream's edge is defined as the waterward extent of the forested wetlands abutting the Econ River and the above named tributaries. In the absence of forested wetlands abutting these streams, the stream's edge shall be defined as the mean annual surface water elevation of the stream; however, if reliable hydrologic records are not available, the landward extent of the herbaceous emergent wetland vegetation growing in these streams shall be considered to be the stream's edge. This protection zone shall be subject to section 15-440 of this article until a final functional study is approved by the county.
7. Measured from outside the top of bank or contiguous wetland whichever is greater
8. Top of bank is defined as that point on the slope at which the side slope becomes flatter than one foot vertical to four ft. horizontal. However, this requirement shall not apply to existing seawalls or other structures creating an abrupt transition between any such property and the adjoining upland property.
9. Provided, however, the buffer shall be a minimum of twenty-five (25) ft. in width if it is located on a lot with less than ten (10) acres of area and is located within an approved subdivision recorded or exempted from the provisions of Article II of this ordinance prior to November 1, 1990.
10. "body of water" is defined to include any natural lake, river, stream, brook, man-made or natural canal, bay, estuary, gulf, ocean or sea.