

**12**

**VEGETATION & WILDLIFE**

## PART III. ENVIRONMENTAL RESOURCE IMPACTS

### QUESTION 12 – VEGETATION AND WILDLIFE

- A. Identify the dominant species and other unusual or unique features of the plant communities on Map F. Identify and describe the amount of all plant communities that will be preserved in a natural state following development as shown on Map H.**

The Watermark DRI property is largely undeveloped and has long been actively managed for silviculture. The property lacks unusual or unique natural features. All of the communities, both upland and wetland, have been altered to varying degrees by typical silvicultural practices and have significantly shaped the communities that exist on the site today. Approximately 53 percent of the property is upland with on-going silviculture activities.

Seven (7) distinct ecological communities occur on the Watermark DRI property as listed Table 12-1; the communities have been categorized according to and are identified by:

FNAI [Florida Natural Areas Inventory] 1990 Guide to the Natural Communities of Florida. Florida Natural Areas Inventory and Florida Department of Natural Resources, Tallahassee. 111 pp.

The vegetative communities occurring on the Watermark DRI property are discussed below and identified on Map F, Vegetation Associations.

The acreage estimates for each community type are based on aerial photographic interpretation and limited ground truthing. The specific wetland acreage will not be known until the entire property is field delineated and surveyed. To aid in determining the existing land use, a preliminary assessment was conducted in January 2009, and a review of existing published information assisted in characterizing current conditions. These sources included:

- The United States Geographical Survey (USGS) topographic map (Diner Island NE, Elkton, Spuds, St. Augustine Beach, Florida Quadrangle 1992),
- National Wetlands Inventory (NWI) map (Diner Island NE, Elkton, Spuds, St. Augustine Beach, Florida Quadrangle 1983),
- The Soil Survey of St. Johns County, Florida (U.S. Department of Agriculture, Natural Resources Conservation Service), and
- Digital True Color Aerial Photographs (2008)

Community	FNAI Code <sup>1</sup>	Acreage
Basin Swamp	BS	401
Baygall	B	541
Dome Swamp	DS	24
Borrow Pond	BP*	30
Pine Plantation	P*	1232
Wet Prairie	WP	20
Wet Pine Plantation	WP*	192
Trail roads	N/A	84
<b>Total Acreage:</b>		<b>2,524</b>

FNAI [Florida Natural Areas Inventory]. 1990. Guide to the Natural Communities of Florida. Florida Natural Areas Inventory and Florida Department of Natural Resources, Tallahassee. 111 pp.

\* Existing Land Use Classification

## UPLAND COMMUNITIES

### 1. Pine Plantation (Silviculture)

Pine Plantation areas are the most prevalent community type located throughout the Watermark DRI, comprising approximately 53 percent of the site. These areas are artificially generated by planting pine trees in a uniform fashion. Slash pine (*Pinus elliotii*) is the dominant species in most of this community, and is the result of planting or seeding operations. Many of the areas have been clear cut within the last 10 years and were not re-planted. These areas still have bedding rows, but were left to reforest naturally without management. The soils are highly disturbed due to multiple generations of pine forests.

The on-site pine plantation is exclusively dominated by slash pine in the canopy and the understory differs according to the proximity of the wetlands and fire suppression. In lower lying areas the dominant subcanopy includes loblolly bay (*Gordonia lasianthus*), swamp bay (*Persea palustris*), sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), and red maple (*Acer rubrum*). The ground cover within the bedding rows includes fetter bush (*Leucothoe* spp.), Virginia chain fern (*Woodwardia virginica*), beakrushes (*Rhynchospora* spp.), yellow-eyed grass (*Xyris* spp.), St. Johns wort (*Hypericum* spp.), redroot (*Lachnanthes caroliniana*), bog button (*Lachnocaulon* spp.) and hat pins (*Eriocaulon* spp.). However, saw palmetto (*Serenoa repens*), bitter gallberry (*Ilex glabra*), and bracken fern (*Pteridium aquilinum*) typically occur along the top of the bedding rows. In higher elevations, the dominant subcanopy is comprised of sweetgum, red maple, and laurel oak (*Q. laurifolia*). The ground cover includes saw palmetto, bracken fern, bitter gallberry, grape vine (*Vitis* spp.), blackberry (*Rubus argutus*), dwarf

blueberry (*Vaccinium myrsinites*), broom sedge (*Andropogon* spp.), dog fennel (*Eupatorium capillifolium*), and longleaf wiregrass (*Aristida affinis*).

The overall characteristics of the pine plantation areas vary with stand age, soil, topography, and on-going management practices. Regularly occurring events, including harvesting and wildfire, significantly alter the nature and appearance of these areas.

## WETLAND COMMUNITIES

### 1. Basin Marsh

This scrub-shrub wetland community represents areas of past disturbance, harvesting, and natural succession. This community appears to have been harvested over 20 years ago, and due to its wet condition is populated with sparse canopy species with stunted growth, including slash pine, sweet gum, and loblolly bay. However, the area is dominated mainly by a thick shrub component, including fetterbush, wax myrtle (*Myrica cerifera*), salt bush (*Baccharis halimifolia*), button bush (*Cephalanthus occidentalis*) and saw palmetto. Species found within the groundcover include red root, soft rush (*Juncus effusus*), sedges (*Carex* spp.), pennywort (*Hydrocotyle* spp.), Panicum (*Panicum verrucosum*), hat pin, royal fern (*Osmunda regalis*), Virginia chain fern, cinnamon fern (*Osmunda cinnamomea*), and netted chain fern (*Woodwardia areolata*).

### 2. Basin Swamp

A majority of these areas on-site occur as contiguous systems associated with Tressel Bay Swamp to the north and Fish Swamp to the south. Basin swamps on-site are associated with, and typically grade into baygall, and wet pine plantation. The species composition within the basin swamp overlaps with the baygall wetland community. However, the basin swamp contains very poorly drained soils that are often saturated or inundated with water. Canopy species can withstand an extended hydroperiod and include blackgum (*Nyssa sylvatica* var. *sylvatica*), cypress (*Taxodium ascendens*), loblolly bay, and swamp bay. Also occurring within the canopy and subcanopy are red maple, sweetgum, sweetbay (*Magnolia virginiana*), fetterbush, and pipe stem (*Agarista populifolia*). Herbaceous species include royal fern, yellow eyed grass, pitcher plants (*Sarracenia* spp.), hat pins, bog buttons, rushes, and nutrush (*Scleria* spp.) species.

### 3. Baygall

This community is densely forested with loblolly bay, sweetbay, and swamp bay. Acting as a transition area between the wet pine plantation and the healthier, interior wetlands, this community is a monoculture of ever-green hardwoods that offers little fauna and flora species diversity. These species quickly proliferate disturbed areas, and most likely became dominant when planted slash pine was harvested within hydric areas and the area was left to regenerate through natural succession. Areas within the community have experienced encroachment of slash pine from the adjacent wet pine plantation community. Immature bay species, bitter gallberry, fetterbush, wax myrtle and titi (*Cyrilla racemiflora*), Virginia chain fern, and cinnamon fern dominate the subcanopy and ground cover.

#### 4. Dome Swamp

Small pockets of cypress occur throughout the project area. Often, these cypress stands occupy shallow depressions within areas of planted pine. These stands may be situated in isolated wetland conditions, or may drain to adjacent wetland communities including wet pine plantation areas. The cypress communities are dominated by bald cypress (*Taxodium distichum*), pond cypress (*T. ascendens*), slash pine, pond pine (*P. serotina*), and blackgum. The understory and groundcover are dominated by fetterbush, bitter gallberry, wax myrtle, dahoon holly (*I. cassine*), yellow-eyed grass, broomsedges, and a wide variety of fern species.

#### 5. Wet Prairie

This habitat type is found within disturbed wet pine plantation habitat type in the southern parcel. This habitat type has no canopy, but is dominated by such herbaceous species as Virginia chainfern, netted chainfern, royal fern, cinnamon fern, bushy bluestem (*Andropogon glomeratus*), red root, sedges, pennywort, panicum, and hat pin.

#### 6. Wet Pine Plantation

Areas of pine plantation that have a seasonal high water table at or very near the ground surface are jurisdictional wetlands, and are vegetatively distinct from upland pine plantation. Groundcover vegetation in these wetlands is relatively open and is dominated in many areas by various grasses, particularly broomsedge. Other groundcover species include red root, yellow-eye grass, hat pins and bog buttons. Rows of slash pine have been planted in the areas of wet pine plantation. The canopy and subcanopy in the areas of wet pine flatwoods are dominated by slash pine with lesser amounts of loblolly bay, blackgum, bald cypress, wax myrtle, red maple, and myrtle leaf holly (*Ilex myrtifolia*).

**B. Discuss what survey methods were used to determine the absence or presence of state or federally-listed wildlife and plants. (Sampling methodology should be agreed to by the regional planning council and other reviewing agencies at preapplication conference stage.) State actual sampling times and dates, and discuss any factors that may have influenced the results of the sampling effort. Show on Map G the location of all transects, trap grids, or other sampling stations used to determine the on-site status of state or federally-listed wildlife and plant resources.**

#### 1. Survey Methodologies.

Prior to this ADA submittal, the on-site habitat was analyzed for the potential presence of state or federally listed wildlife and plant species. Investigations began with a review of state and federally listed wildlife and plant species in St. Johns County, Florida, pursuant to the rules of the appropriate agencies and the following references:

- **U.S. Fish and Wildlife Service** - U.S. Fish and Wildlife Service. 2001. 50 CFR IB Part 17.11. Endangered and Threatened Wildlife. (Incorporating reclassification of Candidate categories published in *Federal Register* 73(234), 10 December 2008.)
- **Florida Fish and Wildlife Conservation Commission** - FWC. May 2008. Florida's Endangered Species, Threatened Species and Species of Special Concern: Official Lists. Tallahassee: Florida Fish and Wildlife Commission. 10 p.
- **Florida Department of Agriculture and Consumer Services** - Department of Agriculture and Consumer Services, Division of Forestry, Forest Management. Chapter 5B-40, FAC.
- **Florida Department of Community Affairs** - Rules of the [FL] Department of Community Affairs. 1998. Chapter 9J-2.041 FAC, Listed Plant and Wildlife Resources Uniform Standard Rule.
- **Florida Natural Areas Inventory (FNAI)** - FNAI. 2008. Biodiversity Matrix.

Prior to ESI establishing wildlife survey methodologies, ESI compiled a preliminary list of potentially occurring wildlife species in St. Johns County, Florida. ESI then conducted a literature review to determine the preferred habitat of each of these species and the probability of that species occurrence within the project area. The probability that each species would occur on the property was estimated based on the results of the FNAI community maps, a preliminary habitat assessment, and a review of habitat needs for each species.

The Florida Fish and Wildlife Conservation Commission (FWC) and the U.S. Fish and Wildlife Service (USFWS) have been consulted regarding the wildlife and plant studies required for the Watermark DRI project. Environmental Services, Inc. (ESI) met with Stephanie Rousso, from FWC, on 19 February 2009 to discuss the wildlife survey methodology. We agreed to conduct surveys in February, March, and April pursuant to the new survey guidelines as reflected in the USDA Multiple Species Inventory and Monitoring Technical Guide. Species of focus include, but are not limited to, black bears, gopher tortoises, fox squirrels, and wading birds. In addition, ESI agreed to coordinate closely with the FWC Black Bear Habitat Management team to ensure that the proposed project design does not attract bears. Pursuant to our discussions with Ms. Rousso, our management plan will focus on the central wetland system that stretches north-south and include measures to maintain and improve wildlife utilization. The wildlife survey methodology is reflected on the Wildlife Transect Map, Map G.

The applicant is proposing 36-inch culvert/small wildlife crossings under State Road (SR) 206 at three separate locations. The crossings will be located adjacent to three wetland crossings and will include fencing and signage. Crossings for SR 206 will be placed adjacent to the wetlands and will include a natural bottom. In addition, the applicant is currently evaluating crossings for internal roadways. At this time the applicant is not proposing crossings to accommodate large mammals based on the meeting with FWC. Further, the

current bear corridors are documented well to the west of the Property. We agree that the bears potentially utilize portions of this tract and surrounding areas in the proposed DRI boundary; however, we have no evidence of bears to date. FWC indicated that a large corridor crossing is not required for bears and that the intact natural wetlands will suffice as a natural corridor. In addition, the main wetland will incorporate a 50' upland buffer and unpaved multi-use trail that borders the eastern side of the main wetland system.

All species determined to likely occur on site were selected from the most recent literature available, discussions with FWC, and field reviews of the property. In addition, the habitat descriptions in the ADA will be based on FNAI natural communities.

Table 12-2 identifies the listed species potentially occurring in St. Johns County, Florida. No federally listed plants are reported to occur in St. Johns County, and none were noted during the wildlife surveys and preliminary wetland assessment. The review began with the compilation of a list of all state-regulated plants from St. Johns County; added to this list were some species known to occur in adjacent counties that, in the professional opinion of the botanists involved in the project, could occur in St. Johns County as well. The list of state-regulated plants was cross-referenced with the lists of Critically Imperiled, Imperiled, and Rare Plants documented in the DRI regulations to ensure that no applicable species were omitted. The composite list was then compared to the plant records received from the FNAI element occurrence database, and a review was done to determine, based on the habitats on the Watermark DRI site, which plants had Low, Moderate, or High probability of occurring on the project area (see Table 12-3).

The required surveys for listed plant species are occurring in conjunction with the wildlife studies. Documentation of survey results will include sampling times and dates, a record of all species observed, and any factors that may have influenced the results of the sampling efforts.

**Table 12-2**  
**Potential List of Species on the Watermark Property (FNAI Biodiversity Matrix)**  
**Watermark DRI**

Common Name	Scientific Name	Federal Status	State Listing
<b>Plants</b>			
Indian – plantain	<i>Arnoglossum diversifolium</i>	N	T
Wagner’s Spleenwort	<i>Asplenium heteroresiliens</i>	N	N
Purple Honeycomb-head	<i>Balduina atropurpurea</i>	N	E
Many-flowered Grass-pink	<i>Calopogon multiflorus</i>	N	E
Bartram’s Ixia	<i>Calydorea coelestina</i>	N	E
Chapman’s sedge	<i>Carex chapmanii</i>	N	E
Sand Butterfly Pea	<i>Centrosema arenicola</i>	N	E
Chapman’s skeletongrass	<i>Gymnopogon chapmaniannus</i>	N	N
Nodding Pineweed	<i>Lechea cernua</i>	N	T
Pondspice	<i>Litsea aestivalis</i>	N	E
Curtis’s Loosestrife	<i>Lythrum curtissii</i>	N	E
Florida Spiny-pod	<i>Matelea floridana</i>	N	E
Celestial Lily	<i>Nemastylis floridana</i>	N	E
Florida Beargrass	<i>Nolina atopocarpa</i>	N	T
Giant Orchid	<i>Pteroglossaspis ecristata</i>	N	T
Florida Mountain-mint	<i>Pycnanthemum floridanum</i>	N	T
Pineland Beaksedge	<i>Rhynchospora punctata</i>	N	N
Thorne’s Beaksedge	<i>Rhynchospora thornei</i>	N	N
St. John’s Black-eyed-susan	<i>Rudbeckia nitida</i>	N	E
Florida Willow	<i>Salix floridana</i>	N	E
<b>Animals</b>			
Rafinesque’s Big-eared Bat	<i>Corynorhinus rafinesquii</i>	N	N
Eastern Indigo Snake	<i>Drymarchon couperi</i>	T	T
Gopher Tortoise	<i>Gopherus polyphemus</i>	N	T
Wood Stork	<i>Myceteria americana</i>	E	E
Round-tailed Muskrat	<i>Neofiber alleni</i>	N	N
Atlantic Salt Marsh Mink	<i>Neovison vison lutensis</i>	N	N
Florida Black Bear	<i>Ursus americanus floridanus</i>	N	T

Notes: N = Not listed, E = Endangered, T = Threatened

**Table 12-3:**  
**Potential List of Additional Species on the Watermark Property**  
**Watermark DRI**

Common Name	Scientific Name	Federal Status	State Listing
<b>Animals</b>			
American Alligator	<i>Alligator mississippiensis</i>	N	SSC
Swallow-tailed Kite	<i>Elanoides forficatus</i>	N	N
Southeastern American Kestrel	<i>Falco sparverius paulus</i>	N	T
Southern Bald Eagle	<i>Haliaeetus leucocephalus</i>	N	N

Notes: N = Not listed, E = Endangered, T = Threatened, SSC = Species of Special Concern

## 2. Conducting the On-Site Surveys

- a. **Species Specific Wildlife Surveys.** A meeting has been conducted with Stephanie Rousso of FWC on 19 February 2009 to discuss and confirm the proposed endangered species and wildlife survey protocols. A preliminary wildlife survey and habitat assessment occurred in January 2009. Biologists at ESI later established the current survey methodology and conducted the first series of surveys on 24 and 26 February 2009. Additional surveys will be conducted in March and April of 2009. The survey results will be provided in future submittals. If requested, species specific surveys will be conducted.
  - b. **Gopher Tortoise Survey.** A species-specific survey is also proposed to determine the current population of gopher tortoises (*Gopherus polyphemus*) in those areas of potentially suitable habitat. ESI will identify and map potential gopher tortoise habitat based on aerial photographs, soils maps, NWI maps, and other in-house resources. ESI will then conduct a pedestrian survey covering 100 percent of the habitat pursuant to the methodologies of FWC to determine the extent of the on-site gopher tortoise population. Each burrow along the transect shall be identified and characterized as Potentially Occupied (F.K.A. Active and Inactive) or Abandoned. The location of each burrow will be recorded using a Global Positioning System (GPS).
  - c. **Listed Plant Survey.** Extensive pedestrian surveys of the subject property are proposed to be conducted as part of the comprehensive wildlife survey and the gopher tortoise survey. In addition, any flora species will be noted during the wetland delineation of the property and will be properly conveyed to the appropriate agency.
3. **Factors Influencing Sampling Results.** The time of the year plays a role in the species of birds observed. Many migratory bird species winter in Florida. Some of these migratory species will not be observed during a survey conducted at other times of the year. Therefore, the period of time the surveys are proposed to be conducted were taken into consideration of these factors.
- C. **List all state or federally listed wildlife and plant resources that were observed on the site and show location on Map G. Given the plant communities on-site, list any additional state or federally listed wildlife and plant resources expected to occur on the site and show the location of suitable habitat on Map G. Additionally, address any unique wildlife and plant resources, such as colonial bird nesting sites and migrating bird concentration areas. For species that are either observed or expected to utilize the site, discuss the known or expected location and population size on-site, existence (and extent, if known) of adjacent, contiguous habitat off-site, and any special habitat requirements of the species.**

1. **Known and Expected Occurrences.** Tables 12-2 and 12-3 summarize information on the wildlife and plant species potentially occurring in the project area that receive various levels of protection and regulation under state and federal law. The species covered include federally listed wildlife species, state listed wildlife species, and state regulated plant species.
  - a. **Federally Listed Plants and Wildlife.** Environmental Services, Inc. obtained an updated enumeration of federally listed wildlife and plant species from U.S. Fish and Wildlife Service. No federally listed plant or animal species are reported to occur in the project area. Other federally listed species that have a Low to High probability of occurring on the Watermark DRI property are listed in Table 12-2.
  - b. **State Listed Plants and Wildlife.** A number of state regulated plant species have moderate to high potential for occurring in the project area based on their known habitat.
2. **Unique Wildlife and Plant Resources.** No unique wildlife or plant resources are known to occur on-site.
3. **Species Discussions.** Listed wildlife species that may be observed on the Watermark DRI property during the proposed surveys.
  - **Bald eagle.** The bald eagle (*Haliaeetus leucocephalus*) is a large raptor measuring from 30 to 43 inches in length. In the field, the adult is easily identified by its white head and white tail. The immature birds have a dusky head and tail with a dark bill. The birds frequent coastal areas, rivers, and large lakes where they hunt for fish, the staple of their diet. Within areas of water the bald eagle may be observed at "lookout" points where it watches for fish to surface. These "lookouts" are often tall dead trees. Eagles nest at about six years of age. Nest building may begin as early as September. Tall living pines are almost always used as nesting sites, but nests are rarely located in cypress. On average the nest is elevated 40 or more feet above the ground. The nests average 6 to 10 feet wide and 8 to 12 feet deep. Based on preliminary field work and initial wildlife surveys, bald eagles are not likely to occur on the Watermark DRI property.
  - **Florida Scrub Jay.** The Florida scrub-jay (*Aphelocoma coerulescens*) is a blue and gray jay that lacks the white wing spots and tail feather tips of the more common and widespread blue jay. The tail is long and the back is gray. Scrub jays habitat consists of small and isolated patches of sand pine scrub, xeric oak scrub, and scrubby flatwoods in peninsular Florida. The potential suitable habitat for scrub jays at the Watermark DRI is limited to the section of property south of SR-206 along areas of the upland ridge that runs north south but is unlikely due to the low quality of the habitat and on-going sivilcultural operations. Based on preliminary field work and initial wildlife surveys, scrub jays are not anticipated to occur on-site. At best, there is marginal habitat on-site and there is no known occurrence of this species on-site or in the general vicinity of the site.
  - **American alligator.** The American alligator (*Alligator mississippiensis*) occurs throughout much of the southeastern United States in a wide variety of wetland habitats. This large

reptile is protected by Florida Statute although the species has been downgraded to a Species of Special Concern. The species, often impressive in size, is a highly visible organism in aquatic habitats. The American alligator is generally restricted to aquatic communities. The suitable habitat at the Watermark DRI is mainly limited to the borrow ponds and portions of open contiguous basin swamp systems associated with Tressel Bay Swamp to the north and Fish Swamp to the south. The size of any alligator population that might occur on the project area is not known; however, after the project is developed, the marsh front will remain as generally unaffected alligator habitat. Alligators may move into and occupy ponds and lakes created as part of the development.

• **Gopher tortoise.** The gopher tortoise (*Gopherus polyphemus*) is a large, distinctive reptile with a rounded, oblong carapace reaching lengths of up to 12 inches. The front feet are spade shaped, having toenails that are broad and short. The hind feet are rounded, reminiscent of elephant's feet. Its distribution is localized in Florida, with populations extending into Georgia, Alabama, and portions of South Carolina.

The gopher tortoise exhibits a fossorial lifestyle and is an adept burrower. It uses its spade-like front feet to excavate burrows, sometimes measuring up to 30 feet long with a depth of up to 18 feet. Because of the overall depth of the burrow, a microenvironment often forms which maintains a moderately high ambient humidity and guards against extremes in temperature. The microhabitat formed by the burrow is utilized by numerous commensal species. These include the gopher frog (*Rana capito* spp.), the eastern indigo snake (*Drymarchon corais couper*), the Florida pine snake (*Pituophis melanoleucus mugitis*) and the Florida mouse (*Podomys floridanus*).

Gopher tortoise habitat occurs in the southern portion of the project along the eastern portion of the upland ridge. Aside from the known gopher tortoise habitat, several additional areas on the subject property could potentially be utilized by gopher tortoises, however the current condition of these areas is not suitable for the species. Gopher tortoises prefer well-drained soils and habitat with a fairly open canopy that allows for growth of desirable groundcover species. The lack of regular burning in these areas has allowed the understory and shrub layer to become very thick with such species as saw palmetto and bitter gallberry. Furthermore, these areas, though they are uplands, have a shallow water table and poorly drained soils. The extremely limited number of individuals in the on-site habitat do not represent a long-term, viable population.

• **Little blue heron, tricolored heron, white ibis, snowy egret.** The little blue heron (*Egretta caerulea*), tricolored heron (*Egretta tricolor*), white ibis (*Eudocimus albus*), and snowy egret (*Egretta thula*), are wading birds that utilize a wide variety of habitats. These species frequently share common habitats for nesting and foraging and feed in shallow waters of bays, estuaries, ponds and riverine systems on organisms ranging from invertebrates to fish and frogs. They are generally considered to be Species of Special Concern due to declining populations throughout their range. At the Watermark DRI, these birds may utilize the basin marsh, wet prairies for feeding and were observed to utilize portions of the inland wetland systems and open water features on an intermittent basis. The development should

not significantly affect site utilization by these species. Habitat in the form of littoral zones of lakes may likely increase wading bird use of the area.

- **Osprey.** The Osprey (*Pandion haliaetus*) is a bird of prey that is common to coastal, riverine, and large lacustrine environments. In northeast Florida, this species typically utilizes large, open wetland areas to forage for fish, snakes, and small rodents. In natural conditions, nests are typically located in very tall, dead snags. However, when these conditions are not available, the Osprey frequently utilizes electrical power transmission poles as a substitute. They are considered to be a species of special concern mostly due to past population decline as a result of exposure to the pesticide DDT. Once the U.S. Environmental Protection Agency (EPA) banned DDT, the Osprey's numbers began to steadily increase, and they have become relatively common in northeast Florida within the past decade. Though a species-specific survey for the Osprey is not proposed to be conducted on-site, the field work should reveal the presence of an active or inactive nest. The proposed project is not expected to have a detrimental effect on the Osprey.

- **Wood stork.** The wood stork (*Mycteria americana*) is the only true stork in North America. These birds nest in cypress and mangrove swamps and feed in freshwater and saltwater marshes, the littoral zones of ponds, flooded pastures, and ditches. The specialized feeding habit, referred to as the grope technique, requires a high concentration of food items, primarily fish and frogs. This condition exists primarily in ephemeral ponds that are created seasonally with the onset of the wet season. Additional research has indicated no nesting colonies in close proximity to the Watermark DRI (FNAI 2005). Wood stork feeding habitat will remain in preserved wetlands on-site, borrow ponds and other surface waters.

- **Gopher frog.** The Gopher frog ranges throughout much of Florida, including St. Johns County, and into southern Alabama and southern Georgia, although it is restricted by availability of suitable habitat. The species is typically associated with well drained pine flatwoods, pine plantation, and open stands of hardwoods. The gopher frog is considered a commensal species of the gopher tortoise and utilizes tortoise burrows for shelter, though it utilizes a variety of other similar ecological equivalents. Marginal habitat is found within the Watermark DRI, and is associated with the areas of gopher tortoise habitat.

- **Eastern indigo snake.** The eastern indigo snake occurs from southeastern Georgia south to the Florida Keys and west to Mobile Bay in Alabama utilizing a variety of sites from mesic hammocks to xeric sandy habitats, including pine flatwoods and sandhill communities. It is often, though not exclusively, found in association with gopher tortoise burrows. Concern for the species is generated primarily from its exploitation by collectors. The probability for Eastern indigo snakes to occur on the Watermark DRI property is low due to the anticipated low density of gopher tortoises and gopher tortoise burrows.

- **Florida pine snake.** The Florida pine snake (*Pituophis melanoleucus mugitus*) is a subspecies geographically distributed in the southeastern United States as far west as Mobile Bay and as far south as Charlotte, Palm Beach, and Dade Counties in Florida. The species is found in areas of sandy soils and scrub pine or other shrub habitat, often in association with the

burrows of the gopher tortoise. Only a small amount of marginal habitat is available to support Florida pine snakes in the project area.

- **Florida black bear.** The Florida black bear (*Ursus americanus floridanus*) is very mobile and wide ranging and occurs throughout Florida. This usually solitary species has an extensive home range occurring in relatively inaccessible swamps and thickets that provide dense cover. The species is omnivorous, feeding opportunistically on items ranging from acorns and berries to carrion or small animals. The requirement for large tracts of undisturbed land, especially swamps, would suggest that the Watermark DRI site does not provide sufficient habitat to support a permanent population of black bear. Hunting pressure on the site may also be a factor for minimizing bear potential at the Watermark DRI. There has been documentation of black bears along I-95 as well as SR-206, suggesting that there is the potential for black bears to utilize the on-site wetlands for foraging and as corridors.

- **Florida mouse.** The Florida mouse is endemic to Florida and is restricted by availability of suitable habitat. Zoogeographic information indicates a probable distribution including St. Johns County but no evidence has confirmed its existence in this portion of the county (FNAI 2005). This species is specifically associated with well-drained communities of pine scrub or sandhills. This ground dwelling mouse utilizes excavated burrows, most often associated with gopher tortoises, in a passive commensal relationship. These burrows help to moderate extremes related to the semiarid community, creating a microclimate for these and other species. A small area of suitable habitat, based upon physical characteristics and vegetation, is present at the Watermark DRI.

**D. Indicate what impact development of the site will pose to affected state or federally listed wildlife and plant resources.**

The eleven wildlife species with potential to occur on the Watermark DRI that could be impacted by the proposed development are the bald eagle, American alligator, gopher tortoise, little blue heron, tricolored heron, white ibis, snowy egret, osprey, wood stork, gopher frog, indigo snake, Florida pine snake, Florida black bear, and Florida mouse. Based on preliminary field work and initial wildlife surveys, bald eagles and scrub jays are not anticipated to occur on-site. At best, there is marginal habitat on-site and there is no known occurrence of either species on-site or in the general vicinity of the site.

The wood stork, as a federally listed species, is protected under the Endangered Species Act of 1973 (16 U.S.C. 1531). Any development planned within the vicinity of wood stork rookeries must conform to the management guidelines indicated in the *Wood Stork Recovery Plan* (U.S. Department of Interior, Fish and Wildlife Service 1997). As no wood stork rookeries have been documented on-site, impacts to the wood stork by the development are not expected.

The American alligator is listed by the State of Florida as a Species of Special Concern and is protected under Chapter 39-27.002(4) FAC. The primary on-site habitat suitable for the American alligator is associated with Tressel Bay Swamp to the north and Fish Swamp to the south. Many these areas may be proposed for conservation, and few if any impacts to the American alligator are expected.

The gopher tortoise is a state Threatened Species and must be relocated prior to development. Prior to the initiation of construction, a gopher tortoise survey will be completed and all on-site gopher tortoises will be excavated and relocated to an approved recipient site. The location will be determined in conjunction with FWC. This approach is consistent with current state guidelines.

Though the little blue heron, snowy egret, white ibis, tricolored heron, and osprey are state-listed Species of Special Concern, disturbance of their habitat does not require formal mitigation. Suitable habitat will be maintained in the project.

No additional state or federally listed wildlife or plant resources will be impacted by the development.

- E. Discuss what measures are proposed to be taken to mitigate impacts to state and federally listed wildlife and plant resources. If protection is proposed to occur on-site, describe what legal instrument will be used to protect the site, and what management actions will be taken to maintain habitat value. If protection is proposed to occur off-site, identify the proposed amount and type of lands to be mitigated as well as whether mitigation would be through a regional mitigation land bank, by acquisition of lands that adjoin existing public holdings, or by other means.
1. **Mitigating Impacts to Protected Wildlife Species.** Gopher tortoises will be relocated in accordance with current rules, if development is proposed in occupied habitat. Mitigation is not anticipated to be required for other protected wildlife species.
  2. **Mitigating Impacts to Protected Plant Species.** No mitigation is anticipated because no protected plants have been identified.