PART III. ENVIRONMENTAL RESOURCES 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.

Site Background

The Subject Property encompasses approximately 2,808.3 acres located west of Interstate 95 and south of County Road 207; Sections 17, 18, 19, 20, 29, 30, 31 and 32; Township 8 South; Range 29 East, St. Johns County, Florida. More than half of the site has been converted into silviculture use. The remaining site area comprises generally natural areas from deep forested wetland bottomland to cypress wetlands with a portion of the project area currently in agricultural operations. The wetlands associated with this project are hydrologically associated with the Moccasin Branch and the Deep Creek drainage basins.

The identified land use/vegetative cover types, as defined by the Florida Department of Transportation's *Florida Land Use, Cover and Forms Classification System* (FLUCFCS, 1999), are described in detail in the following sections.

To determine the vegetative composition of the site and the most suitable habitat for wildlife surveys, existing land use/cover within the study area was mapped according to the natural community and habitat types (Table 12-1). These areas were classified according to the *Florida Land Use, Cover and Forms Classification System* (FLUCFCS) (FDOT, 1999) and the *26 Ecological Communities of Florida* (USDA-SCS, 1989). To aid in determining existing land use/cover, the following remote sources were utilized:

- Digital orthophoto quads at 1 m^2 pixel resolution (source data: SJRMWD, 2000 and 2004)
- Digital true color aerial photographs at 0.56 m^2 pixel resolution (source data: AerialsExpress, 2002; SJRWMD, 2004)
- Digital land use/land cover maps, level three (source data: SJRWMD, 1995)
- Soil Survey of St. Johns County, Florida (source data: USDA-NRCS, 1983)

Using the above-referenced sources, a preliminary Natural Communities Map was developed (Map F). The site was subsequently field-truthed, the map revised where necessary, and the results compiled into a Geographic Information System (GIS) database using ArcMap 9™.

Table 12-1: Vegetative Communities and Other Land Uses

COMMUNITY	FLUCFCS CODE	APPROX. ACREAGE
Row Crops	214	188
Mixed Hardwoods	438	7
Coniferous Plantation	441	1529
Bay Swamp	611	68
Stream Bottomland	615	73
Mixed Wetland Hardwoods	617	170
Cypress	621	4
Wetland Forested Mixed	630	524
Harvested Wetland Forested Mixed	6301	225
Vegetated Non-Forested Wetlands	640	5
Ditches	510	15
Total Approximate Acreage:		2808

Upland Communities

Row Crops, FLUCFCS Code 214 (188 acres ±)

Two large tracts of land in the western portion of the Subject Property are classified as Row Crops. This area has been used as agricultural land for more than two decades and comprises approximately 6.7% of the study area. The agricultural area is currently planted for cabbage (*Brassica oleracea*) harvest.

Mixed Hardwoods, FLUCFCS Code 438 (7 acres ±)

Scattered portions (0.2%) of the site that have not been planted with slash pine (*Pinus elliottii*) contain forested stands that remain relatively undisturbed and in their natural state. The upland portions of these areas are most often characterized as Mixed Hardwoods. In these areas, the canopy consists of hardwood species such as laurel oak (*Quercus laurifolia*), live oak (*Q. virginiana*), water oak (*Q. nigra*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora*), southern red cedar (*Juniperus silicicola*), cabbage palm (*Sabal palmetto*), and red maple (*Acer rubrum*). The understory consists of saw palmetto (*Serenoa repens*), grapevine (*Vitis*

rotundifolia), bitter gallberry (*Ilex glabra*), winged sumac (*Rhus copallina*), and wax myrtle (*Myrica cerifera*). The groundcover includes such species as bracken fern (*Pteridium aquilinum*), reindeer moss (*Cladonia* spp.), and chalky bluestem (*Andropogon capillipes*).

Coniferous Plantation, FLUCFCS Code 441 (1,529 acres ±)

Slash pine plantations are the most prevalent community type located throughout the study area, comprising approximately 54% of the site. They are exclusively pine stands that are the result of planting or seeding operations. The plantations are typically bedded, but can appear random, possibly as a result of aerial seeding. The stands are stocked with a high number of trees per acre, all of the same age class and with a uniform appearance. The stocked species in the study area is entirely slash pine. Some areas have been artificially bedded for planting, or have been clear-cut during harvesting and left to reforest naturally without management (described below). The soils are disturbed and inconsistent due to mechanical mixing as a result of bedding manipulation and drainage. The canopy consists almost exclusively of slash pine, and the understory structure varies according to proximity to low-lying wetland areas. Due to fire suppression, the dominant subcanopy species in many areas include water oak, loblolly bay (*Gordonia lasianthus*), wax myrtle, and swamp bay (*Persea palustris*). Live oak, sand live oak (*Quercus geminata*), and southern magnolia occur in drier areas at higher elevations. Dominant shrub layer species include saw palmetto, bitter gallberry, fetterbush (*Lyonia lucida*), highbush blueberry (*Vaccinium corymbosum*), and blackberry (*Rubus* spp.). Typical herbaceous layer vegetation includes bracken fern, chalky bluestem, Virginia chainfern (*Woodwardia virginica*), St. Johns wort (*Hypericum* spp.), beakrushes (*Rhynchospora* spp.), yellow-eyed grass (*Xyris* spp.), redroot (*Lachnanthes caroliniana*), and scattered bog button (*Lachnocaulon* spp.). Common vines found within the study area include greenbrier (*Smilax* spp.) and grape vine (*Vitis rotundifolia*).

Wetland/Surface Water Communities

Bay Swamp, FLUCFCS Code 611 (68 acres ±)

These relatively small cover types occupy approximately 2.4% of the on-site acreage and are mostly in the southeastern portion of the study area. They most often occur within or adjacent to Mixed Forested Wetlands (630), and at slightly higher elevations than the large forested wetlands on the site. Bay swamps are dominated by a variety of bays including loblolly bay, sweetbay (*Magnolia virginiana*), and swamp bay with a low density of slash pine or loblolly pine (*Pinus taeda*) in some areas. The subcanopy and shrub layer comprises primarily bitter gallberry, fetterbush, myrtle-leaf holly, highbush blueberry, and wax

myrtle. Groundcover species include netted chainfern (*Woodwardia aereolata*), Virginia chainfern, St. John's wort, and yellow-eyed grass.

Stream Bottomland, FLUCFCS Code 615 (73 acres ±)

This natural forested community occurs in association with Deep Creek near the northern project boundary, and an unnamed tributary that flows from north to south into the Moccasin Branch ditch that drains to the west. Both of these sub-drainage basins ultimately flow into the St. Johns River approximately six miles to the west. Stream Bottomland occupies approximately 2.6% of the site and contains predominantly hardwood species in the canopy and subcanopy including laurel oak, red maple, swamp tupelo (*Nyssa sylvatica* var. *biflora*), swamp bay, and sweetgum. Various species of cypress (*Taxodium* spp.) can also be found growing throughout the area. The understory consists of fetterbush, button bush (*Cephalanthus occidentalis*), bitter gallberry, myrtle-leaf holly, highbush blueberry, and saw palmetto. Ground cover throughout this community varies, with the most common species including sphagnum moss (*Sphagnum* spp.), netted chainfern, and Virginia chainfern.

Mixed Wetland Hardwoods, FLUCFCS Code 617 (170 acres ±)

This community type occurs over approximately 6.1% of the site and is associated primarily with wetlands connected to the Moccasin Branch watershed. Mixed Wetland Hardwoods exhibit an ill-defined mixture of hardwood canopy species dominated by red maple, laurel oak, water oak, tupelo, and sweetgum. Slash pine and cypress occur in low densities within this community type. Species identified in the understory include loblolly bay, swamp bay, cabbage palm, and saplings of canopy species. The shrub layer consists of wax myrtle, button bush, bitter gallberry, fetterbush, sparse saw palmetto, and highbush blueberry. The herbaceous layer ranges from sparse to dense, and includes such species as Virginia chainfern, netted chainfern, St John's wort, beakrush, yellow-eyed grass, and sphagnum moss.

Cypress, FLUCFCS Code 621 (4 acres ±)

Composed predominantly of bald cypress (*Taxodium distichum*) and/or pond cypress (*T. ascendens*), these areas are scattered throughout the site, comprising 0.1% of the site. They are typically found as "isolated" domes within the planted pine areas. Other canopy and subcanopy species found in association include slash pine, red maple, and swamp tupelo. The existing shrub layer is sparse in many areas and primarily includes fetterbush, wax myrtle, and myrtle-leaf holly. The ground cover in many of these areas is sparse to non-existent, and includes Virginia chain-fern, netted chain-fern, and sphagnum moss.

Wetland Forested Mixed, FLUCFCS Code 630 (524 acres ±)

This community type, comprising 18.7% of the site, includes mixed hardwoods and coniferous species in which neither achieves greater than 66% dominance in the canopy. Typical canopy species in these on-site communities includes slash pine, loblolly bay, red maple, sweetgum, laurel oak, water oak, and cypress. The typical shrub layer comprises fetterbush, bitter gallberry, greenbrier, myrtle-leaf holly, and saw palmetto. Herbaceous species include primarily beakrushes, netted chainfern, yellow-eyed grass, St. John's wort, sphagnum moss, and Virginia chainfern.

Harvested Wetland Forested Mixed, FLUCFCS Code 6301 (225 acres ±)

Several large areas (roughly 8% of the site) within the study area are characterized as Harvested Wetland Forested Mixed. In this community, a large portion of the hardwoods and softwoods have been harvested. Very sparse canopy remains including tupelo (*Nyssa* spp.), loblolly bay, slash pine, and cypress. The brush layer is generally non-existent with the exception of immature saw palmetto, bitter gallberry, fetterbush, myrtle-leaf holly, and slash pine. The herbaceous layer most often dominates this community and includes such species as beakrushes, yellow-eyed grass, redroot, dog fennel, meadow-beauty, Virginia chainfern, and sphagnum moss.

Vegetated Non-Forested Wetlands, FLUCFCS Code 640 (5 acres ±)

This community type occurs on 0.2% of the site, most often where the ground has been disturbed as a result of silvicultural practices or feral hog activity with no replanting of pine. These low-lying areas lack shrub and canopy layers, are seasonally flooded, and contain herbaceous vegetation dominated by dog fennel, yellow-eyed grass, goldenrod (*Solidago* spp.), bulrushes (*Scirpus* spp.), beakrushes, yellow-eyed grass, redroot, and meadow beauty.

Ditches, FLUCFCS Code 510 (15 acres ±)

Linear water features occur on the site primarily in the form of manmade ditches adjacent to timber access roads that traverse both upland and wetland community types. Approximately 0.5% of the study area comprises this land type. Most of the ditches are connected to the Moccasin Branch tributary along the western portions of the site. Typical vegetation found alongside of the ditch banks includes Carolina willow (*Salix caroliniana*), cattail (*Typha* spp.), immature cypress, maidencane (*Panicum hemitomon*), immature red maple, and

Virginia chainfern.

Map B in the Maps section is an aerial photograph of the subject property, and Map C illustrates the existing land uses and vegetative associations as described above.

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.

Wildlife Survey Methodologies

Prior to establishing wildlife survey methodologies, the likelihood of listed species occurring at the Elkton Site was determined from compiled background information. Probability of occurrence was estimated based on results of the habitat community surveys, draft maps, and a literature review of habitat needs for each species. As indicated in published survey methodologies, several of the listed species are inherently difficult to identify due to low population numbers, and cryptic and/or solitary behavior. Therefore, various survey methods have been established to maximize potential observations. See Table 12-2 for a list of all species potentially occurring on the site. See Map G for the location of transects and survey stations.

Table 12-2: Listed Wildlife Species Potentially Occurring On-Site

SPECIES	FEDERAL STATUS (1)	STATE STATUS (2)	FNAI STATUS *(3)	HABITAT (4)	PROBABILITY OF OCCURRENCE IN PROJECT AREA (5)
REPTILES					
American alligator *Alligator mississippiensis*	SAT	SSC	G5/S4	Lakes, ponds, and streams	Moderate
Eastern indigo snake *Drymarchon couperi*	T	T	G4T3/S3	Wet prairies to xeric uplands	Moderate
Florida pine snake *Pituophis melanoleucus mugitus*	---	SSC	G4T3	Pine flatwoods, sandhill, scrub	Low
Gopher tortoise *Gopherus polyphemus*	---	SSC	G3/S3	Sandhill, sand pine scrub, coastal strand	Low
AMPHIBIANS					
Gopher frog *Rana capito*	---	SSC	G3/S3	Pine flatwoods, sand pine scrub, xeric hammocks	Low
BIRDS					
Bald eagle *Haliaeetus leucocephalus*	LT, PDL	T	G4/S3	Coastal areas, bays rivers, lakes; nests in tall mature trees	Low-Moderate
Roseate Spoonbill *Ajaja ajaja*	-	SSC	G5/S2	Marine tidal flats, coastal marshes, freshwater sloughs	Low
Limpkin *Aramus quarauna*	-	SSC	G5/S3	Freshwater marshes, swamps, ponds and river margins	Moderate
Little blue heron *Egretta caerulea*	-	SSC	G5/S4	Shallow, freshwater, brackish and saltwater habitats	Moderate
Red-cockaded woodpecker *Picoides borealis*	E	SSC	G3/S2	Open, mature pine woodlands with diverse forbs, grasses and shrubs	Low
Snowy egret *Egretta thula*	-	SSC	G5/S3	Inland/coastal wetlands, streams,	Moderate

				lakes, swamps	
Peregrine Falcon *Falco peregrinus*	-	E	G4/S2	Sandhills, scrub, xeric hammocks, coastal habitats, wet and dry prairie, flatwoods, marshes	Low
Southeastern American Kestrel *Falco sparverius paulus*	-	T	G5T4/S3	Open pine habitats, woodland edges, prairies and pastures	High
Tricolored heron *Egretta tricolor*	-	SSC	G5/S4	Coastal environments, freshwater thickets	Moderate
White ibis *Eudocimus albus*	-	SSC	G5/S4	Forested wetlands, wet prairies, swales, ditches	Moderate
Wood stork *Mycteria americana*	E	E	G4/S2	Cypress stands, mixed hardwood swamps, sloughs, and artificial habitats (dredge areas, ditches)	High
MAMMALS					
Florida black bear *Ursus americanus floridanus*	---	T	G5T2/S2	Forested wetland and upland communities	Moderate
Florida mouse *Podomys floridanus*	---	SSC	G3/S3	Scrub and sandhill	Low
Sherman's fox squirrel *Sciurus niger shermani*	---	SSC	G5T3/S3	Sandhill , pine flatwoods and ruderal habitats with scattered oaks and pines	Low

** As indicated in DCA Rule 9J-2.041*

FNAI ranks indicate global (G) and state (S) rarity, if subspecies listed (T)
1: critically imperiled, or less than six occurrences
2: imperiled or less than 20 occurrences
3: rare, restricted, or otherwise vulnerable to extinction
4: apparently secure
5: demonstrably secure

Wetland surveys

The most significant on-site wetland communities are associated with Moccasin Branch and Deep Creek, associated tributaries, and scattered isolated depressional wetlands. Surveys for the following species were conducted for five days: wood stork, bald eagle, limpkin, little blue heron, snowy egret, tricolored heron, and white ibis. Non-forested and sparsely vegetated wetlands determined to be less than ten acres in size and solitary in nature will be visually and aurally spot surveyed. To ensure sufficient coverage of wetlands determined to be greater than ten acres or densely vegetated, visual and aural observations were conducted along pedestrian transects with random 5-minute point call surveys conducted along each transect. All observed nesting and roosting sites were mapped, as applicable, using handheld Global Positioning System (GPS) units.

Upland surveys

The habitats suitable for listed species include Mixed Hardwoods (438), Coniferous Plantation (441), and Forest Regeneration Area (443). The species determined to have the highest occurrence potential include Sherman's fox squirrel, Florida black bear, gopher tortoise, and burrow commensal species such as the gopher frog and eastern indigo snake.

Mammals

Sherman's Fox Squirrel, Florida Black Bear

Upland mammal surveys were conducted. Suitable upland habitat was surveyed via meandering pedestrian transects and trail roads were surveyed for tracks and scat.

Florida Mouse

Pedestrian surveys were conducted throughout the uplands on the site and no suitable habitat for this species was identified.

Reptiles and Amphibians

Gopher Tortoise

As recommended in the *Wildlife Methodology Guidelines,* suitable habitat

areas more than 50 acres were surveyed using one transect for every eight acres. Suitable habitat areas less than 50 acres were surveyed using one transect for every seven acres. To ensure thorough coverage, 20 meter wide transects were established in areas of known gopher tortoise populations within the on-site disturbed sandhill habitat. The required surveyed acreage was achieved by increasing transect length and number accordingly.

Eastern Indigo Snake, Florida Pine Snake, Gopher Frog

Pedestrian surveys for herpetofaunal species were conducted in conjunction with the upland wildlife surveys. Please refer to the *Upland Survey* methodologies for additional details. In addition, frog call surveys were conducted when possible.

Birds

Southeastern American Kestrel and Red-Cockaded Woodpecker

Surveys for these species were conducted in conjunction with the habitat mapping and upland surveys. Specific surveys for the Southeastern American Kestrel were conducted in recently clear-cut areas located throughout the site. Binoculars and a spotting scope were used to further investigate avian species observed perching near or hovering over these areas. In addition, observed cavity nests were inspected for activity.

Red-cockaded woodpecker investigations were conducted during the upland wildlife surveys. Biologists specifically looked for the characteristic cavity nests surrounded by seeping resin that red-cockaded woodpeckers create.

Plant Survey Methodologies

In preparation for listed plant surveys, pertinent sources were reviewed to identify those species that potentially occur in St. Johns County, and within which habitat type they are likely to occur. Subsequent to review of background information and identification of suitable habitats for protected plant species, a watch list was compiled and was distributed to qualified ERS personnel to use for initial survey purposes during natural communities assessments. Initial assessments of the onsite natural communities, their vegetative structure, and position in the landscape, aided in further refining the on-site areas that would have the highest probability of listed plant species occurrence. Once identified, the areas of highest occurrence potential were summarized for subsequent field

assessments. Protected plant surveys were initiated and continued until all representative areas had been assessed. Table 12-3 identifies the protected plant species that potentially inhabit the site and their probability of occurrence.

Table 12-3: Plant Species of Concern Potentially Occurring On-Site

SPECIES	DRI LIST (a)	FEDERAL STATUS	FLORIDA STATUS (b)	HABITAT	PROBABILITY OF OCCURRENCE
Bartram's ixia	I	N	T	Wet flatwoods, wet prairies	Moderate
Southern milkweed		N	T	Wet flatwoods and prairies, seepage slopes, pitcherplant bogs.	Moderate
Chapman's Sedge		N	E	Pine flatwoods and savannahs	Moderate
Sand-dune Spurge		N	E	Sandy openings in coastal scrub, stable dunes.	Low
Coastal Vervain		N	E	Coastal habitats	Low
Florida toothache-grass	I	N	E	Sandhills and dry pinelands	Low
Lakeside Sunflower		N	E	Wet flatwoods and prairies	Moderate
Curtis's Loosestrife		N	E	Wet roadside ditches and clearings in wet flatwoods; sunny patches in stream thickets and floodplain forests	Moderate
Pigmy Pipes		N	E	Upland mixed hardwood forest, hammock, mesic and xeric hammock, sand pine and oak scrub	Moderate
St. John's black-eyed Susan	I	N	E	Wet/mesic flatwoods, bogs, savannas, seepage slopes, roadside ditches	Moderate
Pond Spice	I	N	E	Edges of baygalls, flatwoods ponds, and cypress domes	Moderate
Celestial Lilly		N	E	Wet flatwoods, marshes, cabbage palm hammocks edges.	Moderate
Florida Beargrass		N	T	Scrub, closed canopy hammocks, xeric oak habitat.	Low
Florida Mountain-mint	R	N	T	Pineland, sandhills, and scrub	Low
Ciliate-leaf Tickseed		N	LE	Limestone-based soils of floodplains along small streams.	Low

[a]*Source: Rules of the Department of Community Affairs, Listed Plant and Wildlife Resources Uniform Standard Rule, Chapter 9J-2.041 FAC, July 1998*

CI=DRI critically imperiled listed plant species
I= DRI imperiled listed plant species
R= Rare

[b]*Source: Rules of the Department of Agriculture and Consumer Services Division Plant Industry Chapter 5B-40 FAC, Preservation of Native Flora or Florida. 1998.*

E=Endangered
T=Threatened
C=Commercially exploited

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.

As listed in Table 12-2, 18 State and/or Federally-listed wildlife species are indicated as potential species to occur within the project boundaries. Of these protected species, the following listed species or their sign were observed within the project boundaries: tricolored heron, southeastern American kestrel, and wood stork.

Formal survey methodologies were developed and submitted to Mr. Rick McCann of the Florida Fish and Wildlife Conservation Commission (FWC) and conducted by ERS biologists to determine the population size, habitat utilization, and extent of their presence on the site.

The following sections provide details of habitat needs, extent of on-site suitable habitat, and survey results for protected wildlife species that potentially may occur on the site. See Table 12-4 for a list of all wildlife species observed on the site.

Wetland Habitat Survey Results

Non-forested and sparsely vegetated wetlands determined to be less than ten acres in size and solitary in nature were visually and aurally spot surveyed. To ensure sufficient coverage of wetlands determined to be greater than ten acres or densely vegetated, visual and aural observations

were conducted along pedestrian transects with random 5-minute point call surveys conducted along each transect. Transect and spot sampling locations are illustrated on Map G.

Wetland Bird Species

The wood stork, limpkin, American bald eagle, little blue heron, snowy egret, tricolored heron, and white ibis were the subject species during the wetland bird surveys. These survey iterations were conducted in wetland transition zones and herbaceous wetland communities, through inundated areas and along stream bottomland corridors to encompass the niches required by any or all of these species. The present agricultural and silvicultural activities throughout the site, dense canopy, and understory associated with the stream bottomlands, and extensive disturbance in the herbaceous wetland communities have decreased the forage, nesting and loafing potential for this site. However, a pair of wood storks was sighted on Wetland Transect 2 and a tricolored heron was observed perched along Upland Transect 12 (Map G). No other individuals or evidence thereof were observed.

Upland Habitat Surveys Results

These formal protected wildlife survey results are based on pedestrian transects conducted for five days, beginning 29 March 2006 and ending 14 April 2006.

Mammals

Florida Mouse

According to the scientific literature, the Florida mouse is exclusively a burrow commensal species, using existing gopher tortoise burrows to construct side chambers and tunnels off the main tortoise burrow. It prefers fire-maintained, xeric uplands, with scrub serving as its primary habitat. Sandhill vegetative communities, while not preferred, serve as secondary habitat. On-site investigations conducted by ERS resulted in preliminary indications of a low probability that the Florida mouse is present on the site, due to the lack of suitable habitat.

Sherman's Fox Squirrel

Optimal habitat for the Sherman's fox squirrel is fire-maintained, longleaf pine, turkey oak dominated sandhill and flatwoods communities. In addition to high sandhill habitat, the Sherman's fox squirrel will also inhabit the lower slopes of the sandhill in seasons of poor oak mast crops. Other oaks (i.e. post oak, live oak, laurel oak, and bluejack oak (*Q. incana)*

provide an additional food source and nesting material within the established home range). Based on the preferred habitat and the needs of this species and the silvicultural and agricultural activities occurring throughout the site, ERS determined that there is low probability of this species occurrence on the site.

Florida Black Bear
The diverse habitat requirements for the long-term sustenance of the Florida black bear necessitate large tracts of contiguous land. Pine flatwoods, hardwood swamps, cypress swamps, sand pine scrub, and mixed hardwood hammocks provide some of the more important habitats for the Florida black bear.

Due to the present and historical agricultural and silvicultural use of the study site and the surrounding area, potential habitat for the Florida black bear is minimal.

Black bear evidence, including, tracks and signs of foraging, was not observed on the site.

Reptiles/Amphibians

Gopher Tortoise
According to the scientific literature, the gopher tortoise prefers fire-maintained, xeric uplands, with scrub serving as its primary habitat. Secondary habitat includes dry pine flatwoods and disturbed areas such as pastures and road shoulders. On-site investigations conducted by ERS resulted in preliminary indications of a low probability that the gopher tortoise is present on the site, due to the lack of suitable habitat.

American Alligator
The American alligator commonly inhabits permanent bodies of water including, marshes, lakes, and rivers. Alligators may migrate into brackish or salt water but rarely remain there. This species is most active from spring through fall, with nesting in late spring and hatching in summer. Alligator activity decreases during cold weather, though basking does occur on sunny winter days. There is a moderate likelihood that American Alligator utilize the stream bottomland and tributaries that feed into the St. Johns River.

Eastern Indigo Snake and Florida Pine Snake
The Eastern indigo snake and Florida pine snake are burrow commensals associated with the gopher tortoise, requiring burrows for shelter and

wetland habitat for foraging.

The Florida pine snake prefers open canopy with undisturbed, dry, sandy soils, but uses wetland habitats during periods of drought. Females have a range of 70 to 75 acres, while males can range 2-8 times that of the female. The majority of upland communities have been disturbed for silviculture and managed for fire suppression. Therefore, there is a low likelihood this species utilizes habitat on this site.

The Eastern indigo snake requires large tracts of land, as their territory can exceed 470 acres and encompass habitats such as sandhills, scrub, wet prairies and ponds. The habitats provided by this site are of suitable quality and size for this species to recruit successfully. Dependent on apposite gopher tortoise burrow habitat, this species has a moderate to high likelihood of existing on this site.

Neither the Eastern indigo snake nor the Florida pine snake or evidence of their presence was observed during the formal surveys.

Gopher Frog

This species preferred breeding habitats include seasonally flooded, grassy ponds and cypress heads and other ephemeral wetlands, lacking in carnivorous fish populations. The gopher frog is a gopher tortoise commensal species, with the gopher tortoise burrow as its primary shelter location. Frog call surveys were conducted along pedestrian transects near potential habitat.

None of the frog calls heard during pedestrian surveys were identified as the gopher frog.

Birds

Red-cockaded Woodpecker

The red-cockaded woodpecker is a small bird that excavates cavity nests in fire-tolerant, mature, live, pine trees; preferably long leaf pine but slash pine will be used as a substitute. Preferred habitat is closely associated with fire maintained habitats consisting of mature trees, open understory with a diversity of grasses, forbs and small shrub species. Both the Coniferous Plantation and Forest Regeneration area would provide attractive nesting and forage habitat for this species. However no individuals, or evidence of individuals, were observed on the site.

Southeastern American Kestrel

The Southeastern American kestrel (*Falco sparverius paulus*), the smallest falcon in the U.S., is a subspecies of the American kestrel (*Falco sparverius*). This species is commonly found in Florida throughout the year, but seasonal occurrence is complicated by arrival of northern migrants in winter. The subspecies that breeds in Florida is listed, but northern migrants are not listed. Northern migrants generally arrive in September and depart by March. Individuals observed during the breeding season (April – September) are identified as the subspecies. Those identified at other times are generally undetermined.

The preferred habitat of this falcon includes open pine habitats, woodland edges, prairies, and pastures. Two sightings of the Southeastern American Kestrel were made while performing the formal wildlife surveys (Upland transects 4 and 7). See Map G.

Table 12-4:
Wildlife Species Observed On-Site, March – April 2006

COMMON NAME	TAXONOMIC NAME
Reptiles	
Southern Black Racer	*Coluber constrictor priapus*
Green anole	*Anolis carolinensis*
Amphibians	
Southern Toad	*Bufo terrestris*
America Green Tree Frog	*Hyla cinerea*
Birds	
American Crow	*Corvus brachyrhychos*
Gray Catbird	*Dumatella caroliniensis*
Common Yellowthroat	*Geothlypis trichas*
Great Blue Heron	*Ardea herodias*
Killdeer	*Charadrius vociferous*
Northern Cardinal	*Cardinalis cardinalis*
Northern Mockingbird	*Mimus polyglottos*
Northern Parula	*Parula americana*
Pileated Woodpecker	*Dryocopus pileatus*
Red-tailed Hawk	*Buteo jamaicensis*
Red-winged Blackbird	*Agelaius phoenicus*
Ring-necked Duck	*Aythya collaris*
Rufous-sided Towhee	*Pipilo erythrophthalmus*
South-eastern American Kestrel	*Falco sparverius paulus*
Swallow-tailed Kite	*Elanoides forficatus*
Tricolored Heron	*Egretta tricolor*
Turkey Vulture	*Cathartes aura*
Whippoorwill	*Caprimulgus vociferus*
Wild Turkey	*Meleagris gallopavo*
Wood stork	*Mycteria americana*
Mammals	
Cotton-tailed Rabbit	*Lepus sylvaticus*
Feral Hog	*Sus scrofa*
Gray Squirrel	*Sciurus carolinensis*
Nine-banded Armadillo	*Dasypus novemcintus*
Raccoon	*Procyon lotor*
White-tailed Deer	*Odocoilius virginianus*

Plants

A total of 14 state-listed plant species are listed in Table 12-3 to potentially occur in St. Johns County. During habitat mapping surveys, no listed plant species were identified.

Conservation Areas / Bird Colonies

Based on the Florida Department of Environmental Protection database, no Wild and Scenic Rivers, Aquatic Preserves, or Outstanding Florida Waters exist within the project limits. In addition, the project site was not listed in the database of waterbird colony sites.

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

Listed wildlife Species

Evidence of three listed wildlife species, tricolored heron, Southeastern American kestrel, and wood stork were observed within the project boundaries. Due to the minimal presence of non-impacted, natural habitat communities, field surveys and record searches revealed the project site is only minimally utilized by listed species. As this DRI project is being designed to protect significant high-quality on-site wetland resources, it is unlikely that development of this DRI will adversely affect the observed listed wildlife species to a significant extent.

Listed Plant Species

No federally- or state-listed plant species were observed on-site. No documented observations were listed with FWC and FWS within the study area.

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.

It is understood that the natural forested systems associated with Moccasin Branch and Deep Creek provide suitable habitat for many species. The need to minimize impacts to these systems was realized in the initial planning stages of this DRI. Preservation and/or enhancement of these interconnected systems will provide important benefits to fish and wildlife through habitat preservation within the extensive conservation corridor throughout the property.

The proposed on-site preservation (Map H) is strategically designed to adequately provide beneficial wildlife habitat and mobility corridors through the property. Additionally, wildlife crossings will be designed and implemented at areas where proposed roads will transect wetlands to allow for a minimization of wildlife mortality in these areas.

In addition to those wetland/upland areas included in the conservation corridor, additional isolated and contiguous wetlands and critical-habitat upland areas, yet to be determined, will be preserved wherever impacts can be practicably avoided.

QUESTION 13 – WETLANDS

A. If there are wetlands on the site, discuss and specify the following:

1. Acreage and percentage of property which is currently wetlands. These wetlands should be shown on Map F, Vegetation Associations and identified by individual reference numbers. (These numbers should be utilized in responding to the other sub-questions.)

The wetlands within the Subject Property have yet to be formally delineated pursuant to the methodologies of the U.S. Army Corps of Engineers (COE) Wetlands Delineation Manual (1987), and Chapter 62-340 Florida Administrative Code (FAC), governed by the Florida Department of Environmental Protection (FDEP) and the St. Johns River Water Management District (SJRWMD). At this time, only preliminary wetland assessment data has been used to identify the natural communities and corresponding acreages present on the site, although this level of assessment does provide for the identification of all on-site wetlands of high ecological and regional value. Map F identifies the approximate wetland boundaries, and Table 13-1 summarizes the various wetland communities and provides the approximate acreage of each type.

Table 13-1
Acreage of Wetland Communities and Surface Waters On-Site

COMMUNITY	FLUCFCS CODE	APPROX. ACREAGE
Wetland Communities		
Bay Swamp	611	68
Stream Bottomland	615	73
Mixed Wetland Hardwoods	617	170
Cypress	621	4
Wetland Forested Mixed	630	524
Harvested Wetland Forested Mixed	6301	225
Vegetated Non-Forested Wetlands	640	5
Other Surface Waters		
Ditches	510	15
Total Approximate Wetland Acreage:		1084

Source: Environmental Resource Solutions, 2004

Prior to the formal application for any construction-level permitting issued by the State and Federal regulatory agencies, all wetlands on the subject property will be delineated and surveyed on a project by project basis. Descriptions of the wetland communities are based on the Florida Land Use, Cover and Forms

Classification System (FLUCFCS) and are provided in Question 12 and Map F of this ADA.

Wetlands comprise approximately 1,084 acres± (39%) of the 2,808 acre± Elkton project area. The dominant wetland community types, making up approximately 65% of the on-site wetlands, are Wetland Forested Mixed (FLUCFCS Code 630) and Mixed Wetland Hardwoods (617). The majority of these wetlands occur within large contiguous systems that comprise the tributaries of Deep Creek. In general, the central portions of these contiguous wetland systems are high quality, with moderate, more disturbed quality portions occurring on the fringes. Silviculture activities have occurred along the periphery of many of the natural wetland areas, resulting in disturbed wetland communities exhibiting a higher density of opportunistic species such as myrtle leafed holly (Ilex myrtifolia) and wax myrtle (Myrica cerifera).

2. Historic hydroperiods and seasonal water elevations of on-site wetlands.

Hydroperiods and seasonal high water table elevations within the wetlands that occur on the Elkton project site are variable and dependent upon both natural and human factors. Natural factors influencing these parameters include their location in the landscape, watershed characteristics, local weather influences, soil type, surface contours, groundwater table elevation, and vegetation. Silvicultural management activities have altered the hydroperiods and seasonal high water table elevations of existing wetlands in many areas.

Based on the conceptual site plan, the majority of the large contiguous wetland systems will be preserved (Map H). The hydroperiods within wetlands range from ephemeral in isolated systems, to semi-permanent in portions of the deeper swamps. The proposed drainage systems for the Elkton project will be designed and permitted in compliance with SJRWMD rules that require protection from adverse alterations to wetland hydroperiods adjacent to development.

3. Acreage and location of wetlands which are to be preserved in their natural or existing state, including proposed hydroperiods, seasonal water elevations and methods for preservation.

Based on the Elkton Preliminary Master Plan (Map H), the vast majority of the two highest quality and most functional wetland community types, including the Wetland Forested Mixed and Streams and Lake Swamps (615) communities, will be avoided for development purposes and preserved in perpetuity. These areas of preservation, along with appropriate 25' average upland buffers, (10' minimum per SJC LDC), are included in the areas identified as greenway corridor on Map H. In addition to those wetland areas included in the

conservation area, additional isolated and contiguous wetlands will be preserved wherever impacts can be avoided during future, more resolute, site planning efforts.

A final site plan has not been completed to accurately assess the total specific amount and location of preserved or impacted wetland areas within the Elkton property. However, the majority of the contiguous forested and higher quality isolated wetland systems will be preserved and protected by perpetual conservation easements. Locations and configurations of these wetlands are depicted on Maps F and H.

4. **Acreage and location of areas to be enhanced, including proposed hydroperiods, seasonal water elevations and methods of enhancement.**

   There are many on-site opportunities to provide an ecological lift within previously disturbed wetlands through hydrologic and/or vegetative enhancement. Since the site plan is currently preliminary in nature, direct identification of the areas to be enhanced and/or the specific enhancement methods to be employed is not practicable at this time.

5. **Actions taken to minimize or mitigate impacts on wetland areas, including maintaining the hydroperiod and providing buffers.**

   From the initial stages of planning the Elkton project, avoidance and minimization of impacts to environmentally sensitive areas has played a major part in the development of the site design. The importance of the Moccasin Branch and Deep Creek watersheds prompted the avoidance of the majority of wetlands and tributaries associated with these systems. Minimization considerations have included proposing road crossings at the narrowest wetland areas and/or at areas where crossings already exist, and limiting residential, commercial, and institutional lot fill, where practicable, to lower quality wetlands. Once the wetland jurisdictional determination for both COE and SJRWMD is conducted, during future permitting efforts, proposed encroachments will be reviewed in an effort to further minimize impacts. The type and amount of mitigation will be determined during the permitting process utilizing the Wetland Rapid Assessment Procedure (WRAP) for COE and the Uniform Mitigation Assessment Method (UMAM) for SJRWMD.

   To satisfy all applicable state and local regulations, upland buffers adjacent to wetlands will be incorporated into the site where practicable.

6. **Acreage and location of wetlands which will be disturbed or altered, including a discussion of the specific alterations and disturbances.**

As discussed above, a final site plan has not been presented to accurately assess the total amount (acreage) and location of wetland impact areas within the Elkton property. Furthermore, at this time it is difficult to assess the location or amount of wetlands that will be proposed to be disturbed.

Proposed impacts will be limited to those necessary to achieve an economically viable project while protecting the integrity of the high quality connected wetland systems. The majority of impacts will be to isolated wetlands and peripheral extensions of the forested systems that have been degraded by intensive silvicultural management activities, in order to accommodate the proposed plan.

Wetland impacts resulting from development of a local roadway network are unavoidable due to the landscape configuration of the on-site wetlands. Wetland crossings required to access upland areas have been located within the narrowest portion of the wetland to minimize wetland impacts to the maximum extent practicable.

The Developer has made a conscious effort to consider all potential wetland impacts and will initiate wetland permitting with COE and SJRWMD to address these issues. During this process, impacts will be evaluated in accordance with regulatory criteria, and detailed mitigation plans will be developed to address authorized impacts.

7. Precautions to be taken during construction to protect wetland areas.

Best Management Practices (BMP's) will be employed throughout construction phases that are located within or adjacent to sensitive wetland preservation areas, including buffer zones. The location of wetland preservation areas and corresponding wetland buffers will be surveyed and staked in the field to determine the location of erosion control fencing, hay bales, etc. which will be installed to protect the wetlands from adjacent construction activities. In addition, the contractor will be responsible for obtaining National Pollutant Discharge Elimination System (NPDES) Permits from the Florida Department of Environmental Protection (DEP) prior to construction that may affect wetland areas. Any dewatering activities that may be necessary to construct the proposed surface water management system will be discharged to containment or holding areas located in uplands to prevent the discharge of waters to wetlands. Furthermore, should any discharges be proposed to reach any jurisdictional wetland areas, the contractor will secure the necessary NPDES Groundwater Discharge Permit. Any newly exposed surfaces will be seeded or sodden to prevent erosion as practicable within 14 days of being exposed. Any excavated wetland spoil material will be stockpiled in uplands and contained within siltation curtains, as necessary, to ensure no adverse impacts to water quality. All prudent and necessary steps will be followed for the duration of the

project to ensure protection against water quality contamination from erosion resulting from construction.

8. If available, provide jurisdictional determinations.

As discussed above, the wetlands within the Elkton project have not yet been formally delineated in the field. Upon initiation of environmental permitting with SJRWMD and COE, the on-site wetlands will be delineated.

B. Provide any proposed plans (conceptual or specific) for created or enhanced wetland areas, including littoral lake slopes, buffers, vegetative species to be planted, etc.

Conceptual plans for the creation or enhancement of wetland areas, if needed, will be further defined after impacts to jurisdictional wetlands are finalized during subsequent environmental permitting efforts. All mitigation will be determined during permitting utilizing the Uniform Method Assessment Method (UMAM) for COE and SJRWMD.