DRAFT
FISH AND WILDLIFE COORDINATION ACT REPORT

SUWANNEE RIVER MAINTENANCE DREDGING DIXIE COUNTY, FLORIDA

Prepared for

U.S. Fish and Wildlife Service
Jacksonville Ecological Services Field Office
Jacksonville, Florida

Prepared by

Baton Rouge, Louisiana

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Prepared for

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Jacksonville, Florida

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EXECUTIVE SUMMARY

U.S. FISH AND WILDLIFE COORDINATION ACT REPORT

SUWANNEE RIVER DIXIE COUNTY, FLORIDA

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers is proposing to perform maintenance dredging and prepare a dredged material management plan on Wadley Pass (also known as McGriff Channel) at the mouth of the Suwannee River, Dixie County, Florida. The channel has shoaled in places, and water depths as shallow as 3.0 feet (ft) often impede boat traffic. The proposed dredging would provide a channel of at least 6 ft deep and 75 ft wide. Sediment would be hydraulically dredged and pumped to Upland Disposal Site 5 (U.S. Army Corps of Engineers preferred alternative).

There are three protected species potentially affected by the operation, the endangered West Indian manatee, the threatened Gulf sturgeon, and the threatened eastern indigo snake. Manatees are summer residents of the area and are subject to boat collisions. Standard manatee provisions are recommended during dredging.

Adult and subadult Gulf sturgeon migrate into the Suwannee River from the Gulf of Mexico in the spring and back into the Gulf in the fall; young overwinter at the mouth of the river. It is recommended that dredging be limited to summer, when the sturgeon are upstream and away from the project area.

The eastern indigo snake inhabits dry, well-drained sandy soils usually in association with the gopher tortoise. During the warmer months, the snakes can also be found in streams, swamps and pine flatwoods. Standard protection measures for the eastern indigo snake are recommended.

A natural resources survey and a state and Federal listed species survey were performed. Reports for the two surveys are included in Appendices B and C, respectively.

The preferred alternative includes the disposal of dredged material at Upland Disposal Site 5 in Dixie County, Florida. Dredged material would be pumped through a floating or sunken pipeline in the existing channel of Salt Creek, to a tributary and then to County Road 349. The pipeline would be placed along the northern side of CR 349, within the existing right-of-way. As an option to the preferred alternative, a portion of the dredged material may be used to stabilize the historic shoreline of Little Bradford Island. The placement site at Little Bradford Island is approximately 0.3 acre in area. Dredged material would be pumped from the nearby channel to an area approximately 20 ft wide and up to 400 ft long. Bulkheads would be placed at Mean Low Water (MLW) to protect the island's upland areas along Northern Pass.

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COORDINATION ACT REPORT

1.0 IDENTIFICATION OF PURPOSE, SCOPE, AND AUTHORITY

1.1 INTRODUCTION

The U. S. Army Corps of Engineers (USACE) has proposed to perform maintenance dredging in the federally authorized channel at Wadley Pass (also known as McGriff Channel) located at the mouth of the Suwannee River in Dixie County, Florida. The site is located near the community of Suwannee, Florida. In addition to performing the dredging, the USACE has prepared a Dredged Material Management Plan (DMMP), under which future maintenance dredging would be conducted for the next 20 years.

Historically, there have been three passes of the Suwannee River with channels to provide navigation: Alligator Pass, Wadley Pass/McGriff Channel, and East Pass (Figure 1).

On August 21, 1985, the U.S. Fish and Wildlife Service (Service) issued a Jeopardy Biological Opinion for the proposed dredging of Alligator Pass. The Service did not concur with a USACE conclusion that the dredging would have no effect on the West Indian manatee. Rather, the Service stated that its primary concern was the potential destruction of *Ruppia* beds, which are summer feeding areas for a population of manatees. An additional concern was the increased potential for boat-manatee collision injuries or fatalities.

It was noted in the Biological Opinion that aerial surveys between 1982 and 1985 showed 43 manatees in Alligator Pass, 21 in East Pass, and 6 in Wadley Pass. A similar distribution of manatees was found from satellite tracking. The Service concluded that the greater utilization by manatees at Alligator Pass and East Pass was a result of fewer boats and widespread *Ruppia* beds.

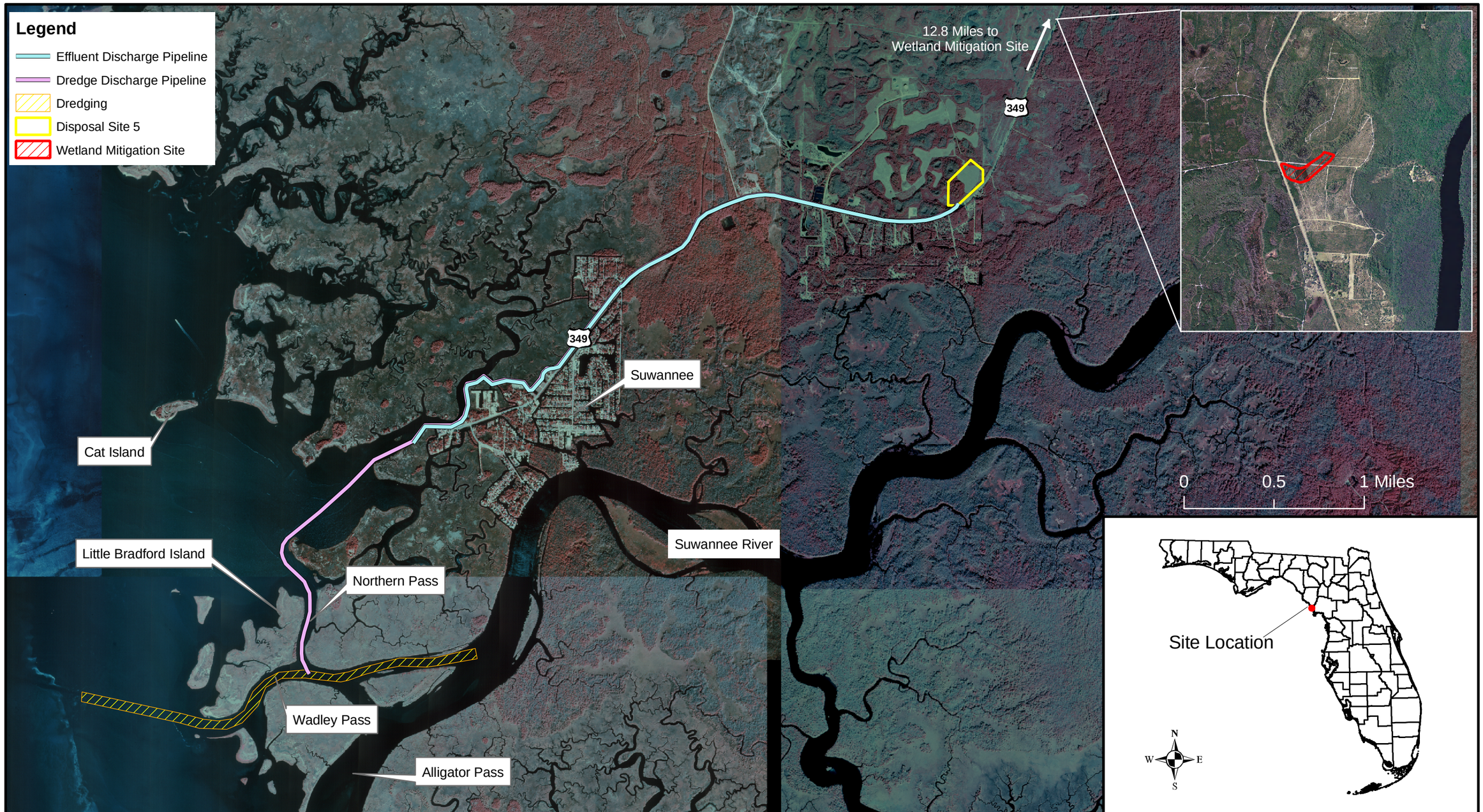
As a result of the Biological Opinion, Federal plans to dredge Alligator Pass were cancelled. Wadley Pass/McGriff Channel was selected to be the authorized navigation channel, and it was subsequently dredged in 1986 by the Suwannee River Authority to a depth of 5-7 feet (ft).

East Pass was the designated Federal navigation channel from 1890 to 1999, at which time the 1999 Water Resources Development Act designated Wadley Pass for maintenance as part of the Federal Project.

1.2 PURPOSE AND SCOPE OF THE PROJECT

1.2.1 Purpose and Need

As a result of the “No-Name” storm of March 1993, dredged material from adjacent spoil banks entered Wadley Pass/McGriff Channel and created shoaling at several locations. Depths at certain locations in the channel are as shallow as 3.0 ft during mean low tides. During spring tides it is necessary for many boats to pass the shallows



SITE LOCATION MAP

Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

USGS Suwanee NE (3/6/1994), Suwanee SE (1/21/1994), East Pass NW (3/6/1994) and East Pass SW (3/6/1994) DOQQs

GEC
Gulf Engineers & Consultants, Inc.

Figure: 1
Date: September 2006
Scale: 1:34,000
Source: GEC/FFWCC

“on plane.” At particularly low tides, as when tides are wind-driven, the channel is impassible by a majority of boats of the area.

The small community of Suwannee, located at the mouth of the Suwannee River, is dependent on water access to the lower reaches of the river and the Gulf of Mexico. There are three marinas in the community that provide berthing and storage of boats for residents and visitors. Recreational and commercial fishing, light tourism, and boating are the mainstays of the community economy.

If the channel is not dredged, sedimentation and shoaling of the channel will continue. Dredging of the channel would provide improved access by eliminating the shoals and improving safety.

The Suwannee River Federal Project does not have a dredged material management plan or a placement site for maintenance dredging. This project includes not only the dredging of the area but also the completion of a 20-year plan for performing maintenance dredging and the management and placement of dredged materials.

1.2.2 Project Scope

The recommended plan is to conduct maintenance dredging in the Federally authorized channel (Wadley Pass/McGriff Channel) just south and west of the community of Suwannee, Florida, in Dixie County. The project consists of maintenance dredging to provide a channel approximately 2.5 miles in length and approximately 75 ft wide by 6 ft in depth. Only those locations where sedimentation has resulted in depths lower than 6 ft will be dredged. Dredging will likely be accomplished using a suction dredge with a cutterhead. Approximately 160,694 cubic yards (cy) of sediment are anticipated to be generated from the maintenance dredging operation.

The USACE previously evaluated three general alternatives for placement of dredged material: upland site disposal, near-shore placement, and off-shore placement. The dredging operations associated with each alternative were the same. The difference was in the placement location associated with each alternative.

The local sponsor initially located four potential upland placement sites in a newly harvested pine plantation near the community of Suwannee. Because of excessive adverse impacts on wetlands and cultural resources, all four candidate upland placement sites were eliminated from further consideration. Nearshore placement at Cat Island was initially considered for dredged material but was subsequently eliminated from consideration because of concerns regarding the use of Federal funds for improving private lands. Although No-Name Island is not privately owned, nearshore placement at this site was also eliminated from consideration because of the lack of threatened cultural resources at the site. Nearshore placement at Little Bradford Island was carried forward for additional consideration because of the presence of threatened cultural resources at the site. However, Little Bradford Island does not have the capacity to accept the estimated amount of material to be dredged. The use of offshore sites for

the placement of dredged material was rejected because of the excessive pumping distance required (approximately 12 miles) and the expense in obtaining information necessary to prepare a detailed environmental impact statement in association with the Environmental Protection Agency (EPA).

The local sponsor subsequently identified a fifth upland disposal site, Upland Disposal Site 5, for consideration. The use of Upland Disposal Site 5 would result in no known impacts to cultural resources and minimal impacts to wetlands, which would in turn be mitigated through the creation of new wetlands at a designated mitigation site.

1.2.2.1 Alternative A – Upland Disposal Site 5 (Preferred Alternative)

Alternative A entails disposal of dredged material at Upland Disposal Site 5 (UDS 5). The disposal site (Figure 2) is located in Section 16 of Township 13 South, Range 12 East on the East Pass Quadrangle in Dixie County, Florida and covers 19.05 acres adjacent to County Road 349 (CR 349). Within the disposal area, dikes would be constructed to contain up to 242,183 cubic yards of dredged material.

Dredged material would be pumped to an upland disposal site through a pipeline. The pipeline would be a floating, pontoon-supported pipeline or a sunken, secured pipeline and would be routed through the existing channel of Salt Creek, through a tributary to CR 349 to the Town of Suwannee Water Treatment Plant. From this location the pipeline would proceed approximately six miles along the northern side of CR 349 within the right-of-way to the disposal site. Booster pumps would be placed in the pipeline, as needed. A sump at the disposal site would collect saltwater from the dewatering of the dredged material. A pump and any necessary booster pumps would pump the saltwater through a return line to the roadside canal adjacent to CR 349 near the Town of Suwannee Water Treatment Plant.

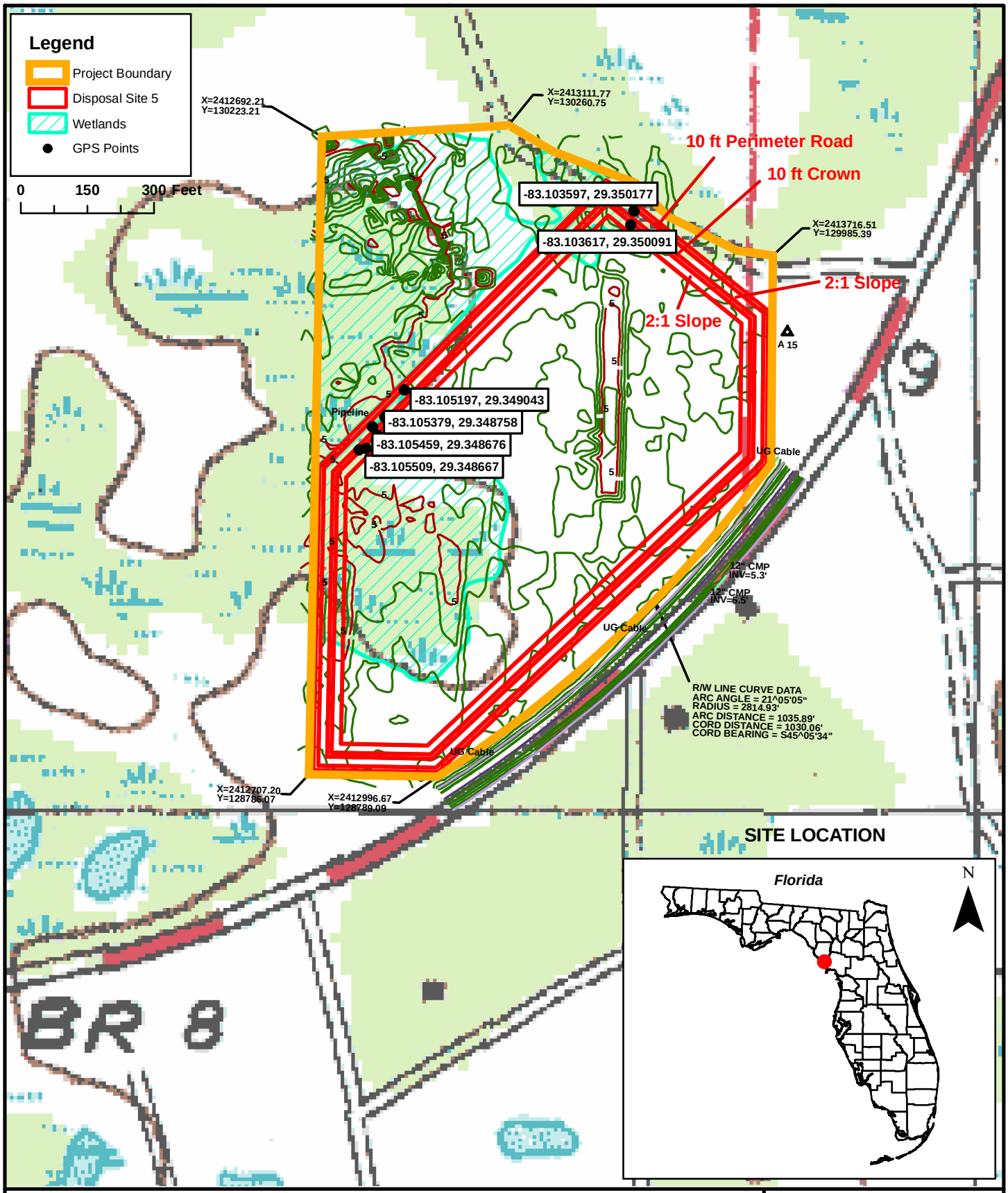
1.2.2.2 Alternative B – No Action (Status Quo)

Under the no-action alternative the status quo would be maintained. The channel would not be dredged.

1.2.2.3 Alternative Option – Little Bradford Island Shoreline Stabilization

This is an option to the placement alternative listed above. While most of the dredged material would be placed at the preferred alternative site, some would be placed along Little Bradford Island to stabilize the historic shoreline of the island.

The placement area is in Northern Pass adjacent to the east side of Little Bradford Island, in Section 36 of Township 13 South, Range 11 East on the Suwannee USGS Quadrangles (1954, PR 1983) in Dixie County (Figure 3). The placement site is approximately 0.3 acre in area. Dredged material would be pumped from the nearby channel to an area approximately 20 ft wide and up to 400 ft long. Bulkheads would be placed at Mean Low Water (MLW) to protect the island's upland areas along Northern

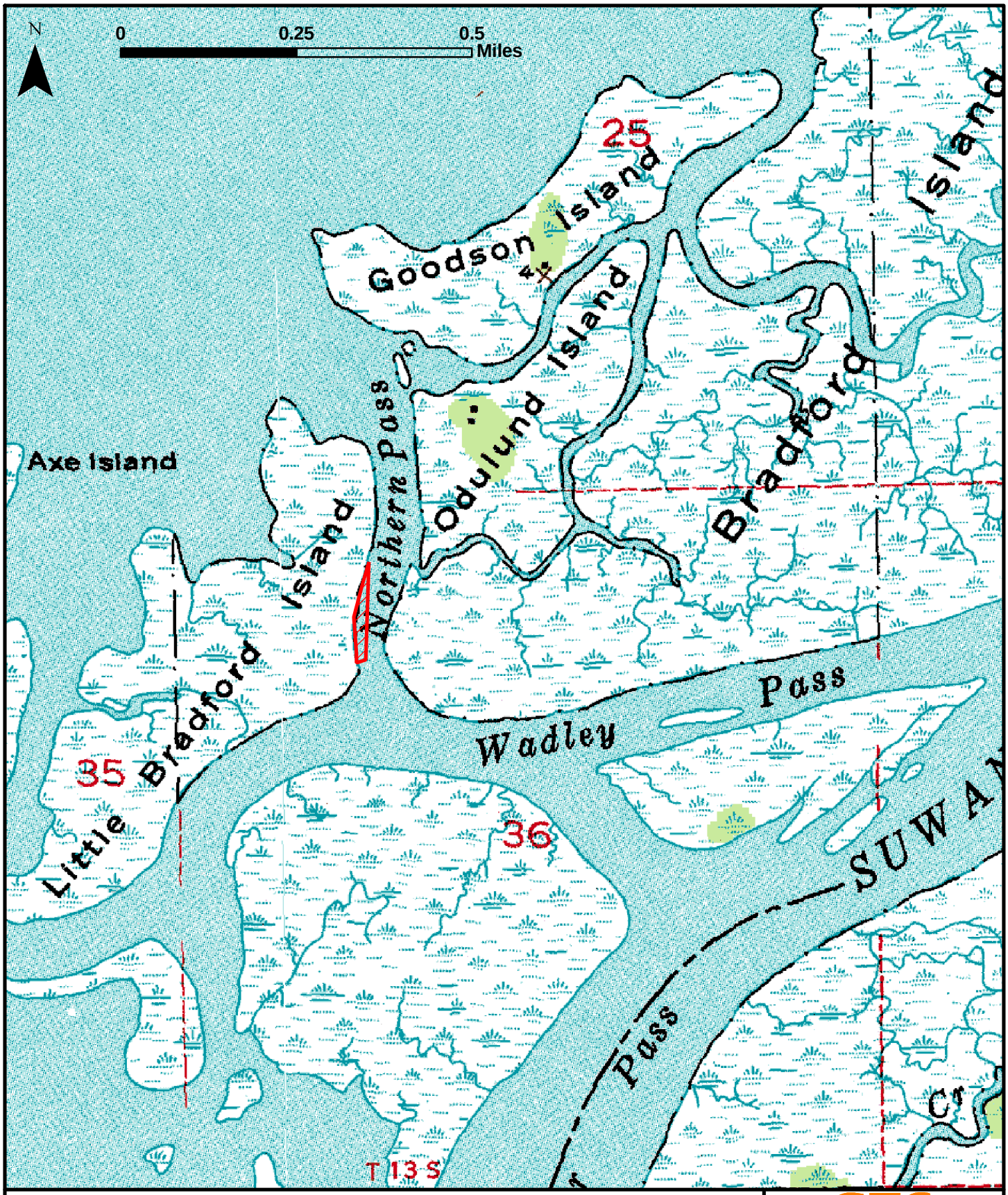


UPLAND DISPOSAL SITE 5
USGS QUADRANGLE OVERLAY
Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

USGS Quadrangle Suwanee (1994) and East Pass (1994)

GEC

Figure: 2
Date: September 2006
Scale:1:3,600
Source: USGS/USACE/GEC
Map Author: C. Perez



LITTLE BRADFORD ISLAND PLACEMENT SITE

Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

Quadrangle East Pass (1989)

GEC

Figure: 3
Date: September 2006
Scale:1:12,000
Source: GEC
Map Author: C. Perez

Pass. The sheet wall would have a standoff distance of approximately 15 ft from all upland areas on the island, and would extend into the wetlands north and south on Little Bradford Island.

1.3 AUTHORITY

The authorizing documents are as follows:

Acts	Work Authorized	Documents
14 June 1880	Channel 5 x 150 ft through entrance to Rolands Bluff, thence 4 x 60 ft to Ellaville	A.R. for 1879, p 857
19 September 1880	Channel 6 ft deep through Derrick Island Gap	Specified in Act
5 August 1977	Dredging through rock shoals below Ellaville and widening of channel through Derrick Island and other locations deauthorized.	Public Law 93-251
29 April 1999	Designation of Federal channel from East Pass to McGriff Channel (also known as Wadley Pass) for maintenance as part of the Federal channel.	HR 1480, WRDA

McGriff Channel has not been dredged since 1986. It was first dredged in 1957 and again in 1964 under the Suwannee River Authority, a board since disbanded.

2.0 DESCRIPTION OF STUDY AREA

2.1 PROJECT LOCATION

The project is located at the mouth of the Suwannee River in Dixie County, Florida, in Wadley Pass. The headwaters of the Suwannee River reach into Georgia. The main source is drainage of about 800 square miles of the Okefenokee Swamp. From here, it flows southwesterly some 200 miles from the Georgia-Florida state line through northwestern Florida to the Gulf of Mexico, forming a boundary between several Florida counties along its route.

A “bird’s-foot” river delta has formed at the mouth of the Suwannee River as a result of a low-slope coastal shelf and low tidal and current velocities in the area (Siegel *et al*., 1996; Plummer *et al*., 1999). East Pass, which meanders in a southerly direction towards the Gulf of Mexico, is about 300 ft wide and typically 20 ft deep. Less than a mile downstream from the town of Suwannee, West Pass becomes subdivided into Northern Pass, Alligator Pass, and Wadley Pass. Alligator Pass is about 600 ft wide and is typically 3 to 6 ft deep at high tide. Wadley Pass, which contains the navigation channel, is about 300 ft wide, and at most locations is typically 7 to 10 ft deep at high tide (Tillis, 1999).

2.2 WADLEY PASS/MCGRIFF CHANNEL

The authorized Wadley Pass navigation project originates at its junction with the West Pass of the Suwannee River at the southeastern corner of Bradford Island. It trends to the west along the southern shoreline of Bradford Island and Little Bradford Island and enters Suwannee Sound. The channel then extends slightly north of west

through Suwannee Sound, through a cut in the Suwannee Reef, and to a point approximately 0.2 mile beyond the cut. The channel was last dredged in 1986 apparently to a depth of 5 to 7 ft. The width of the channel varies from approximately 50 ft to approximately 100 ft. Material from the last dredging operation was mounded at the southeastern point of Little Bradford Island. The “No-Name Storm” of March 1993 produced a storm surge reported by residents of the community of Suwannee to have reached a height of 10 to 12 ft. Much of the material at Little Bradford Island (reportedly, as much as half) was eroded, and it reentered the channel, resulting in channel depths as shallow as 3.0 ft at mean low tide.

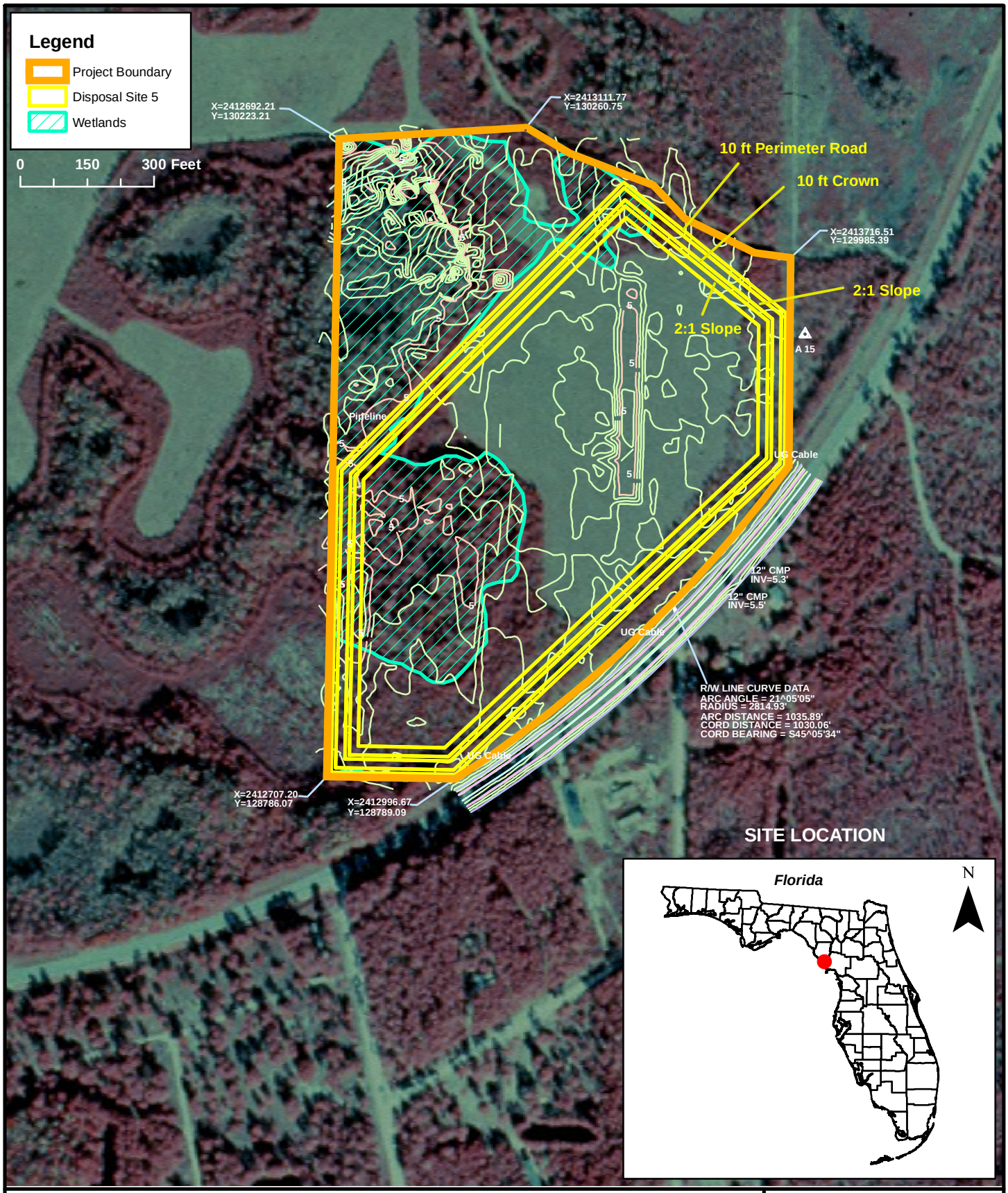
2.3 UPLAND DISPOSAL SITE 5

UDS 5 (Figure 4) is located northeast of Suwannee, Florida along the north and west side of CR 349. The proposed disposal site, as well as a majority of the surrounding property, is currently owned by the Suwannee River Water Management District (SRWMD). This area contains a mixture of habitats, including sandy uplands, swampy open water depressions, yellow pine plantations, herbaceous wetlands, and wastewater spray fields that appear to have received fill. The spray fields were constructed but never utilized.

2.4 LITTLE BRADFORD ISLAND

Little Bradford Island is located on the northern side of the Wadley Pass/McGriff Channel project area. Three communities are present: the eastern/southeastern portion is an upland maritime hammock community characterized by live oaks, cabbage palms, red cedar, and coontie (*Zamia integrifolia*). At the southwestern portion of the island is an old spoil placement site with upland scrub vegetation. The remainder of the island is tidal marsh. No exposed beaches occur on Little Bradford island except at low tide. The southeastern portion of the island has experienced considerable erosion (Figure 5). The upland community appears to have previously extended over 100 ft farther into North Pass, but has eroded to approximately 50 to 60 ft wide at is greatest width on its southern end. Local residents relate that the island was considered to be the nearest “beach” and was historically used for outings, picnicking, and camping. One unsubstantiated report was of a one-room schoolhouse that once was present on the island.

Protection of cultural resources at Little Bradford Island will be designed to minimize impacts to the hydrologic properties of Northern Pass.



UPLAND DISPOSAL SITE 5
AERIAL PHOTOGRAPH OVERLAY
Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

Quadrangle East Pass (1989)

GEC

Figure: 4
Date: September 2006
Scale:1:3,600
Source: LOSCO/USACE/GEC
Map Author: C. Perez

Figure 5. Erosion at Southeast Corner of Little Bradford Island in Northern Pass

3.0 FISH AND WILDLIFE CONCERNS AND PLANNING OBJECTIVES

3.1 INTRODUCTION

The Central Florida Gulf Coast is an embayed coastline in the area of Dixie and Levy counties. Landforms in Florida are classified under four divisions: Delta Plain Highlands; Tertiary Highlands; River Valley Lowlands; and, Terraced Coastal Lowlands (Vernon, 1951). The area of the proposed action is classed as Terraced Coastal Lowland. These terraces consist of five distinct plains roughly paralleling the present coast. They were formed by sedimentation associated with higher sea levels during the Late Miocene and Early Pleistocene and consist of mostly sand sheets overlying limestone bedrock (Arthur *et al.*, 1994). The terrace lines are formed be relict shorelines at 5 ft (Silver Bluff Terrace), 25 ft (Pamlico Terrace), 100 ft (Wicomico Terrace), 150 ft (Okefenokee Terrace), and 220 ft (Coharie Terrace) above present sea level. These shoreline remnants are the direct result of eustatic changes related to the melting of continental ice masses (Arthur *et al.*, 1994).

The offshore bottoms slope gently with scattered irregularities formed by limestone shelves and sand and oyster bars being the only significant bottom features. This is typical of areas formed by marine forces. Near shore areas are, typically, sandy mud marshes averaging two to three miles in width and extending up to six miles inland in Citrus County, to the south of Dixie County. Inland of the coastal swamps, the terrain is typically flat and low-lying with pine flatwoods. The only breaks observed are shallow swamps, generally roughly circular and associated with solution pits in the underlying limestone, relict sand dune or sand ridges, and relatively rare rivers and streams, such as the Suwannee and Chassahowitzka rivers.

The limestone bedrock commonly appears at or near the surface in the coastal area, with the exception of the Suwannee River vicinity. The Suwannee River valley is a band of alluvial deposits overlying the limestone bedrock. The lower section of the valley, where the river empties into the Gulf of Mexico, is drowned and the flood plain is covered by brackish and saltwater marsh. Sediments from the Suwannee River have created mud banks near the mouth and are responsible for covering the local limestone. The coastal flats are broken by scattered hammocks lying between tidal streams.

The mean summer temperature for the region is 81.4° Fahrenheit (F) and the mean winter temperature is 56.6°F. The average annual rainfall is 54.6 inches falling primarily from June through September.

3.2 FISH AND WILDLIFE RESOURCES

Several biological communities occur within the area in which the project is planned.

3.2.1 Suwannee Sound

Suwannee Sound is bordered by a discontinuous oyster reef system, the “Great Suwannee Reef,” that extends approximately 20 miles from Cedar Key in the south to Horseshoe Beach in the north. The reef, which may be considered to be the outer limit of the Suwannee River estuary, is submerged at high tide, but exposed at low tide. Suwannee Sound is characterized by shallow coastal sand/mud/shell flats interspersed with oyster bars and reefs. The sound is shallow, three to 6 ft deep, but with occasional holes several ft deep. Benthic invertebrates include a variety of estuarine crustaceans, annelids, and mollusks (Mason *et al.*, 1994). The area is commercially important for aquaculture as bottoms are leased to individuals for the commercial culture of clams.

3.2.2 Tidal Marsh

The tidal marsh vegetation of the Suwannee River has been studied in detail. This characterization of the marsh is from Clewell *et al.* (1999). The most important species in the Suwannee River tidal marshes is needlerush (*Juncus roemerianus*), which is abundant in all marsh communities except freshwater marsh, and sawgrass

(*Cladium jamaicense*), which is also abundant. The marshes can be divided into shoreline and interior marshes. Interior marshes are further divided into three communities:

- Needlerush community, which covers most of the interior marshlands from the Gulf coast to near the river swamps, is heterogeneous and species rich. It consists of species composition ranging from near pure stands of needlerush to needlerush interspersed with a variety of others species, including *Lugwidia* spp., bulrush (*Scirpus* spp.), cord grass, and others.

- Sawgrass community is an almost pure stand of sawgrass between the needlerush community and the river swamp.

- Levee community, which is generally a continuation of the needlerush community onto higher ground, is characterized by a diversity of site conditions and vegetation, including leather fern (*Acrostichum aureum*), pigweed (*Chenopodium album*), sawgrass, morning glory (*Ipomonea* spp.), and others.

Shoreline marshes are divided into three communities:

- Freshwater tidal marsh community is found on submerged bars and the shallows between these bars and the riverbank where currents are weak. Common species include spatterdock (*Nuphar luteum*), water hemlock (*Cicuta maculata*), pickerelweed (*Pontederia cordata*), bulrush, cattails (*Typha* spp.), etc.

- Oligohaline shoreline community, which occurs in the oligohaline reaches of the Suwannee River, is dominated by needlerush and sawgrass, but with other species including cordgrass, cattails, and bulrush.

- Mesohaline shoreline community occurs within mesohaline areas and on beaches facing the Gulf of Mexico. One or more of smooth cordgrass (*S. alterniflora*), saltmarsh bulrush (*Scirpus robustus*), and needlerush share plant dominance.

3.2.3 Tidal River Swamp

The tidal river swamps along the lower Suwannee River occur inland of tidal marshes. These swamps are dominated by cypress (*Taxodium* spp.) and hardwoods, including swamp tupelo (*Nyssa biflora*), pumpkin ash (*Fraximus profunda*), sweetbay (*Magnolia virginiana*), swamp bay (*Persea borbonia*), and cabbage palm. A variety of shrubs and vines are present, but relatively little grassy vegetation occurs in the herbaceous layer. Ecotones, which may be formed with tidal

marsh, are characterized by shorter trees and fewer tree species. Occasional fires may discourage tree encroachment into the ecotonal area (Clewell *et al.*, 1999).

3.2.4 Maritime Hammocks

Maritime hammocks are mesic sites with sandy soils and better internal drainage than marshes or swamps. Dominant species generally include live oak, cabbage palm, and red cedar. While some hammocks are located on elevated land surrounded by tidal marsh, others are on islands just offshore. The southeastern portion of Little Bradford Island in the project area is a maritime hammock.

3.2.5 MIXED WETLAND FOREST

Mixed wetland forest is the transitional bottomland hardwood forest between the tidal swamp and upland pine forests. Vegetation in the lower, wetter areas includes cypress, red maple (*Acer rubrum*), sweetbay, and Florida willow (*Salix floridana*) in the overstory and cabbage palm, water iris (*Iris laevigata*), lizard's tail (*Saururus cernuus*), and pickerelweed in the understory. Farther inland, this community transitions to dominance by more typical bottomland hardwood species such as oaks maples, sweetgum (*Liquidambar styraciflua*), persimmon (*Diospyros virginiana*), dogwood (*Cornus* spp.), hickory (*Carya* spp.), gallberry (*Ilex coriacea*), saw palmetto (*Serenoa repens*), and blackberry (*Rubus fruticosus*).

3.2.6 Pine/Scrub Oak

The pine/scrub oak community was located along the south side of the site adjacent to County Road 349. Species dominating this community include longleaf pine (*Pinus palustris*), live oak, slash pine (*Pinus elliottii*), cabbage palm (*Sabal palmetto*), saw palmetto (*Serenoa repens*), winged sumac (*Rhus copallinum*), narrowleaf silkgrass (*Pityopsis graminifolia*), American beauty-berry (*Callicarpa americana*), *Cassia*, sp., *Hypericum* sp., greenbriar (*Smilax* spp.), yaupon (*Ilex vomitoria*), and bahia grass. This community had been logged and replanted within the last fifteen to twenty years.

3.2.7 Open Spray Fields

The open spray fields were developed for the Suwannee Wastewater Treatment Facility. Even though the fields are not utilized by the treatment facility, the fields are maintained by periodic mowing. Vegetation within the fields is dominated by bahai grass (*Paspalum notatum*), broom sedge (*Andropogon virginicus*), blackberry (*Rubus* sp.), *Lespedeza* sp., and various other herbaceous species. Individual plants of wax myrtle (*Myrica cerifera*), live oak (*Quercus virginiana*), and rattlebox (*Sesbania* sp.) are scattered over the open spray fields. The species of *Sesbania* occurring in the spray fields was undetermined due to the lack of flowers and seed pods. However, during the wetland investigation on the site, biologists observed some scattered individuals of *Sesbania punicea,* which is a category II exotic pest plant of Florida.

3.3 FEDERAL LISTED SPECIES

The U.S. Fish and Wildlife Service has identified threatened and endangered species that are known to occur in Dixie and Levy counties (see Table 1).

Those known or likely to be found at or near the project site are described in the following subsections.

Table 1. Threatened and Endangered Species in Dixie and Levy Counties

Common Name	Scientific Name	Dixie County	Levy County	Federal Status
West Indian manatee	*Trichechus manatus latirostris*	X	X	E
Florida salt marsh vole	*Microtus pennsylvanicus dukecampbelli*		X	E
Bald eagle	*Haliaeetus leucocephalus*	X	X	T
Florida scrub jay	*Aphelocoma coerulescens*	X	X	T
Wood stork	*Mycteria americana*	X	X	E
Red-cockaded woodpecker	*Picoides borealis*	X	X	E
Gulf sturgeon	*Acipenser oxyrhynchus desotoi*	X	X	T
Eastern indigo snake	*Dymarchon corais couperi*	X	X	T
Green sea turtle	*Chelonia mydas*	X	X	E
Kemp's ridley sea turtle	*Lepidochelys kempii*	X	X	E
Leatherback sea turtle	*Dermochelys coriacea*	X	X	E
Loggerhead sea turtle	*Caretta caretta*	X	X	T

Legend: T = Threatened; E = Endangered

Source: U.S. Fish and Wildlife Service, 2000.

3.3.1 West Indian Manatee

Manatees are relatively common during warmer periods of the year. The Suwannee River, its tributaries, estuary, and tidal streams provide a relatively undeveloped and protected environment with an abundant and extensive supply of aquatic plants for an estimated summer population 25-75 manatees. It is an important habitat for the northwestern Florida population of manatees (Service, 2001). The northwest Florida subpopulation currently represents 12 percent of the Florida manatee population and is growing rapidly (Service, 2005).

3.3.2 Florida Salt Marsh Vole

The Florida salt marsh vole is known from only one location in Waccasassa Bay near Cedar Key in Levy County, approximately five miles south of the project site. This species occurs in a salt marsh habitat dominated by salt grass, smooth cordgrass, and glasswort. Searches for additional populations in Taylor, Dixie, and Levy counties have been unsuccessful (Service, 1997a).

3.3.3 Bald Eagle

The bald eagle is a common inhabitant of the area during spring and summer. It is generally uncommon in the autumn and absent in winter (Service, 1998). There are several bald eagle nests in the project vicinity (Figure 6). The closest nest to the project is approximately 4,000 feet.

3.3.4 Florida Scrub Jay

Scrub jays are restricted to scattered, isolated patches of scrub in peninsular Florida. The scrub type most commonly occupied by scrub jays is an oak scrub usually dominated by myrtle oak, sand live oak, and Chapman oak along with rosemary, palmettos, and scattered sand pine and rosemary. Scrub jay habitat consists of dense thickets of scrub oaks less than three yards in height interspersed with bare sand for foraging and storing acorns. Habitat such as this does not occur within the vicinity of the proposed project. Scrub jays generally avoid forests, prairies, and marshes (Service, 1990).

Scrub jays have been reported in the Lower Suwannee National Wildlife Refuge. While scrub jays have been reported occasionally from Dixie County, there is a relatively stable population in Levy County.

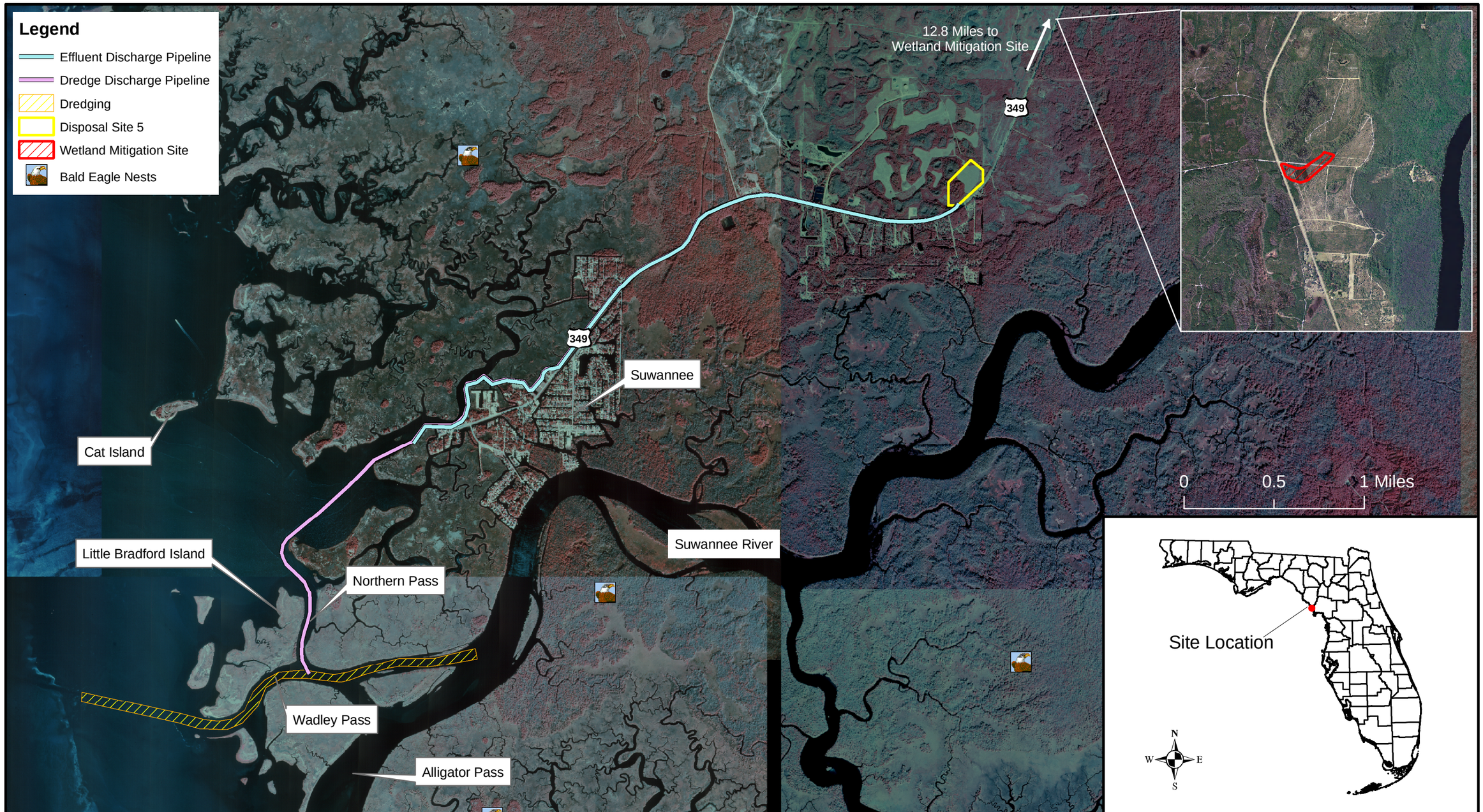
3.3.5 Wood Stork

Breeding populations of wood storks are found from South America, through Central America, Hispaniola, Cuba, and the United States. Historically, the wood stork was found from Texas to South Carolina, but breeding stocks are now restricted to Florida and coastal Georgia and South Carolina. Wood storks are primarily associated with freshwater and estuarine habitats for nesting, roosting, and foraging. In the Lower Suwannee and Cedar Keys National Wildlife Refuges, the wood stork is listed as “unusual” in spring, summer, and fall, and “occasional” in winter (Service, 1998). There are no reported nesting sites in Dixie or Levy counties. The nearest nesting sites to the project area are in Columbia, Hernando, Lake, and Pasco counties (Service, 2004).

3.3.6 Gulf Sturgeon

The Gulf sturgeon is an anadromous fish that migrates from salt water into large coastal rivers to spawn and spend the warm months. The majority of its life is spent in fresh water.

The Gulf sturgeon requires large areas of diverse habitat that exhibit natural variations in water flow, velocity, temperature, and turbidity. Historically, the species occurred in most major rivers from the Mississippi River to the Suwannee River and marine waters of the central and eastern Gulf of Mexico to Florida Bay. The Suwannee River is now recognized as supporting the most viable Gulf sturgeon



BALD EAGLE NESTS WITHIN THE PROJECT VICINITY

Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

USGS Suwanee NE (3/6/1994), Suwanee SE (1/21/1994), East Pass NW (3/6/1994) and East Pass SW (3/6/1994) DOQQs

GEC
Gulf Engineers & Consultants, Inc.

Figure: 6
Date: September 2006
Scale: 1:34,000
Source: GEC/FFWCC

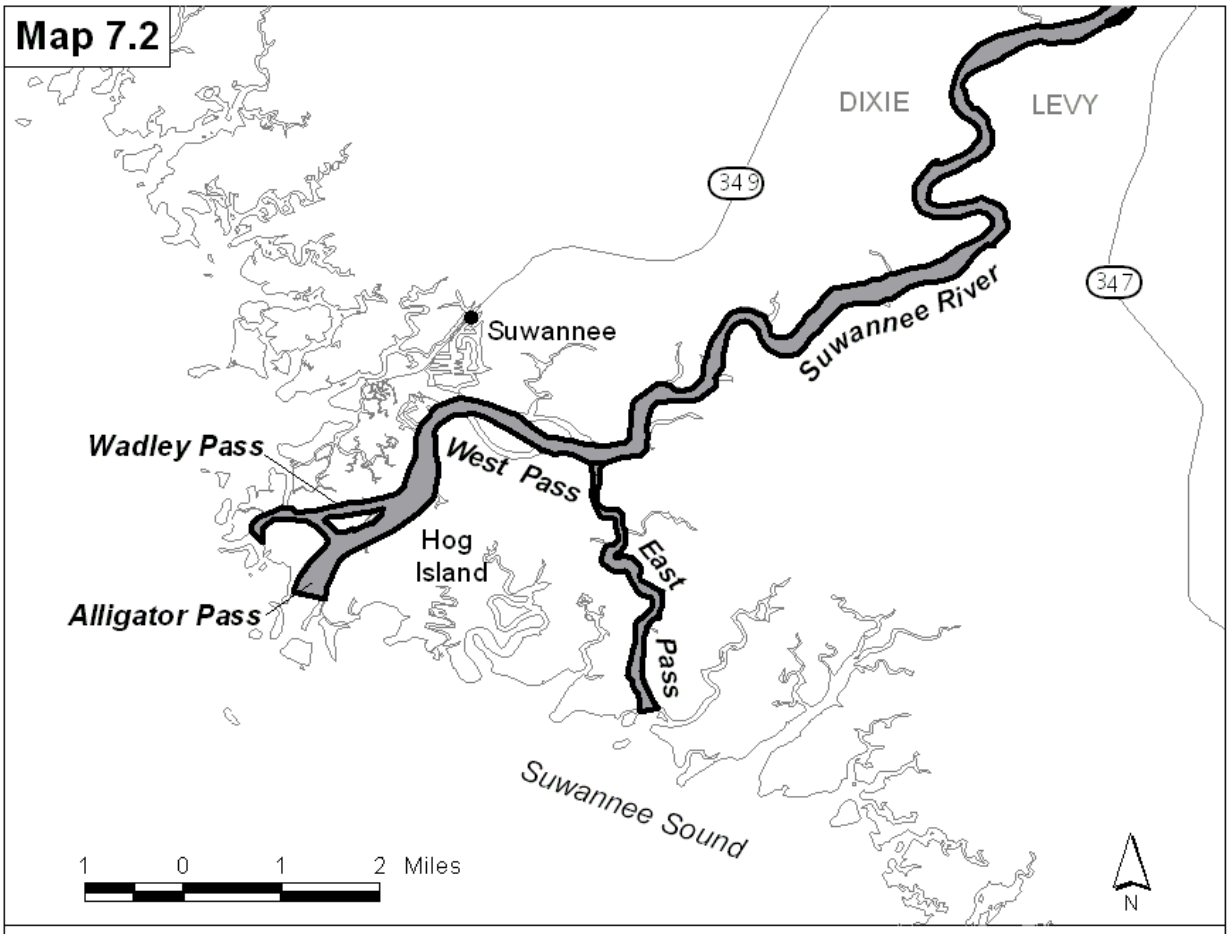
population among the coastal rivers of the Gulf. Between 1986 and 1995, approximately 3,000 Gulf sturgeon were marked and released in the Suwannee River to obtain growth and migration information and to determine the population size of the river (Clugston *et al*., 1995). Long-term and ongoing studies have estimated the Suwannee River population at 7,650 individuals (Sulak and Clugston, 1999).

Gulf sturgeon begin to migrate into rivers in March when water temperatures increase to 16° to 23° Centigrade (C) and continue the migration until early May. The species is known to occupy six holding areas within the Suwannee River at river miles 25, 34, 38, 58, 68, and 125; a few additional holding areas may exist between river miles 68 and 125 (Clugston *et al*., 1995). These holding areas are less than 0.5 mile long. Adult sturgeon do not appear to feed during this time; water temperature is believed to be a primary factor controlling feeding activity (Clugston *et al.,* 1995). Downstream migration begins in September and October and continues until mid-November to early December. Adults and subadults winter in the Gulf, while young sturgeon (less than six years old) remain at the mouth of the river during winter and early spring.

Gulf sturgeon spawning in the Suwannee River occurs during the spring in periods of high water, when ionic conductivity and calcium ion concentration are most favorable for egg development and adhesion (Sulak and Clugston, 1999). Spawning appears to begin 4-7 days after the March new moon, when water temperatures rise above 17° C (Sulak and Clugston, 1999). Studies conducted by Sulak and Clugston (1998) determined that a population of Gulf sturgeons within the Suwannee River used the same spawning site in the river each year.

Juvenile sturgeon feeding is believed to be widely distributed; food sources are believed to include aquatic insects, worms, and bivalve mollusks. Mature sturgeon feeding occurs during that part of the year when the fish are in marine and estuarine waters. Adults and subadults are believed to forage opportunistically, primarily on benthic invertebrates, at this time. Stomach analyses of Gulf sturgeon from the Suwannee and Apalachicola rivers indicated that mud and sand bottoms and seagrass communities appear to be important marine habitats (Murie *et al.,* 2001). Adults collected in East Pass contained plant matter and crab parts, while smaller individuals collected in Alligator Pass contained small crustaceans (Service and GSMFC, 1995). Young sturgeon collected in winter were found to feed on small crustaceans, insect larvae, and worms (Mason and Clugston, 1993). Adult and subadult sturgeons collected during June and October did not appear to feed in fresh water.

The Proposed Rule for the designation of critical habitat for the Gulf sturgeon was published on 6 June 2002 by the Service, the Department of the Interior, the National Oceanic and Atmospheric Administration, and the Department of Commerce. Fourteen geographic areas containing Gulf of Mexico Rivers and tributaries are proposed as critical habitat for the species. The Suwannee River is included in one of these geographic areas (Figure 7). Consequently, the project occurs within a portion of the proposed critical habitat of the Gulf sturgeon.



This map is provided only for illustrative purposes of Gulf Sturgeon critical habitat. For the precise legal definition of critical habitat, please refer to the narrative unit descriptions.

Figure 7. Critical Habitat for the Gulf Sturgeon in the Lower Suwannee River

3.3.7 Eastern Indigo Snake

The range of the eastern indigo snake historically extended from South Carolina through Georgia and Florida to the Keys, and west to southern Alabama and Mississippi. The snake is now known to occur only in Florida and the Coastal Plain of southern Georgia. In southern Florida the snake can be found in a variety of habitats, including wet prairies and mangrove swamps. In the more northern latitudes in winter it is found almost exclusively in sandy habitats typical of the Florida scrub communities, typically in association with gopher tortoises. From spring to fall they can also be found in pine-hardwood forest, mixed hardwood forest, creek bottoms, and agricultural fields (Service, 1999; Hallam *et al.*, 1998).

3.3.8 Sea Turtles

Four species of threatened and endangered sea turtles have been reported from Dixie County: the green sea turtle, Kemp's ridley sea turtle, loggerhead sea turtle, and leatherback sea turtle.

3.3.8.1 Nesting Habitat

Green sea turtles nest mainly on the eastern coast of Florida. Approximately 100 to 1,000 green turtles nest along Florida beaches from June through late September every year (FFWCC, 2000). The largest nesting site is at Tortuguero, Costa Rica.

The Kemp's ridley sea turtle nests from April to June during which time the turtles appear off the Tamaulipas and Veracruz coasts of Mexico. A small number nest at Padre Island National Seashore in Texas. Rare nesting occurrences have been recorded in Florida, South Carolina and North Carolina. Often precipitated by strong winds, the females swarm to mass nesting emergences, known as arribadas or arribazones, to nest during daylight hours. The preferred sections of nesting beach are backed up by extensive swamps or large bodies of open water having seasonal narrow ocean connections.

The loggerhead sea turtle concentrates its nesting efforts in two main areas of the world: at Masirah Island, Oman, and on the coast of the southeastern U.S. The Loggerhead sea turtle is the most common sea turtle in Florida. The majority of the nesting in the U.S. occurs between Cape Canaveral and the Sebastian Inlet. More than 15,000 females are attracted to the beaches of Brevard, Indian River, St. Lucie, Martin, and Palm Beach counties each May through August (FFWCC, 2000).

Leatherbacks approach coastal waters of the U.S. only during breeding season, with nesting occurring throughout the Caribbean, the northern coast of South America, the Pacific Coast of Central America, and on the east coast of Florida. Only a small number of leatherback nests (30 to 60) are found annually (April through July) in Florida.

3.3.8.2 Offshore Habitat

Green sea turtles are found in all temperate and tropical waters and stay mainly near the coastline and around islands. Green sea turtles are found in shallow flats and seagrass meadows during the day and return to scattered rock ledges, oysters beds, and coral reefs during the evening (FFWCC, 2000).

Kemp's ridley sea turtles are primarily sighted in the Gulf of Mexico in coastal waters and tidal rivers or estuaries. After leaving the nests, hatchlings become entrained in Gulf eddies and become dispersed into the Gulf of Mexico and Atlantic Ocean by surface currents. Near the age of two, the turtles enter coastal shallow water habitat. The Kemp's ridley can be found along the Gulf coasts of Mexico and the United States and the Atlantic Coast as far north as Nova Scotia and Newfoundland.

Loggerhead sea turtles are found in temperate and subtropical waters of the world. They feed in coastal bays, estuaries, and in shallow water along the continental shelves of the Atlantic, Pacific and Indian Oceans (Service, 2002).

Leatherbacks are found throughout the Atlantic, Pacific, and Indian oceans, including areas near Alaska and Labrador. Leatherbacks are the most widely distributed sea turtle. Leatherbacks can be found at depths more than 3,000 ft and can be active in water below 40°F.

3.4 STATE-LISTED SPECIES

The Florida Fish and Wildlife Conservation Commission (FFWCC) maintains a listing of protected species for the state of Florida (Appendix A). Table 2 depicts the FFWCC listing by county from 2000. State-listed species likely to be found at the project area and habitats with which they are associated are shown in Table 3.

Table 2. FFWCC Listing of Protected Species by County

Common Name	Scientific Name	Dixie County	Levy County	State Status
American alligator	*Alligator mississippiensis*	X	X	SSC
Loggerhead	*Caretta caretta*	X	X	T
Green sea turtle	*Chelonia mydas*	X	X	E
Kemp's ridley	*Lepidochelys kempi*	X	X	E
Alligator snapping turtle	*Macroclemys temmincki*	X		SSC
Atlantic hawksbill turtle	*Eretmochelys imbriccata imbratica*		X	E
Suwannee cooter	*Chrysemys concinna suwanniensis*	X	X	SSC
Ornate diamondback terrapin	*Malaclemys terrapin macrospilota*	X	X	SSC
Gopher tortoise	*Gopherus polyphemus*	X	X	SSC
Eastern indigo snake	*Dymarchon corais couperi*	X	X	T
Pine snake	*Pituophis melanoleucus mugitus*	X	X	SSC
Short-tailed snake	*Stilosoma extenuatum*		X	T
Sherman's short-tailed shrew	*Blarina carolinensis shermanii*	X	X	SSC
Sherman's fox squirrel	*Sciurus niger shermani*		X	SSC
Florida mouse	*Podomys floridanus*	X	X	SSC
Duke's saltmarsh vole	*Microtus pennsylvanicus dukecampbelli*		X	E
Florida black bear	*Ursus americanus floridanus*	X	X	T
Manatee	*Trichechus manatus latirostris*	X	X	E
Brown pelican	*Pelecanus occidentalis*	X	X	SSC
Little blue heron	*Egretta caerulea*	X	X	SSC
Tricolored heron	*Egretta tricolor*	X	X	SSC
White ibis	*Eudocimus albus*	X	X	SSC
Wood stork	*Mycteria americana*	X	X	E
Bald eagle	*Haliaeetus leucocephalus*	X	X	T
Southeastern kestrel	*Falco sparverius paulus*	X	X	T
Peregrine falcon	*Falco peregrinus tuddrius*	X	X	E
Limpkin	*Aramus guarauna*	X	X	SSC
Florida sandhill crane	*Grus canadensis pratensis*		X	T

Common Name	Scientific Name	Dixie County	Levy County	State Status
Piping plover	*Charadrius melodus*	X	X	T
American oystercatcher	*Haematopus palliatus*	X	X	SSC
Least tern	*Sterna antillarum*	X	X	T
Black skimmer	*Rynchops niger*	X	X	SSC
Florida burrowing owl	*Speotyto cunicularia*		X	SSC
Red-cockaded woodpecker	*Picoides borealis*		X	T
Florida scrub jay	*Aphelocoma coerulescens*		X	T
Marian's marsh wren	*Cictothorus palustris marianae*	X	X	SSC
Scott's seaside sparrow	*Ammodramus maritimus peninsulae*	X	X	SSC
Gulf sturgeon	*Acipenser oxyrhynchus desotoi*	X	X	SSC
Suwannee bass	*Micropterus notius*	X	X	SSC

Legend: T = Threatened; E = Endangered; SSC = Species of Special Concern

Source: FFWCC, 2000.

Table 3. Species Likely to be Found at Project Area

Species	Habitat
American alligator	CSM, FWM, CSWP, HWS, BS, SS, BHW, W
Loggerhead	W
Green sea turtle	W
Kemp's ridley	W
Alligator snapping turtle	W
Atlantic hawksbill turtle	W
Suwannee cooter	CSM, HWS, W
Eastern indigo snake	CSM, FWM, CSWP, HWS, BS, SS, BHW, W
Sherman's short-tailed shrew	UHW
Duke's saltmarsh vole	CSM
Florida black bear	CSWP, HWS, BS, SS, BHW
Manatee	CSM, FWM, CSWP, HWS, BS, SS, W
Brown pelican	W
Little blue heron	CSM, FWM, CSWP, HWS, BS, SS, W
Tricolored heron	CSM, FWM, CSWP, HWS, BS, SS, W
White ibis	CSM, FWM, CSWP, HWS, W
Wood stork	CSM, FWM, CSWP, HWS, W
Bald eagle	CSM, FWM, CSWP, HWS, BS, SS, BHW
Southeastern kestrel	UHF, FWM, BS, SS, SB
Peregrine falcon	CSM, W
Limpkin	FWM, CSWP, HWS, BS, SS, W
Florida sandhill crane	FWM,
Piping plover	CSM, W
American oystercatcher	CSM, W
Least tern	CSM, FWM, W
Black skimmer	W

Species	Habitat
Florida scrub jay	SPS
Marian's marsh wren	CSM
Scott's seaside sparrow	CSM
Gulf sturgeon	W
Suwannee bass	W

Legend: SPS – Sand pine scrub
FWM – Freshwater marsh
HWS – Hardwood swamp
BHW – Bottomland hardwoods
CSM – Coastal salt marsh
CSWP – Cypress swamp
BS – Bay swamp
W – Open Water

Source: FFWCC, 2000.

3.5 OTHER FISH AND WILDLIFE CONCERNS

3.5.1 Lower Suwannee National Wildlife Refuge

The Lower Suwannee National Wildlife Refuge was established in 1979 for the purpose of protecting, maintaining, and enhancing natural ecosystems of the area. Purchase of the lands was made through the cooperative efforts of the Service, the Nature Conservancy, and the Suwannee River Water Management District.

The refuge comprises over 29,000 acres in Dixie County and over 23,000 acres in Levy County. The refuge occupies lands along the lower reaches of Suwannee River, beginning at Yellow Jacket Landing and continuing for 20 miles until the River flows into the Gulf of Mexico. From the mouth of the river, the refuge stretches along the Gulf of Mexico for 10 miles northward almost to Horseshoe Beach and Southward to Cedar Key. It is one of the largest undeveloped river-delta-estuarine systems in the United States.

The watershed and estuary of the Lower Suwannee National Wildlife Refuge contain valuable water resources and fish and wildlife habitat. The constant influx of nutrients from the river system coupled with numerous offshore island and tidal creeks create ideal conditions for a diverse ecosystem. The West Indian manatee and several species of sea turtles use the coastal waters of the refuge. Over 250 species of birds have been identified on the refuge; over 90 of these species nesting in the refuge.

Natural salt marshes and tidal flats serve as a nursery for fish, shrimp, and shellfish, while the Suwannee River and its tributary creeks provide a haven for freshwater fish.

The refuge is managed for the conservation of fish and wildlife and their habitat, with special emphasis on the protection and restoration of wetland and upland communities. Educational, research, and wildlife-dependent recreational opportunities are available, insofar as they are compatible with refuge health and preservation.

Several studies (e.g., Clugston *et al*., 1995; Sulak and Clugston, 1998, 1999) have concluded that the mouth of the Suwannee River and the adjacent estuarine and nearshore Gulf of Mexico waters represent important fall and winter habitat for the Gulf sturgeon. It has previously been established that young sturgeon (i.e., age 2-5) utilize the river mouth estuary, including Wadley Pass, as primary winter feeding habitat (Clugston *et al.,* 1995; Sulak and Clugston, 1998, 1999). Additionally, it has been established that subadult and adult Gulf sturgeon utilize Suwannee Sound and marine waters adjacent to the Suwannee River mouth as primary initial winter feeding habitat (October-January) annually (Sulak and Clugston, 1999).

Management partners with local, state, and Federal agencies, community organizations, and individuals to ensure the protection and conservation of the Suwannee River ecosystem.

3.5.2 Big Bend Seagrasses Aquatic Preserve

The State of Florida has established the Aquatic Preserve Program that includes 41 designated marine, estuarine and freshwater areas mainly along the coastal areas of the state. The goal of the program is to preserve these areas in essentially natural or existing condition so that their aesthetic, biologic and scientific values might be enjoyed by future generations.

The Big Bend Seagrasses Aquatic Preserve is the largest aquatic preserve in the program and is located adjacent to the proposed project area. Designated an aquatic preserve on June 25, 1985, the preserve encompasses approximately 450,000 acres of sovereignty submerged lands located from the mouth of the St. Marks River in Wakulla County to the mouth of the Withlacoochee River in Levy County, a distance of approximately 150 miles. The preserve boundary encompasses “all tidal lands, islands, seagrass beds, shallow banks, submerged bottom and all submerged lands located waterward of mean high water (MHW), or in the riverine portions of the preserve, the ordinary high water (OHW), to which the State holds title. The boundary extends across the mouth of all artificial waterways, but includes all natural waterways tidally connected to the preserve to the extent of state jurisdiction. The aquatic preserve also extends seaward nine miles into the Gulf of Mexico.” The lower Suwannee River is included within the boundaries of the preserve.

This preserve represents the largest span of pristine seagrass beds and salt marshes in the state, and is unique in that it is the only aquatic preserve that extends across the state’s transitional zone between temperate and tropical climates.

A management plan for the preserve was prepared in October 1988 by the Bureau of Aquatic Preserves, Division of State Lands. The plan outlines four management strategies to attain the goal of the Aquatic Preserves program: (1) resource management; (2) environmental impact review; (3) education; and (4) research. The environmental impact review program develops and implements procedure to assess

proposed activities that may threaten the natural and cultural resources of the preserve.

The management plan contains 22 major program policy directives, most of which set forth commitments and steps to maintain or improve the natural environment within the preserve and to ensure access by the public to enjoy this pristine area.

4.0 PROJECT IMPACT EVALUATIONS

4.1 EVALUATION FRAMEWORK

The determination of impacts attributable to this project can be best evaluated through comparisons of future without-project conditions to future with-project conditions. This principle can be used to evaluate the effects of the project to fish and wildlife resources including any impacts to habitats.

Dial-Cordy and Associates, Inc. (Dial-Cordy) was contracted by the USACE to perform a natural resources survey of the project area. The survey was conducted on 18-19 September 2001 and 11-12 March 2002. The results of the survey are discussed where applicable below. A complete report of the survey is presented as Appendix B.

Gulf Engineers and Consultants, Inc. (GEC) was contracted by the USACE to perform a State and Federal listed species and exotic/invasive species survey for UDS 5. The results of the survey are discussed where applicable below. A complete report of the survey is presented as Appendix C.

4.2 FISH AND WILDLIFE RESOURCES WITHOUT THE PROJECT

4.2.1 Wadley Pass/Mcgriff Channel

Without the project the channel and pass would continue to experience shoaling and sedimentation. Sediment from the mounded spoil at the southwestern end of Little Bradford Island would continue to provide a long-term source of material for filling the channel. However, the channel is a natural feature, and it would be expected to remain as an outlet for the flow of Suwannee River.

4.2.2 Upland Disposal Site 5

4.2.2.1 Alternative A - Preferred Alternative

Without the project the upland disposal site would persist in its present condition.

4.2.3 **Little Bradford Island**

4.2.3.1 Alternative Option

It is anticipated that Little Bradford Island would continue to experience erosion of its southeastern shoreline. There is no information to suggest that the trend would not continue until at least the maritime hammock community has been lost. Prehistoric Native American relics would be lost with continued erosion of the island.

4.3 PROJECT IMPACTS

4.3.1 Wadley Pass/Mcgriff Channel

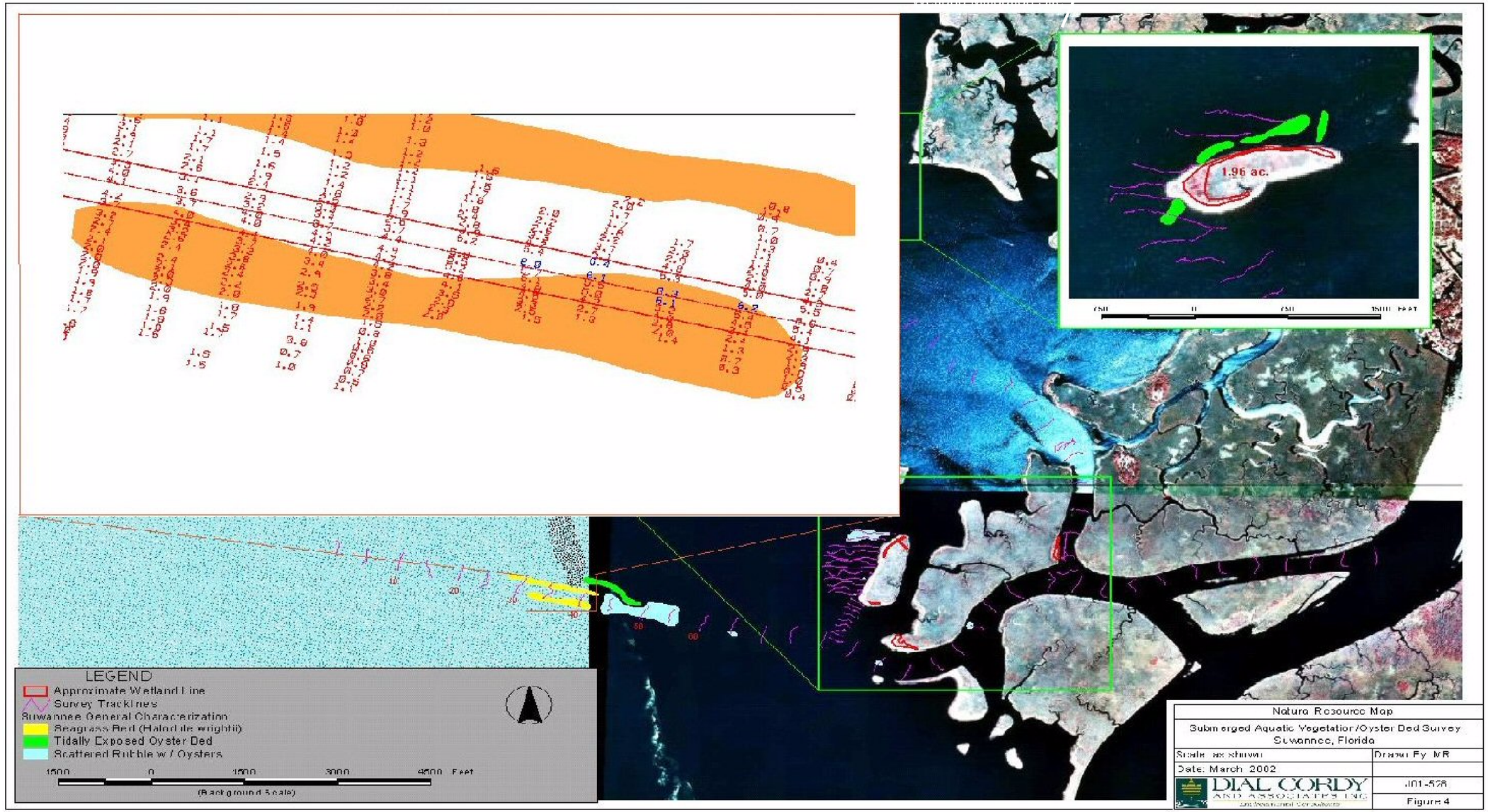
Dredging will lower the depth of the channel at various locations at much as 2 ft. The sand/mud/shell benthic habitat in areas where dredging occurs will be converted into a deeper sand/mud/shell benthic habitat. The diversity of the benthic community in the converted habitat is not expected to differ markedly from adjacent, undredged areas.

The survey conducted by Dial-Cordy showed approximately 5.68 acres of sparse shoots of shoal grass (*Halodule wrighttii*) located on the channel slopes in the central section of Wadely Pass. It is assumed that this area of submerged aquatic vegetation has recolonized since the last dredging project in 1986. This area should also recolonize after proposed dredging activities are complete.

The USACE, by overlaying the Dial-Cordy survey data atop the proposed channel and placement sites, determined that a total of 0.5 acre of submerged aquatic vegetation could be potentially impacted by project operations (Figure 8).

To minimize disturbance, the Suwannee River Water Management District will mark areas containing submerged aquatic vegetation. These sites will be avoided during dredging operations. To avoid areas of submerged aquatic vegetation, a buffer zone will be established around vegetated areas. This buffer zone will be established based on a 1:3 (horizontal: vertical) clearance from the edge of the seagrass to the 7-ft allowable overdredged depth. Other words if the outer limits of the seagrass depth is 1 ft deep, then the buffer would be (7-1) X 3 = 18 ft from the edge of seagrass to the dredging limit. The minimum buffer will be 12 ft. The Suwannee River Water Management District has agreed to mark the seagrass beds prior to dredging.

Dredging of McGriff Channel will not have a hydrographic influence on the surrounding waterbodies. The cross-sectional area of the proposed channel is much smaller than the natural channels at Alligator and East Passes. Consequently, no changes in flow directions or mean water levels in neighboring waterbodies are anticipated as a result of the project.



IMPACTED SUBMERGED AQUATIC VEGETATION

Draft Coordination Act Report
U.S. Fish and Wildlife Service
Suwannee River, Dixie County, Florida

GEC
Gulf Engineers & Consultants, Inc.

Figure: 8
Date: September 2006
Scale: 1:34,000
Source: Dial Cordy

In 2002, a representative of the National Marine Fisheries Service (personal communication) expressed concern that deepening of the channel could result in increased light absorption thereby inhibiting the growth of benthic algae. In personal communications with a biologist with the Suwannee River Water Management District, it was related that under current conditions the darkly colored Suwannee River water absorbs light and inhibits benthic algal growth in Suwannee Sound. Algae is present primarily during periods of drought when discharge from the river is low and sea water with increased clarity allows sufficient light penetration to promote benthic algal growth. Therefore, it is anticipated that the dredging of the channel will have little impact on the production of benthic algae and primary production of the Suwannee Sound.

It is assumed that the channel will continue to be maintained and that it will remain in place indefinitely. The changes made to the channel by dredging, however, are not of an irreversible nature. If the program of dredging is cancelled, shoaling processes will reestablish the irregularities of the bottom profile, and reestablishment of natural conditions will occur.

Because the area dredged represents such a minor fraction of that area of Suwannee Sound with similar depths, there is no significant loss of habitat and no significant loss of overall long-term productivity.

4.3.2 Upland Disposal Site 5

4.3.2.1 Alternative A – Preferred Alternative

Implementation of the proposed project would impact approximately 19.05 acres of sandy uplands, pine plantation, open spray field, herbaceous wetland, and swampy open water depressions at the disposal site. Upland Disposal Site 5 is estimated to impact approximately 4.6 acres of wetlands.

For construction of the disposal area, the footprint of the dike, plus a 10-foot margin beyond its outer edges, and the interior of the impoundment, would be cleared and grubbed. The clearing and grubbing would include the complete removal and disposal of timber, bushes, stumps, roots, rubbish and debris and all other obstructions resting on or protruding through the ground surface. Organic soils mantling these areas would also be stripped. Within upland areas, it is anticipated that this would require the removal of about six to 12 inches of surficial soils. Shallow probes made within the wetland areas shows these areas to be mantled by about six to 24 inches of unsuitable organic soil which must be removed prior to dike construction, or excavation of borrow materials.

Upon completion of the site preparation activities, embankment construction would proceed.

The survey conducted by GEC recorded no observance of Federally listed species; however, suitable habitat for the Florida scrub jay and the eastern indigo snake

occurs within the project area. Approximately 21 active, 8 inactive, and 13 old gopher tortoise burrows were observed within the proposed disposal site.

4.3.3 Little Bradford Island

4.3.3.1 Alternative Option

Implementation of the project would extend the shoreline of Little Bradford Island to its historic extent and offset the erosion that has occurred. Dredged material would be emplaced to reestablish the original elevation of the island. This would allow the marine hammock community on the island to expand to its previous extent. Vegetative colonization of the dredged material will be allowed to proceed at a natural pace.

Stabilization of the Little Bradford Island shoreline will be accomplished by the emplacement of a bulkhead or stone wall at MLW along the Northern Pass shoreline. The wall will be designed to minimize impacts to the hydrologic properties of Northern Pass.

The stabilization of the Little Bradford Island shoreline is considered to be a beneficial effect of the project. There are no adverse irretrievable/irreversible effects to the fish and wildlife resources as a result of this phase of the project. The protection and expansion of the Little Bradford Island shoreline will maintain the island's upland community and help preserve the diversity of habitats in the area of the Suwannee River estuary. This will, in turn, provide at least a role in maintaining the long-term productivity of fish and wildlife resources of the area.

4.3.4 Protected Species

Except for the West Indian manatee, Gulf sturgeon, and eastern indigo snake, it is expected that the proposed project will not affect protected species in the area.

Operations, which will consist of hydraulic dredging, pumping of sediment/salt water through pipelines, and placement actions, should have no adverse effects on protected species. The potential for collisions between dredges and manatees or sea turtles is low; the slow pace of the dredging operation should provide ample opportunity for animals to avoid collisions. There are no indications that the existing channel provides a significant habitat for sea turtles or that sea turtles are present in the channel other than incidentally. However, it is recommended that standard manatee protection measures be employed during construction and included in the construction specifications (see Section 5.0).

Gulf sturgeon are seasonal inhabitants of the lower Suwannee River area – migrations of the sturgeon take place in early spring and fall, and young inhabit the mouth of the river during winter, when extensive feeding occurs. The greatest potential impacts to Gulf sturgeon are the interference with fall and spring migrations by adults and subadults. If dredging operations are conducted during the fall and

spring migration period, there is the possibility that it may restrict access to Gulf sturgeon that enter the river through Wadley Pass and affect feeding in the fall.

To reduce the effect of dredging operations on Gulf sturgeon, the USACE has agreed to restrict dredging to 15 May to 15 October when Gulf sturgeon have migrated upstream into the Suwannee River.

Manatees are known to use Wadley Pass/McGriff Channel. In order to reduce manatee collisions, standard manatee precautions will be made a condition of the contract.

Eastern indigo snakes are known to utilize gopher tortoise burrows for dens and for laying eggs. Although no individuals were observed during the survey, the potential exists for the species to occur at the upland disposal site. Standard protection measures for the eastern indigo snake will be made a condition of the contract.

4.3.6 Mitigation

In order to avoid and minimize impacts to the gopher tortoise, USACE will secure a permit from FFWCC to capture and relocate the gopher tortoise population from Upland Disposal Site 5 to other SRWMD lands that contain suitable habitat.

Compensatory mitigation for impacts to wetlands would be accomplished at a 540-acre site located within one mile of the Suwannee River. The site is owned by the Suwannee River Water Management District and is identified as the best available lands for mitigation of the project impacts. The Sunnyvale Tract is situated within Township 11 South, Range 13 East, Section 22 and within the Lower Suwannee watershed or Hydrologic Unit Code (HUC) 03110205, is bordered to the north, south, and east by private landowners and to the west by CR 349. Managed timberlands occur to the west of CR349.

The Sunnyvale Tract contains a three acre borrow pit, dated to pre-1957 based on aerial photography, and a bordering tree plantation, geographically separated from the borrow pit by a maintained gravel road. Vegetation includes bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), Carolina willow (*Salix caroliniana*), buttonbush (*Cephalanthus occidentalis*), lemon bacopa (*Bacopa caroliniana*), red ludwigia (*Ludwigia repens*), mermaid weeds (*Proserpinaca* spp.), *Eleocharis* spp., yellow-eyed grass (*Xyris* spp.), and coinwort (*Centella asiatica*). Evidence of extended ponding includes water stains, dried algal mats, catfish bones, crayfish claws and carapace, and apple snail (*Pomacea paludosa*) and mussel shells. A stunted and sparse canopy and shrub layers indicate prolonged inundation or low fertility.

The area adjacent to the borrow pit is hydraulically connected through culverts. Currently the site functions as a pine plantation and provides a conduit for sheet flow when drainage ditches are full. Wetland mitigation will be accomplished through

hydrologic and vegetative enhancement of the borrow pit as well as improving surface water connections to adjacent lands.

5.0 RECOMMENDATIONS

The following recommendations are proposed to reduce the potential for adverse impacts associated with the proposed project on fish and wildlife resources.

Standard manatee protection provisions as of June 2001 should be employed during construction and included in the construction specifications as follows:

- The permittee shall instruct all personnel associated with the project of the potential presence of manatees and the need to avoid collisions with manatees. All construction personnel are responsible for observing water-related activities for the presence of manatee(s).

- The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act of 1972, The Endangered Species Act of 1973, and the Florida Manatee Sanctuary Act.

- Siltation barriers shall be made of material in which manatees cannot become entangled, are properly secured, and are regularly monitored to avoid manatee entrapment. Barriers must not block manatee entry to or exits from essential habitat.

- All vessels associated with the construction project shall operate at “no wake/idle” speeds at all times while in the construction area and while in water where the draft of the vessel provides less than a 4-ft clearance of the bottom. All vessels will follow routes of deep water whenever possible.

- If manatee(s) are seen within 100 yards of the active daily construction/ dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure protection of the manatee. These precautions shall include the operation of all moving equipment no closer than 50 ft to a manatee. Operation of any equipment closer than 50 ft to a manatee shall necessitate immediate shutdown of that equipment. Activities will not resume until the manatee(s) has departed the project area of its own volition.

- Any collision with and/or injury to a manatee shall be reported immediately to the FFWCC Hotline at 1-888-404-FWCC. Collision and/or injury should also be reported to the Service in Jacksonville (1-904-232-2580) for north Florida or Vero Beach (1-561-562-3909) in south Florida.

- Temporary signs concerning manatees shall be posted prior to and during all construction/dredging activities. All signs are to be removed by the permittee upon completion of the project. A sign measuring at least 3 ft by 4 ft which reads *Caution: Manatee Area* will be posted in a location prominently visible to water related construction crews. A second sign should be posted if vessels are associated with the construction, and should be placed visible to the vessel operator. The second sign should be at least 8 1/2 inches by 11 inches which reads *Caution: Manatee Habitat. Idle speed is required if a manatee comes within 50 feet of operation. Any collision with and/or injury to a manatee shall be reported immediately to the FFWCC Hotline at 1-888-404-FWCC. The U.S. Fish and Wildlife Service should also be contacted in Jacksonville (1-904-232-2580) for north Florida or Vero Beach (1-561-562-3909) in south Florida.*

Dredging of the channel should be restricted to the period of 15 May to 15 October to avoid potentially adverse impacts on Gulf sturgeon.

Standard protection measures for the eastern indigo snake should be implemented during construction and included in the construction specifications as follows:

- An eastern indigo snake protection/education plan shall be developed by the applicant or requestor for all construction personnel to follow. The plan shall be provided to the Service for review and approval at least 30 days prior to any clearing activities. The educational materials for the plan may consist of a combination of posters, videos, pamphlets, and lectures (e.g., an observer trained to identify eastern indigo snakes could use the protection/education plan to instruct construction personnel before any clearing activities occur). Informational signs should be posted throughout the construction site and contain the following information:

    a. description of the eastern indigo snake, its habits, and protection under Federal Law;

    b. instructions not to injure, harm, harass or kill this species;

    c. directions to cease clearing activities and allow the eastern indigo snake sufficient time to move away from the site on its own before resuming clearing; and

    d. telephone numbers of pertinent agencies to be contacted if a dead eastern indigo snake is encountered. The dead specimen should be thoroughly soaked in water, then frozen.

- Only an individual who has been either authorized by a section 10(a)(1)(A) permit issued by the Service, or designated as an agent of the State of Florida by the Florida Fish and Wildlife Conservation Commission for such

activities, is permitted to come in contact with or relocate an eastern indigo snake.

- If necessary, eastern indigo snakes shall be held in captivity only long enough to transport them to a release site; at no time shall two snakes be kept in the same container during transportation.

- An eastern indigo snake monitoring report must be submitted to the appropriate Florida Field Office within 60 days of the conclusion of clearing phases. The report should be submitted whether or not eastern indigo snakes are observed. The report should contain the following information:

    a. any sightings of eastern indigo snakes;

    b. summaries of any relocated snakes if relocation was approved for the project (e.g. locations of where and when they were found and relocated); and

    c. other obligations required by the Florida Fish and Wildlife Conservation Commission, as stipulated in the permit.

6.0 SUMMARY OF POSITION

The Service has several concerns about the potential impacts of the project on the biological communities and threatened and endangered species of the vicinity. Impacts on overwintering and migrating Gulf sturgeon would be avoided by conducting dredging operations during summer.

Impacts to manatees from dredging operations could be minimized by implementing standard manatee protection provisions, and long-term effects could be reduced by maintaining reduced boat speeds in Wadley Pass/McGriff Channel.

Impacts to the eastern indigo snake from disposal operations could be minimized by implementing standard protection provisions.

Based on minimization of environmental impacts and construction costs, Alternative A was chosen as the Preferred Alternative. No objection is offered to the use of dredged material for the restoration of the shoreline of Little Bradford Island (Alternative Option).

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Appendix A

STATE OF FLORIDA LISTED SPECIES

FLORIDA'S ENDANGERED SPECIES, THREATENED SPECIES, AND SPECIES OF SPECIAL CONCERN

June 2006

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

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PREFACE

This document consolidates the official state of Florida list of endangered species, threatened species, and species of special concern. The Florida Fish and Wildlife Conservation Commission (FWC) maintains the state list of animals designated as endangered, threatened, or species of special concern, in accordance with Rules 68A-27.003, 68A-27.004, and 68A-27.005, respectively, Florida Administrative Code (F.A.C.) http://fac.dos.state.fl.us/. The state lists of plants, which are designated endangered, threatened, and commercially exploited, are administered and maintained by the Florida Department of Agriculture and Consumer Services (DOACS) via Chapter 5B-40, F.A.C. This list of plants can be obtained at http://www.fl-dof.com/forest_management/plant_conserve_list.html. The federal agencies that share the authority to list species as Endangered and Threatened are the National Oceanic and Atmospheric Administration-National Marine Fisheries Service (NOAA-NMFS) and U. S. Fish and Wildlife Service (USFWS). The NOAA-NMFS is responsible for listing most marine species. The federal list of animals and plants is administered by the USFWS, and this list is published in 50 CFR 17 (animals) and 50 CFR 23 (plants). Additional information regarding federal listings can be located at the following websites; NOAA-NMFS - http://www.nmfs.noaa.gov and USFWS - http://endangered.fws.gov/wildlife.html#Species.

Please note that while the FWC has published a consolidated list of state and federally listed species in the past, we now only publish a list of species listed within the state of Florida. This list will be maintained and available at our agency website: http://www.myfwc.com. Lists of federally listed species can still be viewed at the USFWS and NOAA-NMFS websites mentioned above. It is our intent by providing the list in this manner that we will be able to maintain a current list that is more readily available to the public. I would like to thank the following people who assisted in revising this list; Tom Logan, Jeff Gore, Paul Vincent, Paul Moler, George Wallace, Jim Rodgers, Karl Miller, Ted Hoehn, Darrell Scovell, Gray Bass, Kelly Donnelly, Elsa Haubold, Kipp Frohlich, Bill Brooks and the USFWS staff. Special appreciation is expressed to Ms. Angela T. Williams, Ms. Christine Yannett and Ms. Kat Diersen for their assistance with preparation of this document.

- **Common and scientific names listed first are as they appear in the FWC "Florida Wildlife Code Title 68A" (F.A.C). Common and/or scientific names following this and located within parentheses ( ) contain names as used by USFWS, or other commonly used names.**

J. Daniel Sullivan Jr.
Endangered Species Coordinator
Species Conservation Planning Section

Cover Photos by FWC Staff: Key Largo Woodrat, Burrowing Owls, Okaloosa Darter, Schaus' swallowtail butterfly, Short-tailed Snake.

NUMERICAL SUMMARY OF SPECIES LISTED BY THE STATE OF FLORIDA AS ENDANGERED, THREATENED, OR SPECIES OF SPECIAL CONCERN

STATUS DESIGNATION	FISH	AMPHIBIANS	REPTILES	BIRDS	MAMMALS	INVERTEBRATES	TOTAL
E	3	0	6	8	20	4	**41**
T	2	0	10	10	4	0	**26**
SSC	10	5	8	18	6	4	**51**
TOTAL	**15**	**5**	**24**	**36**	**30**	**8**	**118**

OFFICIAL LISTS

Common Name	Scientific Name	Status
FISH		
Atlantic sturgeon (Gulf sturgeon)	*Acipenser oxyrinchus* (*Acipenser oxyrinchus desotoi*)	SSC (1)
shortnose sturgeon	*Acipenser brevirostrum*	E
shoal bass	*Micropterus cataractae*	SSC (1,2)
Suwannee bass	*Micropterus notius*	SSC (1)
rivulus (mangrove rivulus)	*Rivulus marmoratus*	SSC (1)
Lake Eustis pupfish	*Cyprinodon variegatus hubbsi*	SSC (1)
blackmouth shiner	*Notropis melanostomus*	E
bluenose shiner	*Pteronotropis welaka*	SSC (1,2)
saltmarsh topminnow	*Fundulus jenkinsi*	SSC (1)
key silverside	*Menidia conchorum*	T
crystal darter	*Crystallaria asprella*	T
harlequin darter	*Etheostoma histrio*	SSC (1)
okaloosa darter	*Etheostoma okalossae*	E
Southern tessellated darter (tessellated johnny darter)	*Etheostoma olmstedi maculaticeps*	SSC (1)
key blenny	*Starksia starcki*	SSC (1)
AMPHIBIANS		
flatwoods salamander	*Ambystoma cingulatum*	SSC
Georgia blind salamander	*Haideotriton wallacei*	SSC (1,2)
pine barrens treefrog	*Hyla andersonii*	SSC (1)
Florida bog frog	*Rana okaloosae*	SSC (2)
gopher frog	*Rana capito*	SSC (1,2)
REPTILES		
American alligator	*Alligator mississippiensis*	SSC (1,3)
American crocodile	*Crocodylus acutus*	E
key ringneck snake	*Diadophis punctatus acricus*	T
Eastern indigo snake	*Drymarchon corais couperi*	T
red rat snake	*Elaphe guttata*	SSC[1] (1)
Atlantic salt marsh water snake (Atlantic salt marsh snake)	*Nerodia clarkii taeniata*	T

Common Name	Scientific Name	Status
Florida pine snake	*Pituophis melanoleucus mugitus*	SSC (2)
short-tailed snake	*Stilosoma extenuatum*	T
Florida brown snake	*Storeria dekayi victa*	T[1]
rim rock crowned snake	*Tantilla oolitica*	T
Florida ribbon snake	*Thamnophis sauritus sackeni*	T[1]
bluetail mole skink	*Eumeces egregius lividus*	T
Florida Key mole skink	*Eumeces egregius egregius*	SSC (1)
sand skink	*Neoseps reynoldsi*	T
gopher tortoise	*Gopherus polyphemus*	SSC (1,2,3)
Barbour's map turtle	*Graptemys barbouri*	SSC (1,2)
alligator snapping turtle	*Macroclemys temminckii*	SSC (1)
striped mud turtle	*Kinosternon baurii*	E[1]
Suwannee cooter	*Pseudemys concinna suwanniensis*	SSC (1,2)
loggerhead seaturtle (loggerhead sea turtle)	*Caretta caretta*	T
green seaturtle (green sea turtle)	*Chelonia mydas*	E
leatherback seaturtle (leatherback sea turtle)	*Dermochelys coriacea*	E
hawksbill seaturtle (hawksbill sea turtle)	*Eretmochelys imbricata*	E
Kemp's ridley seaturtle (Kemp's ridley sea turtle)	*Lepidochelys kempii*	E
BIRDS		
piping plover	*Charadrius melodus*	T
snowy plover (Cuban snowy plover)	*Charadrius alexandrinus*	T
American oystercatcher	*Haematopus palliatus*	SSC (1,2)
brown pelican	*Pelecanus occidentalis*	SSC (1)
black skimmer	*Rynchops niger*	SSC (1)
least tern	*Sterna antillarum*	T
roseate tern	*Sterna dougalli* (*Sterna dougallii dougallii*)	T
limpkin	*Aramus guarauna*	SSC (1)
reddish egret	*Egretta rufescens*	SSC (1,4)
snowy egret	*Egretta thula*	SSC (1)
little blue heron	*Egretta caerulea*	SSC (1,4)
tricolored heron	*Egretta tricolor*	SSC (1,4)

Common Name	Scientific Name	Status
white ibis	*Eudocimus albus*	SSC (2)
Florida sandhill crane	*Grus canadensis pratensis*	T
whooping crane	*Grus americana*	SSC (5)
wood stork	*Mycteria americana*	E
roseate spoonbill	*Platalea ajaja*	SSC (1,4)
burrowing owl (Florida burrowing owl)	*Athene cunicularia* (*Athene cunicularia floridana*)	SSC (1)
crested caracara (Audubon's crested caracara)	*Caracara cheriway* (*Polyborus plancus audubonii*)	T
peregrine falcon	*Falco peregrinus*	E
Southeastern American kestrel	*Falco sparverius paulus*	T
bald eagle	*Haliaeetus leucocephalus*	T
osprey	*Pandion haliaetus*	SSC[2] (1,2)
snail kite (Everglades snail kite)	*Rostrhamus sociabilis plumbeus*	E
Florida scrub jay	*Aphelocoma coerulescens*	T
Cape Sable seaside sparrow	*Ammodramus maritimus mirabilis*	E
Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	E
Scott's seaside sparrow	*Ammodramus maritimus peninsulae*	SSC (1)
Wakulla seaside sparrow	*Ammodramus maritimus juncicolus*	SSC (1)
white-crowned pigeon	*Columba leucocephala*	T
Kirtland's warbler	*Dendroica kirtlandii*	E
Bachman's warbler	*Vermivora bachmanii*	E
ivory-billed woodpecker	*Campephilus principalis*	E
red-cockaded woodpecker	*Picoides borealis*	SSC
Marian's marsh wren	*Cistothorus palustris marianae*	SSC (1)
Worthington's marsh wren	*Cistothorus palustris griseus*	SSC (1)
MAMMALS		
Florida panther	*Puma concolor coryi* (*Puma* [=*Felis*] *concolor coryi*)	E
Florida black bear	*Ursus americanus floridanus*	T[3]
Everglades mink	*Mustela vison evergladensis*	T
key deer	*Odocoileus virginianus clavium*	E

Common Name	Scientific Name	Status
Lower Keys marsh rabbit	*Sylvilagus palustris hefneri*	E
Big Cypress fox squirrel	*Sciurus niger avicennia*	T
Sherman's fox squirrel	*Sciurus niger shermani*	SSC (1,2)
Eastern chipmunk	*Tamias striatus*	SSC (1)
Sanibel Island rice rat	*Oryzomys palustris sanibeli*	SSC (1,2)
silver rice rat (rice rat, lower FL Keys)	*Oryzomys argentatus* (*Oryzomys palustris natator*)	E
Key Largo woodrat	*Neotoma floridana smalli*	E
Key Largo Cotton Mouse	*Peromyscus gossypinus allapaticola*	E
Choctawhatchee beach mouse	*Peromyscus polionotus allophrys*	E
Southeastern beach mouse	*Peromyscus polionotus niveiventris*	T
Anastasia Island beach mouse	*Peromyscus polionotus phasma*	E
St. Andrews beach mouse	*Peromyscus polionotus peninsularis*	E
Perdido Key beach mouse	*Peromyscus polionotus trissyllepsis*	E
Florida mouse	*Podomys floridanus*	SSC (1)
Florida mastiff bat	*Eumops glaucinus floridanus*	E
gray bat	*Myotis grisescens*	E
Indiana bat	*Myotis sodalis*	E
Florida saltmarsh vole (Florida salt marsh vole)	*Microtus pennsylvanicus dukecampbelli*	E
Sherman's short-tailed shrew	*Blarina carolonensis* [*=brevicauda*] *shermani*	SSC (2)
Homosassa shrew	*Sorex longirostris eionis*	SSC (2)
sei whale	*Balaenoptera borealis*	E
fin whale (finback whale)	*Balaenoptera physalus*	E
North Atlantic right whale (right whale)	*Eubalaena glacialis* (*Balaena glacialis* [*incl. australis*])	E
humpback whale	*Megaptera novaeangliae*	E
sperm whale	*Physeter macrocephalus*	E
Florida manatee (West Indian manatee)	*Trichechus manatus latirostris* (*Trichechus manatus*)	E

Common Name	Scientific Name	Status
INVERTEBRATES		
CORALS		
pillar coral	*Dendrogyra cylindrus*	E
CRUSTACEANS		
Panama City crayfish (econfina crayfish)	*Procambarus econfinae*	SSC (1)
sims sink crayfish (Santa Fe cave crayfish)	*Procambarus erythrops*	SSC (1)
black creek crayfish	*Procambarus pictus*	SSC (1)
INSECTS		
Miami blue butterfly	*Cyclargus* [=*Hermiargus*] *thomasi bethunebakeri*	E
Schaus' swallowtail butterfly	*Heraclides aristodemus ponceanus*	E
MOLLUSKS		
Florida tree snail	*Liguus fasciatus*	SSC (1)
Stock Island tree snail	*Orthalicus reses* *Orthalicus reses* [*not incl. nesodryas*]	E

KEY TO ABBREVIATIONS AND NOTATIONS

List Abbreviations

FWC =	Florida Fish and Wildlife Conservation Commission
E =	Endangered
T =	Threatened
SSC =	Species of Special Concern

Reasons for SSC listings prior to January 1, 2001 are indicated by the number in parenthesis under the following criteria:

(1) has a significant vulnerability to habitat modification, environmental alteration, human disturbance, or human exploitation which, in the foreseeable future, may result in its becoming a threatened species unless appropriate protective or management techniques are initiated or maintained;
(2) may already meet certain criteria for designation as a threatened species but for which conclusive data are limited or lacking;
(3) may occupy such an unusually vital or essential ecological niche that should it decline significantly in numbers or distribution other species would be adversely affected to a significant degree;
(4) has not sufficiently recovered from past population depletion, and
(5) occurs as a population either intentionally introduced or being experimentally managed to attain specific objectives, and the species of special concern prohibitions in Rule 68A-27.002, F.A.C., shall not apply to species so designated, provided that the intentional killing, attempting to kill, possession or sale of such species is prohibited.

(FWC)

[1] Lower keys population only.

[2] Monroe County population only.

[3] Other than those found in Baker and Columbia Counties or in Apalachicola National Forest.

Appendix B

SUBMERGED AQUATIC VEGETATION AND OYSTER BED SURVEY

D R A F T

SUBMERGED AQUATIC VEGETATION AND OYSTER BED SURVEY FOR POTENTIAL DREDGE MATERIAL PLACEMENT SITES, DIXIE COUNTY, FLORIDA

April 2002

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1.0 INTRODUCTION

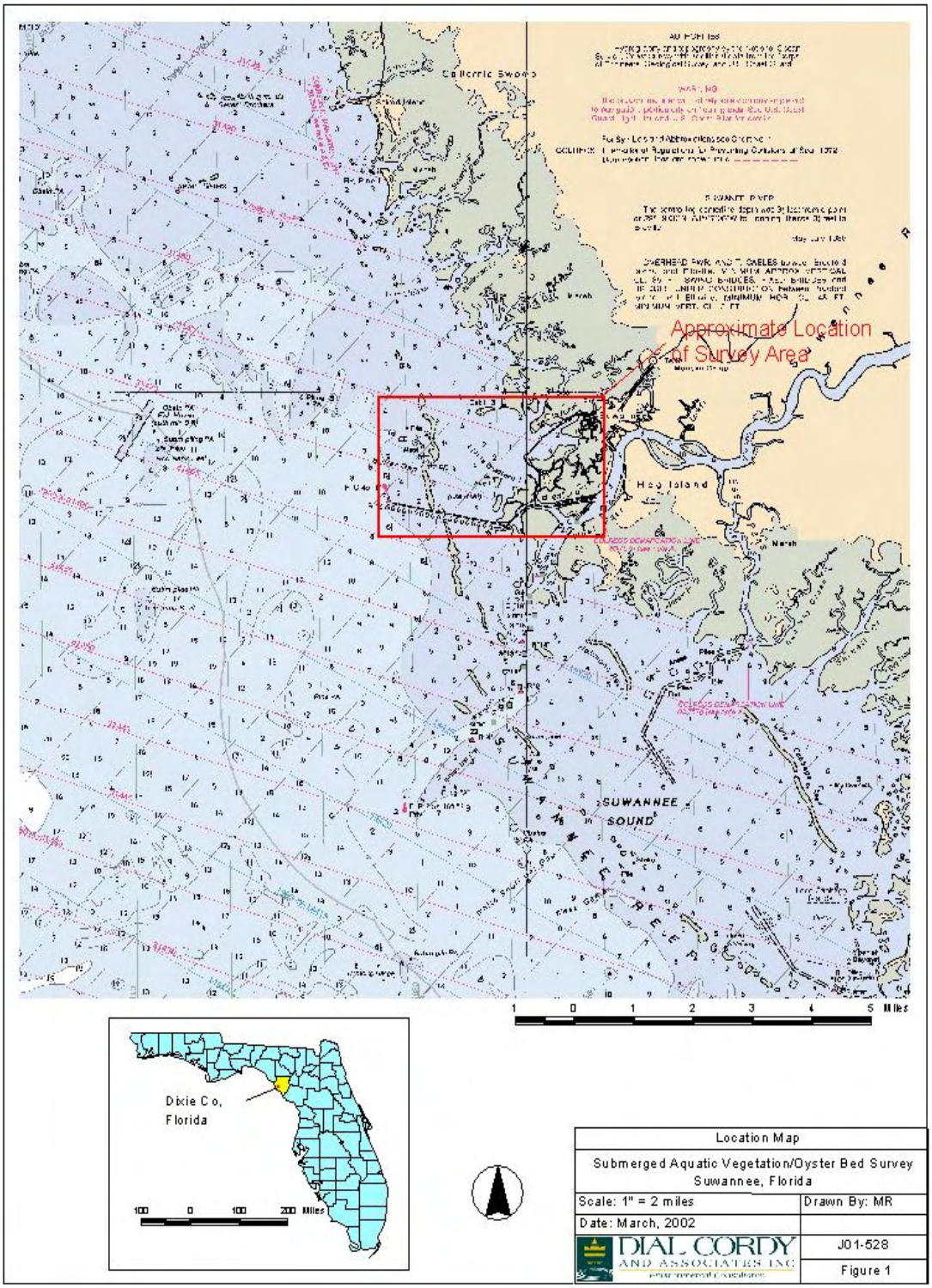
Dial Cordy and Associates Inc. (DC&A) was contracted by Gulf Engineers and Consultants, Inc. (GEC) to conduct a submerged aquatic vegetation and oyster bed survey for Wadley Pass and the Northern Pass located at the mouth of the Suwannee River, Dixie County, Florida (Figure 1). Wetland delineations were also conducted on Cat Island, Little Bradford Island and No Name Island to assess the upland/wetland boundaries. This work is under a subcontract from GEC under Task Order 21 DACW17-99-0043 of the U.S. Army Corps of Engineers (ACOE).

1.1 Project Purpose

The objective of this project was to document the presence of submerged aquatic vegetation (SAV) and oyster beds near Wadley Pass (sometimes called McGriff Pass or Channel) and the Northern Pass, within 100 ft of either side of the 75-foot wide channel (Figure 2). Those areas are proposed for maintenance dredging as well as placement of a pipeline to carry the spoil to wetlands surrounding the three survey islands. Additional SAV and oyster bed surveys were conducted to include the western side of No Name Island and Cat Island where dredge material is proposed for placement, as well as, wetland delineations on Cat Island, Little Bradford Island and No Name Island to assess the upland/wetland boundaries.

1.2 Background

The ACOE has proposed to perform maintenance dredging in the Federally authorized channel at Wadley Pass located at the mouth of the Suwannee River. Wadley Pass was designated a Federal Navigation Channel in 1999 after the U.S. Fish and Wildlife Service's Biological Opinion (GEC 2001) assessed that Alligator Pass, then designated as the navigation channel, contained widespread *Ruppia spp*. beds that helped support the endangered manatee (*Trichechus manatas*).


Approximate Location of Survey Area
Hog Island
SUWANNEE SOUND
1 0 1 2 3 4 5 Miles
Dixie Co, Florida
100 0 100 200 Miles
Location Map
Submerged Aquatic Vegetation/Oyster Bed Survey Suwannee, Florida
Scale: 1" = 2 miles
Drawn By: MR
Date: March, 2002
DIAL CORDY AND ASSOCIATES INC
J01-528
Figure 1

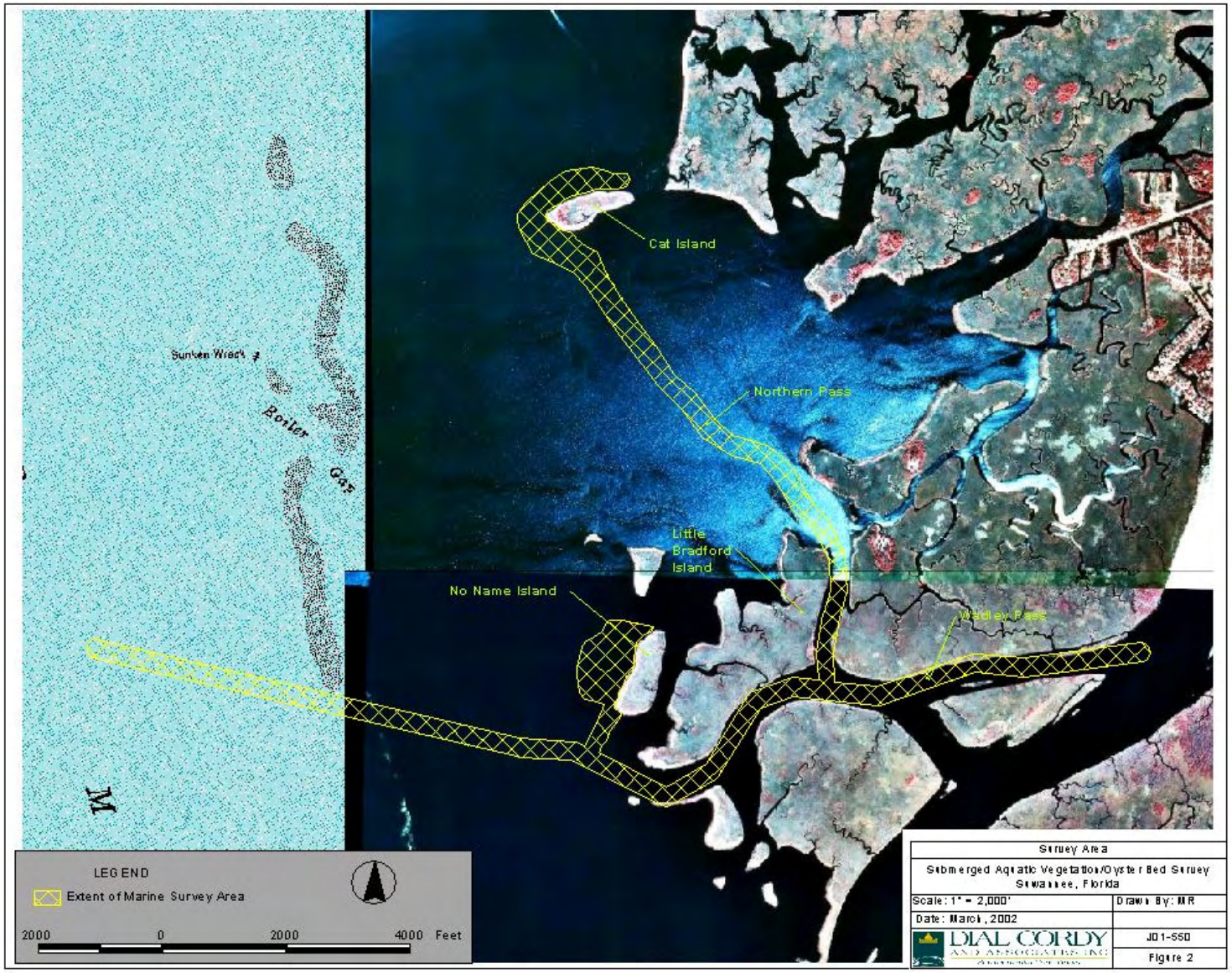


Figure 2 Survey Area

Shoaling has occurred within the channel since the Wadley Pass was last dredged in 1985 (GEC, 2001). Depths at certain locations in the channel are as shallow as –3.0 ft during mean low tides. During spring tides, it is necessary for many boats to pass the shallows "on plane." At particularly low tides, as when tides are wind-driven, the channel is impassible by the majority of boats that use the area.

If the channel is not dredged, sedimentation and shoaling of the channel will continue, and the economy of the Suwannee community will deteriorate. Dredging of the channel would provide improved access by eliminating the shoals, improving safety, and help maintain the economy of the community.

2.0 TECHNICAL APPROACH

A description of the methods utilized to document the distribution, occurrence, abundance, and density of SAV and oyster bed locations within the study area is described below. Marine resources were mapped and documented with a towed underwater video camera. Methodology utilized to delineate the wetland/upland boundary on Cat, Little Bradford and No Name Islands is also described below. Field investigations were conducted during 18-19 September 2001, and 11-12 March 2002.

2.1 Location of Video Survey Transects – Submerged Aquatic Vegetation and Oyster Beds

Video survey transects for SAV and oyster beds were located within Wadley Pass, Northern Pass, and the western portions of Cat Island and No Name Island (Figure 3). Transects for Wadley Pass and the Northern Pass were 100 ft on either side of the channel centerline, with perpendicular transects 500 ft apart. Along the western half of Cat and No Name Island, video survey transects were 300 ft long with perpendicular transects spaced 100 ft apart. Additional video survey transects 100 ft long and spaced 100 ft apart were located between the southern end of No Name Island and Wadley Pass.

2.2 Video Survey Methodology

The end points of each survey transect were located using a Trimble Differential Global Positioning System (DGPS). Once the beginning of each transect was located, a towed underwater video camera was lowered to within 1 ft off the bottom and towed along the transect line using Hypack® Max software to maintain the vessel's course. The underwater video was viewed onboard while the camera was towed and the occurrence of SAV, oysters, and oysters/rock rubble were documented. The documentation was used later when reviewing

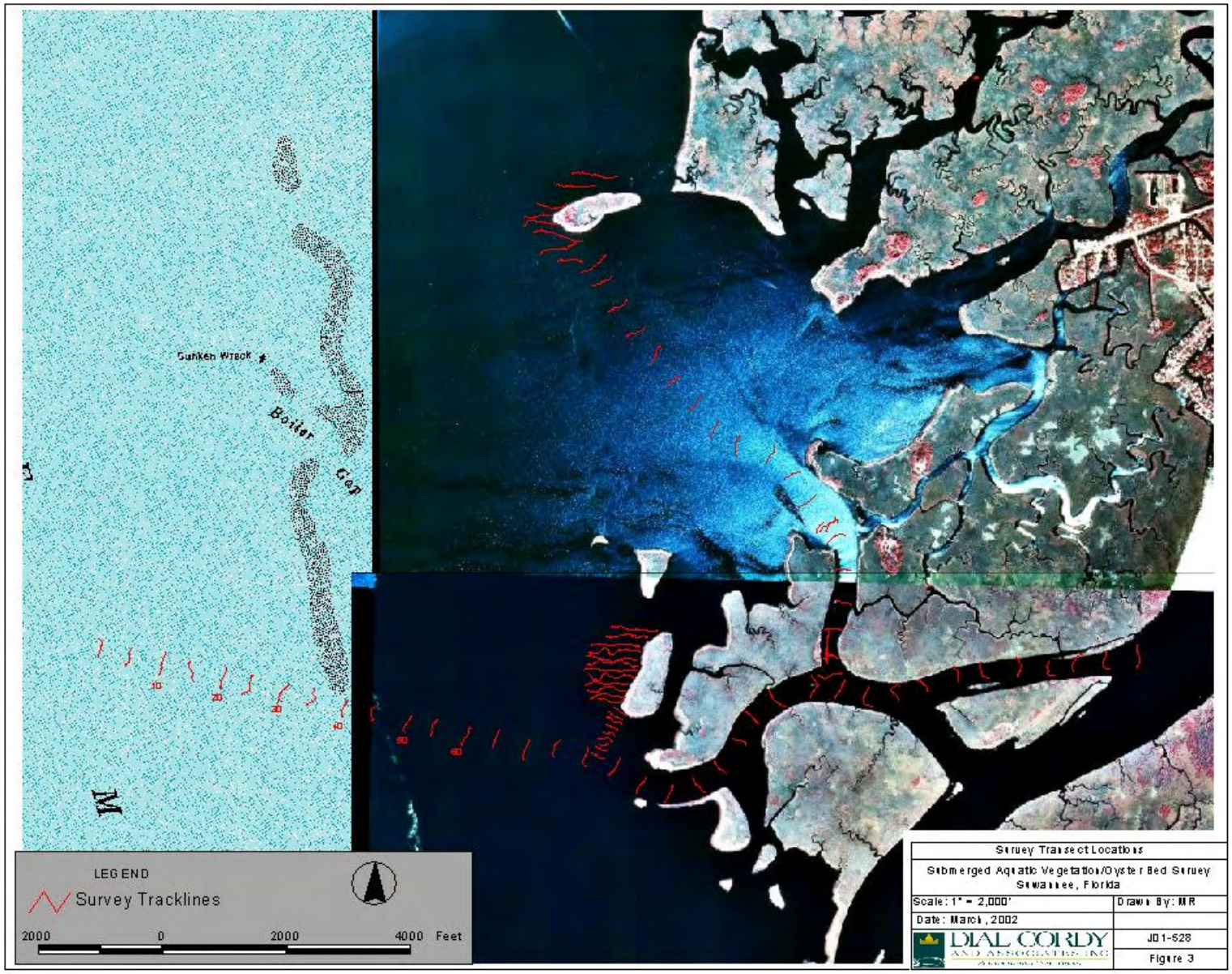


Figure 3 Survey Transect Locations

the video to denote the resource description and DGPS location. For mapping purposes, the resource type classification system used is described in Table 1.

Table 1 Resources Associated With the Suwannee River Submerged Aquatic Vegetation and Oyster Bed Survey, Suwannee, Florida

Bottom Resources	Description
Seagrass Bed	*Halodule wrightii* - Shoal grass was present
Tidally Exposed Oysters Beds	Oyster beds visible at low tide
Scattered Rubble w/Oysters	Loose aggregation of oysters and rock rubble

Following compilation of resource type distribution, they were superimposed over an aerial map using ArcView® GIS.

2.3 Biological Data Collection

In order to ascertain pertinent information on the SAV identified while towing the underwater video camera, the location, occurrence, abundance and density of the SAV was recorded utilizing a snorkel point intercept methodology. This survey methodology was performed at locations where SAV was identified. For each snorkel point intercept transect line, the percent mean (percent of 16, 25 x 25 cm sub-units within a 1 m^2 quadrat that contains at least one seagrass shoot) was estimated at the red side, centerline and green side of the navigation channel along the transect line (Fonseca 1998; Virstein 1995; Braun-Blanquet, 1965). Specific data recorded within each 1 m^2 quadrat for the SAV species present included the number of sub-units containing at least one shoot, a mean cover abundance score (Braun-Blanquet, 1965), and any other observations considered useful. The cover abundance scale is discussed below.

The cover abundance scale was computed for the three survey locations along each snorkel point transect. The content of each quadrat was visually inspected and a cover abundance scale value assigned to the seagrass coverage.

The scale values are:

0.1 = Solitary shoots with small cover
0.5 = Few shoots with small cover
1.0 = Numerous shoots but less than 5 percent cover
2.0 = Any number of shoots but with 5-25 percent cover
3.0 = Any number of shoots but with 26-50 percent cover
4.0 = Any number of shoots but with 51-75 percent cover
5.0 = Any number of shoots but with >75 percent cover

From the survey of quadrats along each transect, frequency of occurrence, abundance, and density of seagrass was computed as follows:

Frequency of Occurrence = Number of occupied sub-units/total number of sub-units
Abundance = Sum of cover scale values/number of occupied quadrats
Density = Sum of cover scale values/total number of quadrats

Snorkel point intercepts were not conducted along transects where no SAV was identified. However, spot checks were conducted at eight random locations along survey transect lines to verify that no SAV was missed during the towing and recording of the underwater camera.

2.4 Jurisdictional Wetland Determination

The upland areas and wetland habitats were delineated on Cat, Little Bradford and No Name Islands. The vegetation, hydrology, and soils were reviewed using the *1987 Army Corps of Engineers Wetlands Delineation Manual* and the *Florida Wetlands Delineation Manual*, to verify wetland boundaries on the islands. The determinations included plant identification throughout the site to record the presence of hydrophytic vegetation. Various taxonomic keys of regional flora were consulted for species identification (Dressler et al. 1991, Resource Management Group, Inc. 1995). Analyses of soil core samples were conducted at selected locations to determine the presence of hydric soils and to establish the line delineating the boundary between upland and hydric soil conditions. Hydrologic conditions of the site were determined using indicators such as inundation, saturated soils, oxidation associated with plant roots, water marks on vegetation and other fixed objects, debris lodged in tress and shrubs, sediment deposition, and the topographic relationship of the site with respect to

influential water bodies. Vegetation, soils, and hydrologic data were recorded on ACOE data forms from representative wetland points (Appendix A). The location of the upland/wetland boundary on each island surveyed was recorded using a DGPS.

A description of each habitat type was recorded using the Florida Land Use, Cover and Forms Classification System (Florida Department of Transportation, 1985). The habitat class definition and dominant vegetation identified within each habitat were recorded for both wetland and upland habitats.

3.0 SURVEY RESULTS

The video surveys identified one area of SAV and several scattered locations for oyster beds and oysters/rubble (Figure 4). Snorkel point intercepts collected information on the frequency of occurrence, abundance, and density of SAV identified. Wetland boundaries were determined for all three islands.

3.1 Description of Submerged Aquatic Vegetation and Oyster Bed Resources - Video Surveys

One SAV species was identified during the video survey, which occurred along the western section of Wadley Pass (Figure 4). Tidally exposed oyster beds were identified around Cat Island and within Wadley Pass (Figure 4). Scattered rubble with oysters was identified within Wadley Pass, and on the western section of No Name Island.

3.1.1 General Occurrence Patterns – Submerged Aquatic Vegetation

The SAV observed during the video surveys was identified as *Halodule wrightii*. *Halodule wrightii* was observed along 3 of the 86 survey transects (Figure 4). The SAV was located along the northern and southern channel slopes of the western section of the Wadley Pass survey area. This SAV totaled approximately 5.68 acres (Table 2).

Table 2 Cover Type Acreages Associated With the Suwannee River Submerged Aquatic Vegetation and Oyster Bed Survey, Suwannee, Florida

Location	*Halodule wrigthii* (acres)	Tidally Exposed Oyster Beds (acres)	Scattered Rubble with Oysters (acres)
Wadley Pass	5.68	2.39	8.59
Cat Island	NA	2.76	NA
Little Bradford Island	NA	NA	0.53
No Name Island	NA	NA	2.5
Total Acreage	5.68	5.15	11.62

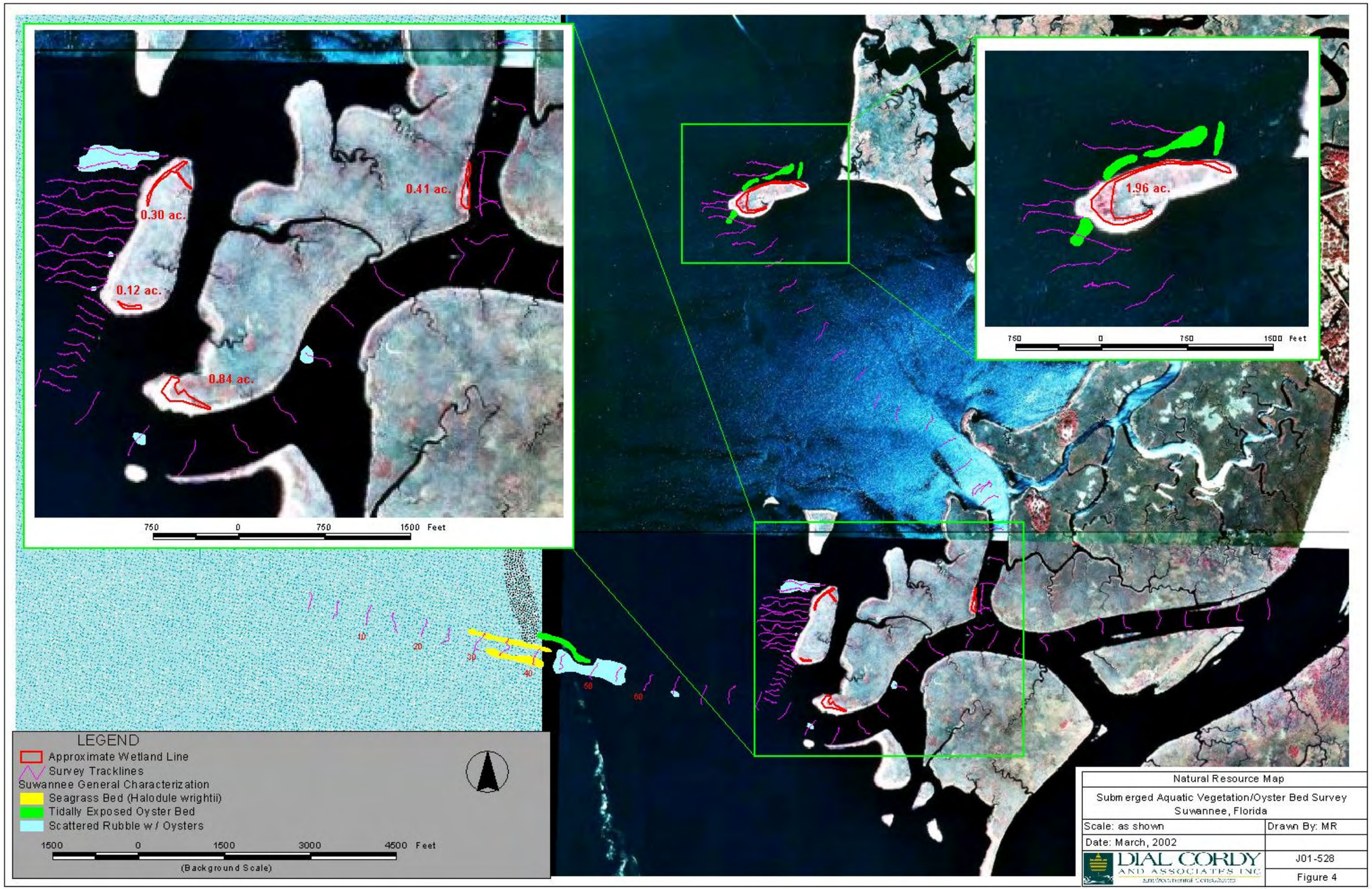


Figure 4 Marine Resource Map

3.1.2 General Occurrence Patterns – Tidally Exposed Oyster Beds

Tidally exposed oyster beds were identified at two locations within the survey area (Figure 4). One oyster bed was located along the northern side of the channel within the central section of the Wadley Pass survey area. This area is exposed during low tide and comprises approximately 2.39 acres (Table 2). Four tidally exposed oyster beds were identified around Cat Island. These areas were confined to the southwestern and northern areas of the Island and comprised approximately 2.76 acres (Table 2).

3.1.3 General Occurrence Patterns – Scattered Rubble with Oysters

Several areas were identified that contained scattered rubble with oysters (Figure 4). These areas are defined as a loose aggregation of oysters that are associated with rubble/rock substrate. The largest area was in the central/western section of the Wadley Pass survey area and comprised approximately 8.3 acres (Table 2). A second, smaller area was identified along the southern portion of the channel within Wadley Pass and comprised approximately 0.29 acres. Two areas along the southern portion of Little Bradford Island contained a total of 0.53 acres of scattered rubble with oysters (Table 2).

3.2 Seagrass Frequency of Occurrence, Abundance, and Density - Snorkel Surveys

Snorkel surveys were conducted to ascertain the frequency of occurrence, abundance and density for the only SAV identified during the survey, *Halodule wrightii*. The mean frequency of occurrence for *H. wrightii* was 0.37. The mean abundance and density for *H. wrightii* was 0.10 and 0.61, respectively. *Halodule wrightii* located within the survey area does occur within an area of 5.68 acres, however the shoots located within this area are very sparse and scattered and do not constitute a contiguous bed.

3.3 Wetland Delineations

Wetland delineations were conducted on the three islands located within the survey area (Figure 4). The wetlands surrounding the islands are the proposed locations for dredge spoil material. Five wetland boundaries were determined for the three islands; two each on Little Bradford Island and No Name Island, and one on Cat Island. Descriptions of the wetland and upland habitats are described below.

3.3.1 Cat Island

This island was comprised of approximately 1.96 acres of coastal shrub habitat (Florida Land Use Classification System (FLUCCS) habitat type 322) (Figure 4). Upland vegetation for the coastal shrub habitat consists primarily of live oak (*Quercus virginiana*), cabbage palm (*Sabal palmetto*), red cedar (*Juniperus silicicola*), baccharis (*Baccharis halimifolia*) and yaupon (*Ilex vomitoria*). Saltwater marsh wetlands (FLUCCS 642) surround the Island and consists predominately of needlerush (*Juncus roemarianus*), cordgrass (*Spartina alterniflora*) and saltgrass (*Distichlis spicata*).

3.3.2 Little Bradford Island

Two areas were delineated on this island (Figure 4). The eastern portion of the island was a coastal shrub habitat (FLUCCS 322) consisting of 0.41 acres of live oak, red cedar, yaupon, cabbage palm and poison ivy (*Toxicodendron radicans*). The surrounding saltmarsh wetland (FLUCCS 642) vegetation consists of needlerush, and cordgrass.

The second upland area was a spoil deposition area located at the southwestern tip of the Island. This spoil island habitat (FLUCCS 743) consists primarily of poison ivy, panicum (*Panicum spp*.), red cedar, and baccharis and comprises approximately 0.84 acres. The surrounding salt marsh wetland (FLUCCS 642) vegetation consists of needlerush, and cordgrass.

3.3.3 No Name Island

This Island consisted of two small upland areas consisting of 0.42 acres (Figure 4). Both coastal scrub habitats (FLUCCS 322) are vegetated with cabbage palms, red cedar, yaupon, and saltgrass. The surrounding saltmarsh habitat (FLUCCS 642) consists of needlerush and cordgrass.

4.0 IMPACT ASSESSMENT

A discussion of resource type impacts within the study site is provided below.

4.1 Submerged Aquatic Vegetation Impacts

Impacts to the main channel due to dredging and additional channel widening would affect approximately 5.68 acres of very sparse *Halodule wrightii* (Table 2). While this SAV does cover an area 5.68 acres it does not constitute a contiguous grass bed but is rather scattered shoots throughout the area. Density values for *Halodule wrightii* within the survey were very low (< 1.0) with very low abundance and occurrence values also noted. These impacts are confined to channel slopes within the central section of Wadley Pass. No other areas containing SAV were identified within the survey area.

4.2 Oyster Bed Impacts

A total of 5.15 acres of tidally exposed oyster beds could potentially be impacted during dredging activities (Table 2). Approximately 2.39 acres of tidally exposed oyster beds may potentially be impacted during maintenance dredging activities and along the central section of Wadley Pass. Another 2.76 acres of tidally exposed oysters could be impacted around Cat Island, where dredge spoil placement is proposed.

4.3 Scattered Rubble with Oysters Impacts

A total of 11.62 acres of scattered rock rubble with oysters could potentially be impacted during the dredging and filling activities (Table 2). Approximately 8.59 acres of scattered rubble with oysters will be impacted as part of the maintenance dredging within the central section of Wadley Pass. Two smaller areas, totaling 0.53 acres, will be impacted by maintenance dredging within Wadley Pass, on the southern side of Little Bradford Island. Approximately 2.5 acres could be impacted on the western side of No Name Island if dredge spoil material is placed there.

4.4 Wetland Impacts

The islands associated with this project contain approximately 3.63 acres of uplands. Several of these islands are slowly loosing these upland areas to erosion. Along with the physical land feature losses, at least one of these islands (the eastern portion of Little Bradford Island) is also loosing cultural resources, as this area has been designated a cultural resources area by the Suwannee National Wildlife Refuge. Further erosion of this upland island threatens to disturb these resources.

5.0 SUMMARY AND RECOMMENDATIONS

Maintenance dredging of Wadley Pass and the proposed pipeline corridors and dredge spoil fill areas are assessed in this section.

5.1 Submerged Aquatic Vegetation

The SAV located within the area of the Wadley Pass is very sparse and of moderate quality. It is assumed that this vegetation has re-colonized since the 1986 dredging. Therefore, it is recommended that no mitigation should be needed to offset SAV impacts, as this SAV should re-colonize after the work is performed.

5.2 Oyster Beds

The 2.39 acres of tidally exposed oysters located along the central portion of Wadley Pass are on the outer reaches where the maintenance dredging scheduled is planned and may not be impacted. The remaining 2.76 acres of tidally exposed oyster beds is centered around Cat Island. This area is a proposed spoil deposition area and could help preserve historical resources discovered by cultural resource personnel (Eddy Carter, GEC, pers. comm., March 2002). Depositing spoil material on this natural resource could help preserve the historical resources identified offshore of the southwestern portion of Cat Island. No indirect impacts are likely to occur within the survey area due to the high turbidity and sediment loads already encountered within the system.

5.3 Scattered Rubble with Oysters

The largest area of scattered rubble with oysters is located along the central reaches of Wadley Pass. This area will be impacted by the maintenance dredging operation. There is the potential for new oyster formation on exposed substrate following dredging activities. Oyster seed placement along the edges of the newly created fill areas can also be used to mitigate some of the losses that will occur through dredging.

5.4 Wetlands Impacts

Spoil placement around the three islands would help to reduce erosion and lose of cultural resources, especially around the eastern side of Little Bradford Island and around Cat Island. Dredge material placement would occur in open water habitats that are an extension of the islands, thus not impacting saltmarsh vegetative habitat (FLUCCS 642).

6.0 LITERATURE CITED

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October 17, 2006

APPENDIX A

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	USACE				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	Cat Island
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Upland
					Plot ID:	FLUCCS 322

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Quercus virginiana*	C	FACU+	9.		
2. *Sabal palmetto*	C	FAC	10.		
3. *Juniperus silicicola*	M	FACU-	11.		
4. *Baccharis halimifolia*	M	FAC	12.		
5. *Ilex vomitoria*	M	FAC	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 60%

Describe Morphological Adaptations:

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks)			Wetland Hydrology Indicators:
Stream, Lake, or Tide Gage			Inundated
Aerial Photograph			Saturated in Upper 12 Inches
Other			Water Marks
___ No Recorded Data Available		X	Drift Lines
			Sediment Deposits
Field Observations:			Drainage Patterns in Wetlands
Depth of Surface Water: NA (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ___ (in)			Water Stained Leaves
Depth to Saturated Soil: ___ (in)			Local Soil Survey Data
			Other (Explain in Remarks)

Remarks: Upland

SOILS

Map Unit Name: Lacoochee			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes No **X**		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-6		10 YR 7/1	Light gray		Fine sandy loam
6-16		10 YR 6/6	Yellow brown		Loamy fine sand

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon			High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime			Listed on Local Hydric Soils List
		Reducing Conditions			Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)

Remarks: Upland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y	N **X**			
Wetland Hydrology Present?	Y	N **X**	Is this Sampling Point Within a Wetland?	Y	N **X**

Remarks: Upland habitat of a coastal barrier island

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	USACE				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	Cat Island
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Saltwater Wetland
					Plot ID:	FLUCCS 642

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Juncus roemarianus*	H	OBL	9.		
2. *Spartina alterniflora*	H	OBL	10.		
3. *Distichlis spicata*	H	FACW+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 100%

Describe Morphological Adaptations:

Remarks: Vegetated saltmarsh surrounding Cat Island, tidally influenced

HYDROLOGY

Recorded Data (Describe in Remarks)
- Stream, Lake, or Tide Gage
- Aerial Photograph
- Other
- ___ No Recorded Data Available

Field Observations:
- Depth of Surface Water: 0-16+ (in)
- Depth to Free Water in Pit: ____ (in)
- Depth to Saturated Soil: ____ (in)

Wetland Hydrology Indicators:
- X Inundated
- X Saturated in Upper 12 Inches
- X Water Marks
- X Drift Lines
- X Sediment Deposits
- X Drainage Patterns in Wetlands
- Oxidized Root channels in Upper 12 Inches
- Water Stained Leaves
- X Local Soil Survey Data
- Other (Explain in Remarks)

Remarks: Tidally influenced Wetland

SOILS

Map Unit Name: Homosassa mucky fine sandy loam			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes **X** No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-3	10 YR 2/1	Black			Friable, many fine roots
4-16	10 YR 3/2	Dark gray			Sandy loam
Hydric Soil Indicators:					

		Histosol			Concretions
		Histic Epipedon		X	High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime		X	Listed on Local Hydric Soils List
		Reducing Conditions		X	Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)

Remarks: Tidally influenced wetland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y **X**	N			
Wetland Hydrology Present?	Y **X**	N	Is this Sampling Point Within a Wetland?	Y **X**	N

Remarks: Saltmarsh surrounding Cat Island

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:					County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	L. Bradford Island East
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Upland
					Plot ID:	FLUCCS 322

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Quercus virginiana*	C	FACU+	9.		
2. *Sabal palmetto*	C	FAC	10.		
3. *Juniperus silicicola*	M	FACU-	11.		
4. *Ilex vomitoria*	M	FAC	12.		
5. *Toxicodendron radicans*	H	FAC	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 60%

Describe Morphological Adaptations:

Remarks: Upland - Eastern side of Little Bradford Island

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage			Inundated
Aerial Photograph			Saturated in Upper 12 Inches
Other			Water Marks
___ No Recorded Data Available		X	Drift Lines
			Sediment Deposits
Field Observations:			Drainage Patterns in Wetlands
Depth of Surface Water: NA (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ____ (in)			Water Stained Leaves
Depth to Saturated Soil: ____ (in)			Local Soil Survey Data
			Other (Explain in Remarks)

Remarks: Upland

SOILS

Map Unit Name: Lacoochee			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes No **X**		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-6		10 YR 7/1	Light gray		Fine sandy loam
6-16		10 YR 6/6	Yellow brown		Loamy fine sand

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon			High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime			Listed on Local Hydric Soils List
		Reducing Conditions			Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)

Remarks: Upland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y	N **X**			
Wetland Hydrology Present?	Y	N **X**	Is this Sampling Point Within a Wetland?	Y	N **X**

Remarks: Upland habitat of a coastal barrier island

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	U.S. Army Corps of Engineers				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	L Bradford Island East
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Saltwater Wetland
					Plot ID:	FLUCCS 642

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Juncus roemarianus*	H	OBL	9.		
2. *Spartina alterniflora*	H	OBL	10.		
3. *Distichlis spicata*	H	FACW+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 100%

Describe Morphological Adaptations:

Remarks: Vegetated saltmarsh surrounding Little Bradford Island, tidally influenced

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage		X	Inundated
Aerial Photograph		X	Saturated in Upper 12 Inches
Other		X	Water Marks
___ No Recorded Data Available		X	Drift Lines
		X	Sediment Deposits
Field Observations:		X	Drainage Patterns in Wetlands
Depth of Surface Water: 0-16+ (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ____ (in)			Water Stained Leaves
Depth to Saturated Soil: ____ (in)		X	Local Soil Survey Data
			Other (Explain in Remarks)

Remarks: Tidally influenced Wetland

SOILS

Map Unit Name: Homosassa mucky fine sandy loam			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes **X** No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-3	10 YR 2/1	Black			Friable, many fine roots
4-16	10 YR 3/2	Dark gray			Sandy loam

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon		X	High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime		X	Listed on Local Hydric Soils List
		Reducing Conditions		X	Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)
Remarks: Tidally influenced wetland					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y **X**	N			
Wetland Hydrology Present?	Y **X**	N	Is this Sampling Point Within a Wetland?	Y **X**	N
Remarks: Saltmarsh surrounding Little Bradford Island East					

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	USACE				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes	x	No		Community ID:	L. Bradford Island SW
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Upland
					Plot ID:	FLUCCS 743

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Baccharis halimifolia*	S	FAC	9.		
2. *Panicum spp.*	H	FAC	10.		
3. *Juniperus silicicola*	S	FACU-	11.		
4. *Toxicodendron radicans*	H	FAC	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 75%
Describe Morphological Adaptations:
Remarks: Upland Dredge Spoil area at the Southwest corner of Little Bradford Island

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage			Inundated
Aerial Photograph			Saturated in Upper 12 Inches
Other			Water Marks
___ No Recorded Data Available		X	Drift Lines
			Sediment Deposits
Field Observations:			Drainage Patterns in Wetlands
Depth of Surface Water: NA (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ____ (in)			Water Stained Leaves
Depth to Saturated Soil: ____ (in)			Local Soil Survey Data
			Other (Explain in Remarks)
Remarks: Upland			

SOILS

Map Unit Name: Lacoochee			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes No **X**		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-6		10 YR 7/1	Light gray		Fine sandy loam
6-16		10 YR 6/6	Yellow brown		Loamy fine sand

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon			High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime			Listed on Local Hydric Soils List
		Reducing Conditions			Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)

Remarks: Upland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y	N **X**			
Wetland Hydrology Present?	Y	N **X**	Is this Sampling Point Within a Wetland?	Y	N **X**

Remarks: Upland habitat of a coastal barrier island, formerly a dredge deposition area

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	U.S. Army Corps of Engineers				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	L Bradford Island SW
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Saltwater Wetland
					Plot ID:	FLUCCS 642

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Juncus roemarianus*	H	OBL	9.		
2. *Spartina alterniflora*	H	OBL	10.		
3. *Distichlis spicata*	H	FACW+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 100%

Describe Morphological Adaptations:

Remarks: Vegetated saltmarsh surrounding Little Bradford Island SW, tidally influenced

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage		X	Inundated
Aerial Photograph		X	Saturated in Upper 12 Inches
Other		X	Water Marks
___ No Recorded Data Available		X	Drift Lines
		X	Sediment Deposits
Field Observations:		X	Drainage Patterns in Wetlands
Depth of Surface Water: 0-16+ (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ___ (in)			Water Stained Leaves
Depth to Saturated Soil: ___ (in)		X	Local Soil Survey Data
			Other (Explain in Remarks)

Remarks: Tidally influenced Wetland

SOILS

Map Unit Name: Homosassa mucky fine sandy loam			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes **X** No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-3	10 YR 2/1	Black			Friable, many fine roots
4-16	10 YR 3/2	Dark gray			Sandy loam

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon		X	High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime		X	Listed on Local Hydric Soils List
		Reducing Conditions		X	Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)
Remarks: Tidally influenced wetland					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y **X**	N			
Wetland Hydrology Present?	Y **X**	N	Is this Sampling Point Within a Wetland?	Y **X**	N
Remarks: Saltmarsh surrounding Little Bradford Island SW					

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	USACE				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	No Name Island
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Upland
					Plot ID:	FLUCCS 322

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Ilex vomitoria*	M	FAC	9.		
2. *Sabal palmetto*	C	FAC	10.		
3. *Juniperus silicicola*	M	FACU-	11.		
4. *Disticchlis spicata*	H	FACW+	12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 75%
Describe Morphological Adaptations:
Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage			Inundated
Aerial Photograph			Saturated in Upper 12 Inches
Other			Water Marks
___ No Recorded Data Available		X	Drift Lines
			Sediment Deposits
Field Observations:			Drainage Patterns in Wetlands
Depth of Surface Water: NA (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ____ (in)			Water Stained Leaves
Depth to Saturated Soil: ____ (in)			Local Soil Survey Data
			Other (Explain in Remarks)
Remarks: Upland			

SOILS

Map Unit Name: Lacoochee			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes No **X**		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-6		10 YR 7/1	Light gray		Fine sandy loam
6-16		10 YR 6/6	Yellow brown		Loamy fine sand
Hydric Soil Indicators:					

		Histosol			Concretions
		Histic Epipedon			High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime			Listed on Local Hydric Soils List
		Reducing Conditions			Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)

Remarks: Upland

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y	N **X**			
Wetland Hydrology Present?	Y	N **X**	Is this Sampling Point Within a Wetland?	Y	N **X**

Remarks: Upland habitat of a gulf coast barrier island

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Suwannee River Maintenance Dredging				Date:	March 12, 2002
Applicant/Owner:	U.S. Army Corps of Engineers				County:	Dixie
Investigator:	Dial Cordy and Associates Inc.				State:	Florida
Have Vegetation, soils, or hydrology been disturbed?	Yes		No	x	Community ID:	No Name Island
Is the area a potential Problem Area? (If needed, explain on reverse)	Yes		No	x	Transect ID:	Saltwater Wetland
					Plot ID:	FLUCCS 642

VEGETATION (Note: those species observed to have morphological adaptations to wetlands with a*)

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Juncus roemarianus*	H	OBL	9.		
2. *Spartina alterniflora*	H	OBL	10.		
3. *Distichlis spicata*	H	FACW+	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW, or FAC (except FAC-). Include species noted (*) as showing morphological adaptations to wetlands. 100%

Describe Morphological Adaptations:

Remarks: Vegetated saltmarsh surrounding No Name Island, tidally influenced

HYDROLOGY

Recorded Data (Describe in Remarks)	Wetland Hydrology Indicators:		
Stream, Lake, or Tide Gage		X	Inundated
Aerial Photograph		X	Saturated in Upper 12 Inches
Other		X	Water Marks
___ No Recorded Data Available		X	Drift Lines
		X	Sediment Deposits
Field Observations:		X	Drainage Patterns in Wetlands
Depth of Surface Water: 0-16+ (in)			Oxidized Root channels in Upper 12 Inches
Depth to Free Water in Pit: ___ (in)			Water Stained Leaves
Depth to Saturated Soil: ___ (in)		X	Local Soil Survey Data
			Other (Explain in Remarks)

Remarks: Tidally influenced Wetland

SOILS

Map Unit Name: Homosassa mucky fine sandy loam			Drainage Class:		
Taxonomy (Subgroup):			Field Observations Confirm Mapped Type: Yes **X** No		
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Rhizospheres, etc.
0-3	10 YR 2/1	Black			Friable, many fine roots
4-16	10 YR 3/2	Dark gray			Sandy loam

Hydric Soil Indicators:					
		Histosol			Concretions
		Histic Epipedon		X	High Organic Content in Surface Layer
		Sulfidic Odor			Organic Streaking
		Probable Aquic Moisture Regime		X	Listed on Local Hydric Soils List
		Reducing Conditions		X	Listed on National Hydric Soils List
		Gleyed or Low-Chroma Colors			Other (Explain in Remarks)
Remarks: Tidally influenced wetland					

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	Y **X**	N			
Hydric Soils Present?	Y **X**	N			
Wetland Hydrology Present?	Y **X**	N	Is this Sampling Point Within a Wetland?	Y **X**	N
Remarks: Saltmarsh surrounding No Name Island					

Appendix C

STATE AND FEDERAL LISTED SPECIES AND EXOTIC/INVASIVE SPECIES SURVEY

FINAL

US Army Corps
Of Engineers
Jacksonville District

STATE AND FEDERAL LISTED SPECIES AND EXOTIC/INVASIVE SPECIES SURVEY SUWANNEE RIVER UPLAND DISPOSAL SITE 5 DIXIE COUNTY, FLORIDA

OCTOBER 2005

October 7, 2005

FINAL

STATE AND FEDERAL LISTED SPECIES AND EXOTIC/INVASIVE SPECIES SURVEY SUWANNEE RIVER UPLAND DISPOSAL SITE 5 DIXIE COUNTY, FLORIDA

Contract No.W912EP-04-D-0004
Delivery Order No. 0004
GEC Project No. 27307604

Prepared for

U.S. Army Corps of Engineers
Jacksonville District
Jacksonville, Florida

Prepared by

Environmental Resources
9357 Interline Avenue
Baton Rouge, Louisiana
225/612-3000

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STATE AND FEDERAL LISTED SPECIES AND EXOTIC/INVASIVE SPECIES SURVEY

STATE AND FEDERAL LISTED SPECIES AND EXOTIC/INVASIVE SPECIES SURVEY SUWANNEE RIVER DREDGE DISPOSAL SITE DIXIE COUNTY, SUWANNEE, FLORIDA

1.0 INTRODUCTION

1.1 BACKGROUND

The Federal Project is located at the mouth of the Suwannee River in Dixie County, Florida, in Wadley Pass (sometimes called McGriff Pass or Channel). This project was authorized by the Rivers and Harbors Act of 1960. See Figure 1 for vicinity map and project plan view.

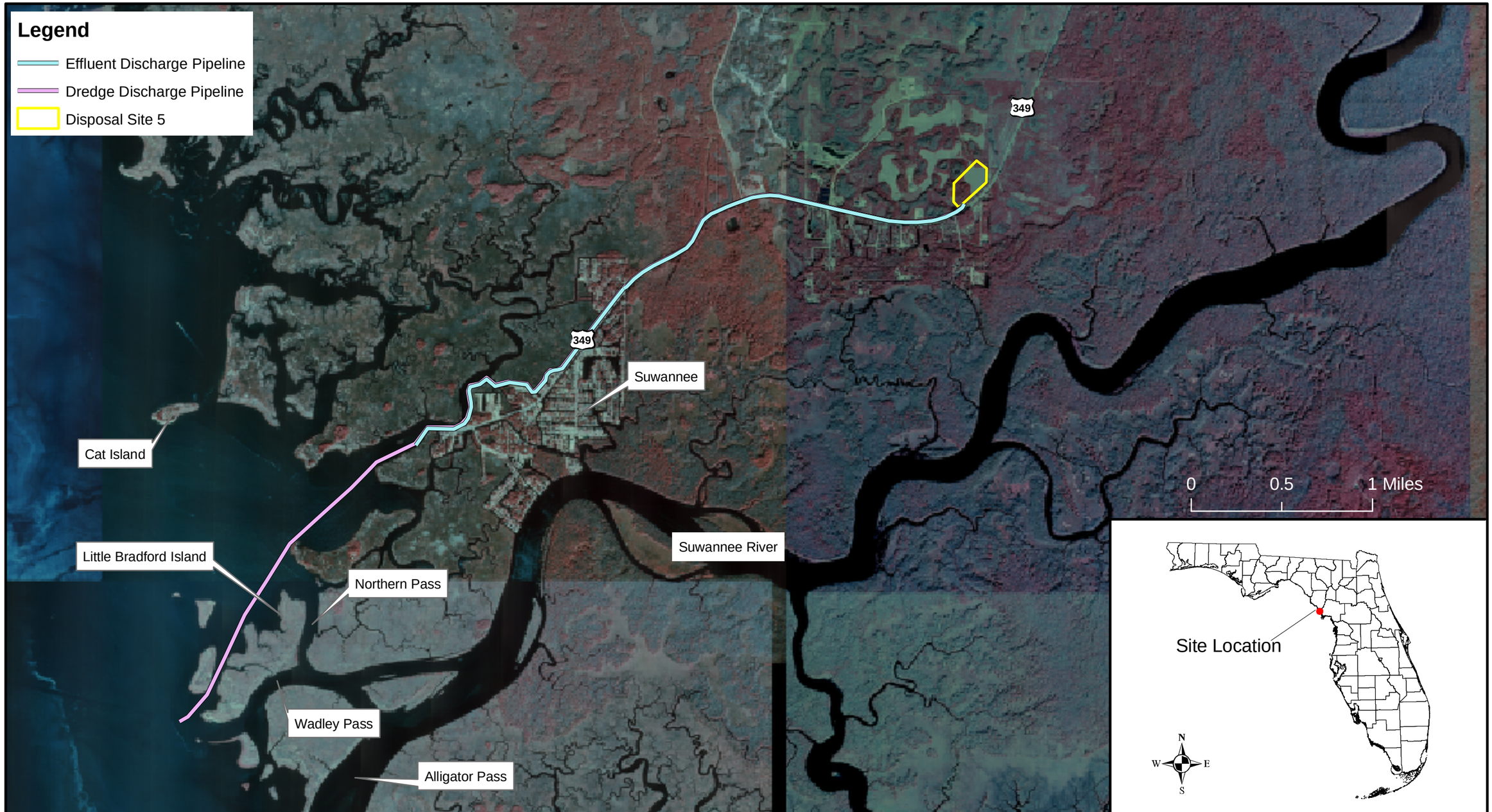
Wadley Pass was dredged in 1962 when 48,576 cubic yards of material were removed from the project area to provide a channel with a depth of five to seven feet. The Suwannee River Authority last performed maintenance dredging of Wadley Pass in 1986.

The Water Resources Development Act of 1999 designated Wadley Pass for maintenance as the Federal navigation channel.

1.2 PROJECT

Spoil from dredging operations was mounded at the southeastern point of Little Bradford Island. The “No-Name Storm” of March 1993 produced a storm surge reported by residents of the community of Suwannee to have reached a height of 10 to 12 feet. Much of the spoil at Little Bradford Island (reportedly, as much as half) was eroded, and it reentered the channel, resulting in channel depths as shallow as 3.0 feet at mean low tide.

Shoaling of the channel has restricted vessel movement in the channel, particularly during low tides. During spring tides, it is necessary for many boats to pass the shallows “on plane.” At particularly low tides, as when tides are wind-driven, the channel is impassible by a majority of boats of the area. This has created a potential safety hazard by preventing boats from reaching safe harbor during adverse weather.



SITE LOCATION MAP

Upland Disposal Site 5
Dixie County, Florida

USGS Suwanee NE (3/6/1994), Suwanee SE (1/21/1994), East Pass NW (3/6/1994) and East Pass SW (3/6/1994) DOQQs

GEC
Gulf Engineers & Consultants, Inc.

Figure:	1
Date:	October 2005
Scale:	1:34,000
Source:	GEC

The small community of Suwannee, located at the mouth of the Suwannee River, is dependent on water access to the lower reaches of the river and the Gulf of Mexico. There are three marinas in the community that provide berthing and storage of boats for residents and visitors. Recreational and commercial fishing, light tourism, and boating are the mainstays of the community economy. Shoaling of the channel has adversely affected the economic development of the community. The project is needed to improve access through the elimination of shoals, which would improve navigation safety, facilitate expansion of recreation and tourism, and contribute to maintaining the economy of the community.

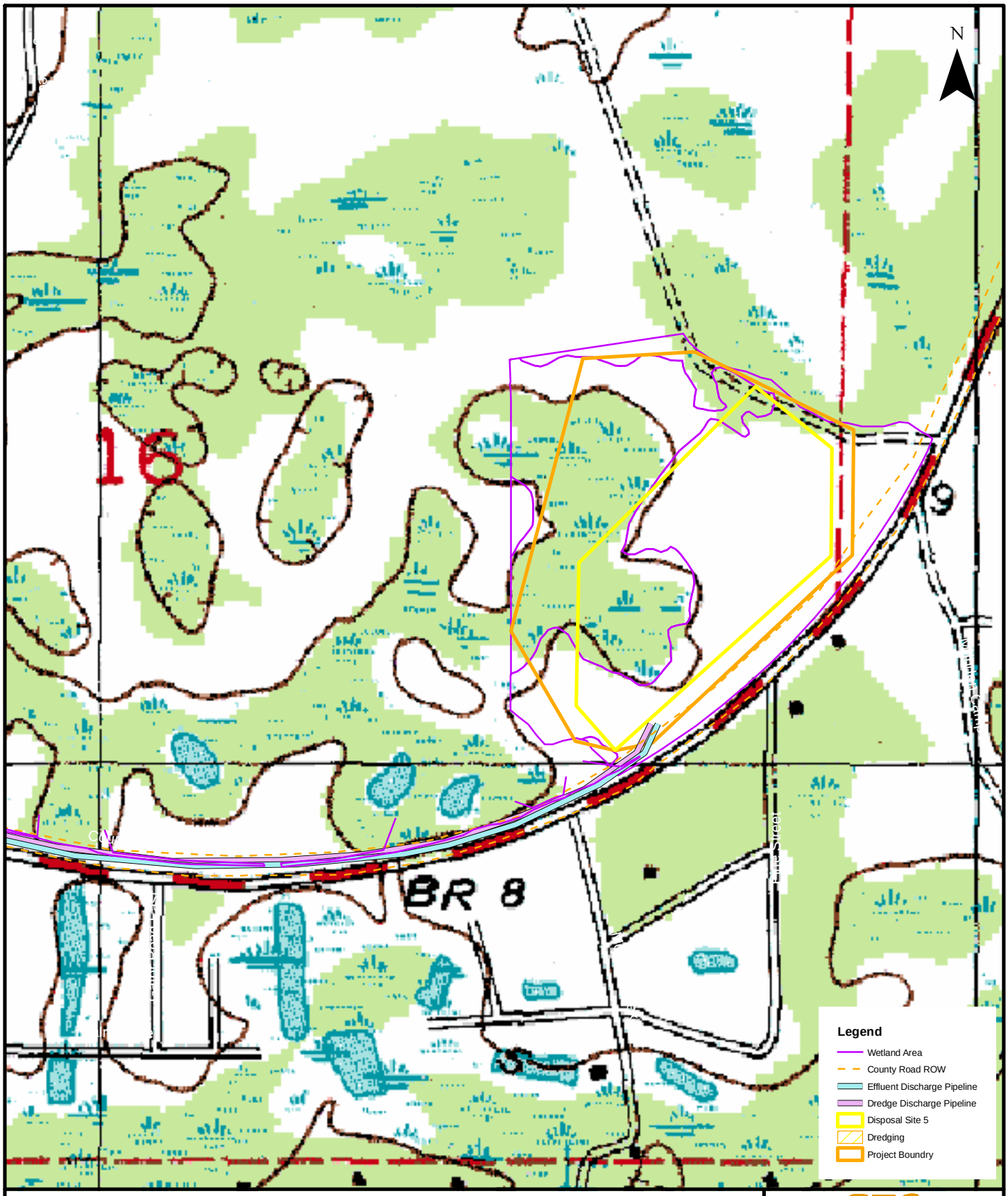
The U.S. Army Corps of Engineers (EC 1165-2-200, July 1994) requires each of its Districts to prepare a Dredged Material Management Plan (DMMP) to maintain Federal navigation channels for at least 20 years. The Suwannee River Federal Project does not have a dredged material management plan or a disposal site for maintenance. Therefore, there is a need to prepare a DMMP to comply with Corps requirements.

The purpose of the project is to restore the channel depth and width for safe and efficient navigation throughout the length of the Federal navigation project. The goal is to restore navigability in the Federal project, to dispose of dredged material consistent with sound engineering practice, and to present a management plan that identifies the specific measures necessary to manage the volume of material likely to be dredged over a 20-year period.

1.3 PROPOSED ACTION

Dredging to restore the dimensions of the Federal project to 75 feet wide and six feet deep will require removal of approximately 125,000 cubic yards of dredged material. Dredging will likely be performed by a suction dredge with a cutterhead.

Dredge material would be pumped to an upland disposal site through a pipeline. A pontoon-supported pipeline would be routed through the existing channel of Salt Creek, through a tributary to County Road 349 to the Town of Suwannee Water Treatment Plant. From this location the pipeline would proceed approximately six miles along the northern side of County Road 349 within the right-of-way to the disposal site (Figure 2). Booster pumps would be placed in the pipeline, as needed. A sump at the disposal site would collect saltwater from the dewatering of the dredged material. A pump and any necessary booster pumps would pump the saltwater through a return line to the roadside canal adjacent to County Road 349 near the Town of Suwannee Water Treatment Plant.



UPLAND DISPOSAL SITE 5 LOCATION MAP

Suwannee River
Dixie County, Florida

Quadrangle East Pass (1989)

GEC

Figure: 2
Date: October 2005
Scale:1:6,000
Source: GEC
Map Author: G. Sigrest

Opportunities exist for beneficial uses of the dredged material. Little Bradford Island has experienced considerable shoreline erosion, and much of the unique biological communities and prehistoric Native American relics on this island have been lost. The proposed action incorporates the placement of approximately 3,000 cubic yards of dredged material to restore the historic shoreline to prevent further losses of natural and cultural resources. Stabilization will be accomplished through the placement of geotubes filled with dredge material along the historic shoreline. Dredge material will then be pumped between the geotubes and the existing shoreline

The disposal site is located in Sections 16 of Township 13 South, Range 12 East on the East Pass Quadrangle (1954, PR 1993) in Dixie County, Florida (Figure 2). The disposal site area covers 16.9 acres and is situated alongside and approximately 50 feet from the County Road 349 right-of-way (Figure 2). Within the disposal area, 10-foot dikes will be constructed to contain up to 300,000 cubic yards of dredged material.

2.0 METHODOLOGY

The state species possibly occurring in the area were obtained from the Florida Fish and Wildlife Conservation Commission. The list includes approximately 118 species and can be found at http://wildflorida.org/imperiled/pdf/Endangered-Threatened-Special-Concern-2004.pdf. For a list of the 53 exotic/invasive species possibly occurring at the site go to http://www.fleppc.org/.

For initial information regarding species that may possibly occur within the vicinity of the proposed disposal site, GEC biologists contacted the Florida Fish and Wildlife Conservation Commission (FFWCC) to request a search of existing data. Prior to initiation of fieldwork, aerial photography of the proposed disposal site was reviewed to identify community types within the proposed project site and determine potential habitat of those listed species that may possibly occur within the proposed disposal site. During the field reconnaissance, these areas were investigated to determine the presence or absence of any State or Federally listed species (endangered, threatened, status review, of concern, or invasive exotic). Table 1 provides the list of Federally protected species that are potentially found in the area and surveyed for during this investigation. The proposed disposal area was surveyed by qualified biologists utilizing north\south transects spaced approximately 50 feet apart to provide adequate coverage of the site. General vegetation of the habitats was recorded within the wetland, upland scrub, and open spray field communities. Listed species observed along the transects were mapped utilizing a Trimble Pro XRS Global Positioning System Unit. Photographs representing overviews of the communities surveyed and any listed species observed on the site were taken and are presented in Appendix A.

3.0 COMMUNITIES OBSERVED

Through the use of aerial photography and data collected during a wetlands delineation on the proposed disposal site, three general communities were identified within the site. These included open spray fields, pine/scrub oak, and forested wetlands. A general description of each of these community types is provided below.

3.1 OPEN SPRAY FIELDS

The open spray fields were developed for the Suwannee Wastewater Treatment Facility. Even though the fields are not utilized by the treatment facility, the fields are maintained by periodic mowing. Vegetation within the fields is dominated by bahai grass (*Paspalum notatum*), broom sedge (*Andropogon virginicus*), blackberry (*Rubus* sp.), *Lespedeza* sp., and various other herbaceous species. Individual plants of wax myrtle (*Myrica cerifera*), live oak (*Quercus virginiana*), and rattlebox (*Sesbania* sp.) are scattered over the open spray fields. The species of *Sesbania* occurring in the spray fields was undetermined due to the lack of flowers and seed pods. However, during the wetland investigation on the site, biologists observed some scattered individuals of *Sesbania punicea,* which is a category II exotic pest plant of Florida.

Table 1. Federally Listed Species of Dixie County

Category	Species Common Name	Species Scientific Name	Code
Mammals	West Indian (Florida) Manatee	*Trichechus manatus latirostris*	E/CH
Birds	Bald Eagle	*Haliaeetus leucocephaula*	T
	Florida Scrub-jay	*Aphelocoma coeruluscens*	T
	Wood Stork	*Mycteria americana*	E
	Red-cockaded Woodpecker	*Picoides borealis*	E
Fish	Gulf Sturgeon	*Acipenser oxyrhynchus desotoi*	T
Reptiles	Eastern Indigo Snake	*Dymarchon corais couperi*	T
	Green Sea Turtle	*Chelonia mydas*	E
	Leatherback Sea Turtle	*Dermochelys coriacea*	E
	Loggerhead Sea Turtle	*Caretta caretta*	T
Amphibians	None		
Mollusks	None		
Crustaceans	None		
Plants			

Note: Code Key: E = Endangered, T = Threatened, P = Proposed
C = Candidate, CH = Critical Habitat

3.2 PINE/SCRUB OAK

The pine/scrub oak community was located along the south side of the site adjacent to County Road 349. Species dominating this community include longleaf pine (*Pinus palustris*), live oak, slash pine (*Pinus elliottii*), cabbage palm (*Sabal palmetto*), saw palmetto (*Serenoa repens*), winged sumac (*Rhus copallinum*), narrowleaf silkgrass (*Pityopsis graminifolia*), American beauty-berry (*Callicarpa americana*), *Cassia*, sp., *Hypericum* sp., greenbriar (*Smilax* spp.),
yaupon (*Ilex vomitoria*), and bahia grass. This community had been logged and replanted within the last fifteen to twenty years.

3.3 FORESTED WETLANDS

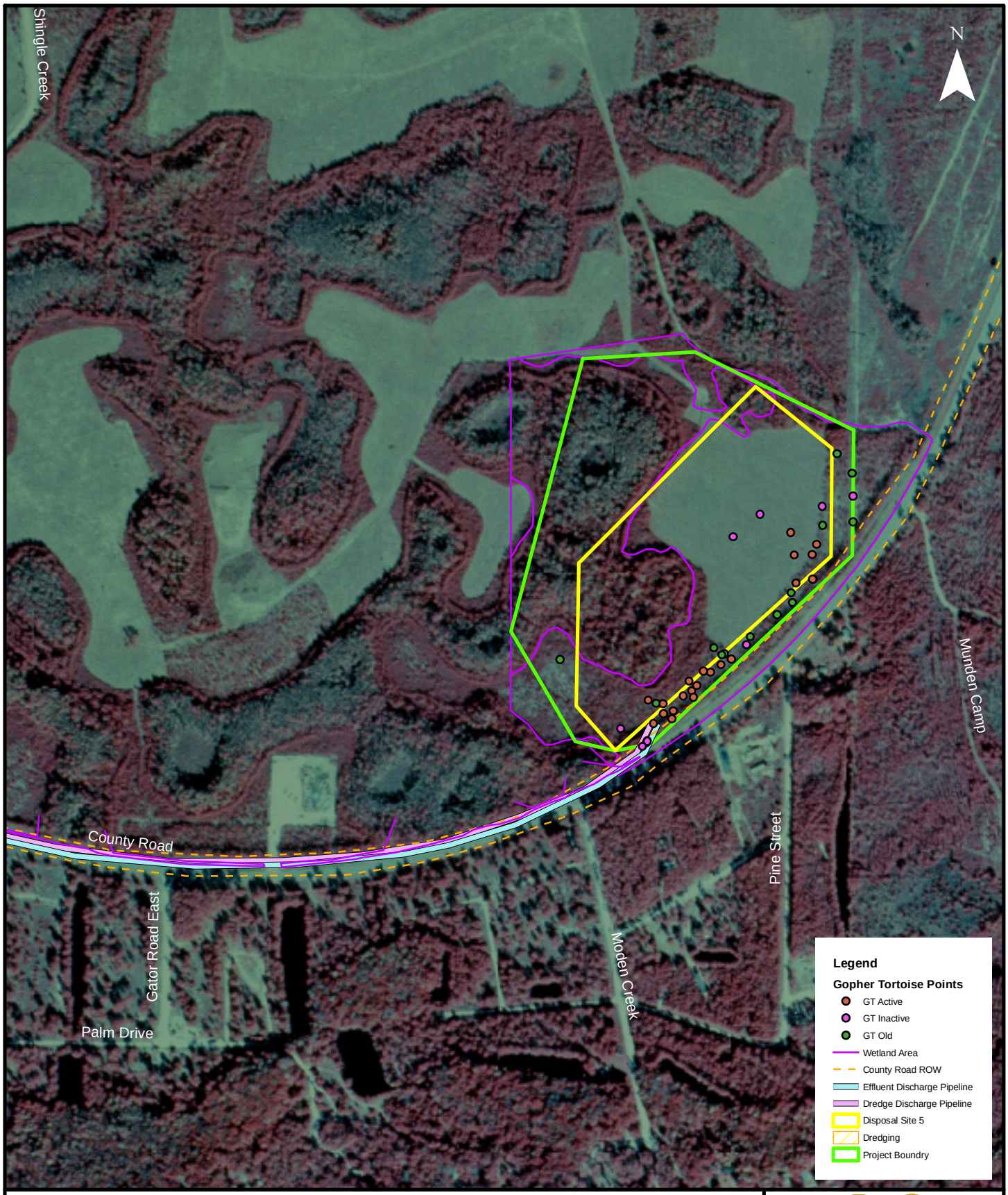
Forested wetlands were located along the northern portion of the proposed disposal site. These areas were logged in the recent past, leaving a few overstory slash and longleaf pines along the edges a few pond cypress (*Taxodium ascendens*) within the inundated areas. By opening the overstory, the understory had become extremely thick. Dominant species around the edges of this community consisted of fetterbush (*Lyonia lucida*), red maple (*Acer rubrum*), ink-berry (*Ilex glabra*), eastern false-willow (*Baccharis halimifolia*), meadow beauty (*Rhexia* spp.), and persimmon (*Diospyros virginiana*). The interior portion of this community was inundated and contained species such as pond cypress, buttonbush (*Cephalanthus occidentalis*), swamp tupelo (*Nyssa sylvatica* var. *biflora*), *Ludwigia* spp., netted chainfern (*Woodwordia areolata*), royal fern (*Osmunda regalis*), and *Sagittaria* spp.

4.0 RESULTS

Within the proposed disposal site, suitable habitat for the federally listed scrub jay (*Aphelocoma coeruluscens*) and the eastern indigo snake (*Dymarchon corais couperi*) was present, but no individuals were observed during the survey. No suitable habitat for the other federally listed species expected to occur within the area was present within the proposed disposal site. As mentioned, the disposal material pipeline route will traverse from the dredge site through open water channels in the marsh to the channel of Salt Creek and north along County Road 349 right-of-way to the proposed disposal site. The portion of the route within the marsh and Salt Creek channel is within suitable habitat for the West Indian manatee (*Trichechus manatus latirostris*) and individuals are observed within these areas on a regular basis. Even though the Suwannee River provides suitable habitat for the Gulf sturgeon (*Acipenser oxyrhynchus desotoi*), the placement of the pipeline would be accomplished during the summer months when the sturgeons are not within the dredge area.

As for state listed species, the only evidence of protected species observed within the proposed disposal site was burrows of the gopher tortoise (*Gopherus polyphemus*). Approximately 22 active, 10 inactive, and 13 old burrows were recorded within the proposed disposal site. Figure 3 shows the locations of the burrows in relation to the disposal site. There were no tortoises observed during the survey, but recent activity near the active burrows confirmed that tortoises were present. The gopher tortoise burrows also provide suitable habitat for a variety of other state and federally listed species such as eastern indigo snake, Florida pine snake (*Pituophis melanoleucus*), and gopher frog (*Rana capito*). None of these species were observed within the proposed disposal site. There were no observations of any other state or federally listed species within the proposed disposal site or the associated dredge material pipeline.

During the survey, biologists also searched for any occurrences of exotic/invasive species listed on the Florida Exotic Pest Plant Council's list. Biologists observed individuals of *Sesbania* sp., but were unable to confirm the species due to the lack of flowers or seed pods. However, during a wetland delineation on the proposed disposal site in 2004, biologists from Anamar Environmental, Inc. recorded scattered occurrences of the purple rattlebox (*Sesbania punicea*), but these occurrences were not prevalent. Therefore, the *Sesbania* sp. could be purple rattlebox. There were no other exotic/invasive species observed during the survey.



LOCATIONS OF PROTECTED SPECIES

Suwannee River
Dixie County, Florida

Quadrangle East Pass (1989)

GEC

Figure: 3
Date: October 2005
Scale:1:6,000
Source: GEC
Map Author: G. Sigrest

Appendix A

PHOTOGRAPHS

Photograph 1. Typical overview of the open spray field habitat.

Photograph 2. Typical overview of pine/scrub oak habitat.

Photograph 3. Typical habitat within the dredge material pipeline route along County Road 349.

Photograph 4. Typical active gopher tortoise burrow observed during the survey.

Photograph 5. Typical inactive gopher tortoise burrow observed during the survey.

Photograph 6. Typical old gopher tortoise burrow observed during the survey.