

Doyle Creek – 2007 Monitoring
CORPS Permit No. SAJ-2004-706 (NW-TLZ)
[SR 65 Mitigation]

Project Location: The Doyle Creek/Tates Hell wetlands restoration site is located along the eastern side of Tower Road, north of State Road (SR) 65 in Tates Hell Swamp, Franklin County, Florida (Figure 1) at approximately 29°52'N and 84°55'W in Sections 10, 11, 14, 15, Township 7S, Range 7W. Tates Hell Swamp covers some 200,000 acres (>300 mi²) of low-lying, poorly drained land between the Apalachicola and Ochlockonee rivers in the Florida Panhandle. Although this area historically was dominated by a variety of wetland types including wet savanna, wet flatwoods, cypress strands and hardwood swamps, much of the swamp was converted to slash pine (*Pinus elliotii*) plantation during the 1960s and 1970s. Degradation of Tates Hell from silvicultural operations included the construction of over 800 miles of logging roads and drainage ditches, and the establishment of bedded pine stands. These actions disrupted natural flow patterns and caused a lowering of the water table across large sections of the swamp and ponding of some specific locations due to road construction. With the replacement of much of the natural vegetation with stands of bedded pine, the natural functions and biotic diversity (flora and fauna) of the swamp also were severely impacted.

The ecological health of the Apalachicola Bay is strongly influenced by freshwater flows from Tates Hell. In the early 1990s, the Northwest Florida Water Management District (NFWFMD) and the State of Florida began acquiring portions of Tates Hell Swamp for wetland habitat preservation and to forestall further water quality declines. Public acquisitions now total some 205,000 acres and are managed by the Florida Division of Forestry (DOF) as Tates Hell State Forest. Since 1993, the NFWFMD, working with DOF, has conducted restoration of portions of Tates Hell Swamp. A long-term vision is eventual restoration of the natural communities of the entire swamp. This mitigation project complements these ongoing efforts by focusing on an area not previously slated for restoration activities.

Project Description: The objective of this project is to mitigate for a 2.27-acre wetland impact associated with the repaving and shoulder improvements to SR65 in Franklin County between US98 north to the Liberty County line. The mitigation site is located within a 2,000-acre tract of cutover pine plantation which, per the Florida Natural Areas Inventory, historically was a mosaic of wet pine flatwoods, open savanna, and cypress flats. DOF clear cut the area in Fall 1998, roller chopped in Spring 2004 and burned in Spring 2005 and 2007. The approved mitigation plan (Figure 2) incorporates the elimination of 18,000 feet of logging roads and associated ditching by pushing the road-fill into the adjacent ditches, reestablishing natural grade, and revegetating the road footprint (approximately 25 acres) with wiregrass (*Aristida stricta*) and cypress (*Taxodium* spp.). Additionally, three hardened low-water crossings (HLWC) were installed downstream of the mitigation site to enhance hydrologic flows. This project is being carried out in accordance with U.S. Army Corps of Engineers Nationwide Permit No. 3, SAJ-2004-706 (NW-TLZ), issued April 26, 2004.

Project Implementation and Monitoring: The project was divided into two phases with all construction activities (road removal and construction of HLWCs) included in phase one and vegetation planting in phase two. Construction began on February 10, 2006 and was completed

by July 11, 2006. Nearly 18,000 feet of roadbed was pushed into the adjacent ditches (Figure 2). The roadbed footprint was contoured and graded to approximate adjacent land elevations and seeded with brown topped millet as an erosion control measure. Comparative photographs of the road removals are shown for site #1 (Figures 3 and 4) and site #2 (Figures 5 and 6); each set of photos shows the sites immediately after construction and again after about 16 months. Hardened low water crossings were installed at sites #3 - #5; the crossing at site #4 is shown in Figure 7 after construction. Stream reconnection is seen in this figure with water flowing over the structure after a recent rain event. Best management practices were implemented during both road removal and construction of low water crossings. No turbid runoff was observed at either road removal or low water crossing sites during or after construction. Guard rails and water elevation staff gages have been installed at each of the crossings as a safety precaution.

Prior to planting the roadbed sites were surveyed for existing vegetation on December 10, 2007 (see Figures 4 and 6). A 15-minute pedestrian survey was taken at each site; thirty-six plant species were observed at site #1 (Table 1) with 30 species noted at site #2 (Table 2). Native groundcover covered about 30-40% of both sites and no invasive or exotic species were observed. Evidence of wildlife usage (e.g., tracks, scat) at the sites is given at the bottom of each table.

Wiregrass will be planted on 4-foot centers throughout the roadbed footprint beginning January 2008. Additional cypress seedlings will be planted in appropriate areas of the footprint.

Location Map - Doyle Creek Mitigation Area

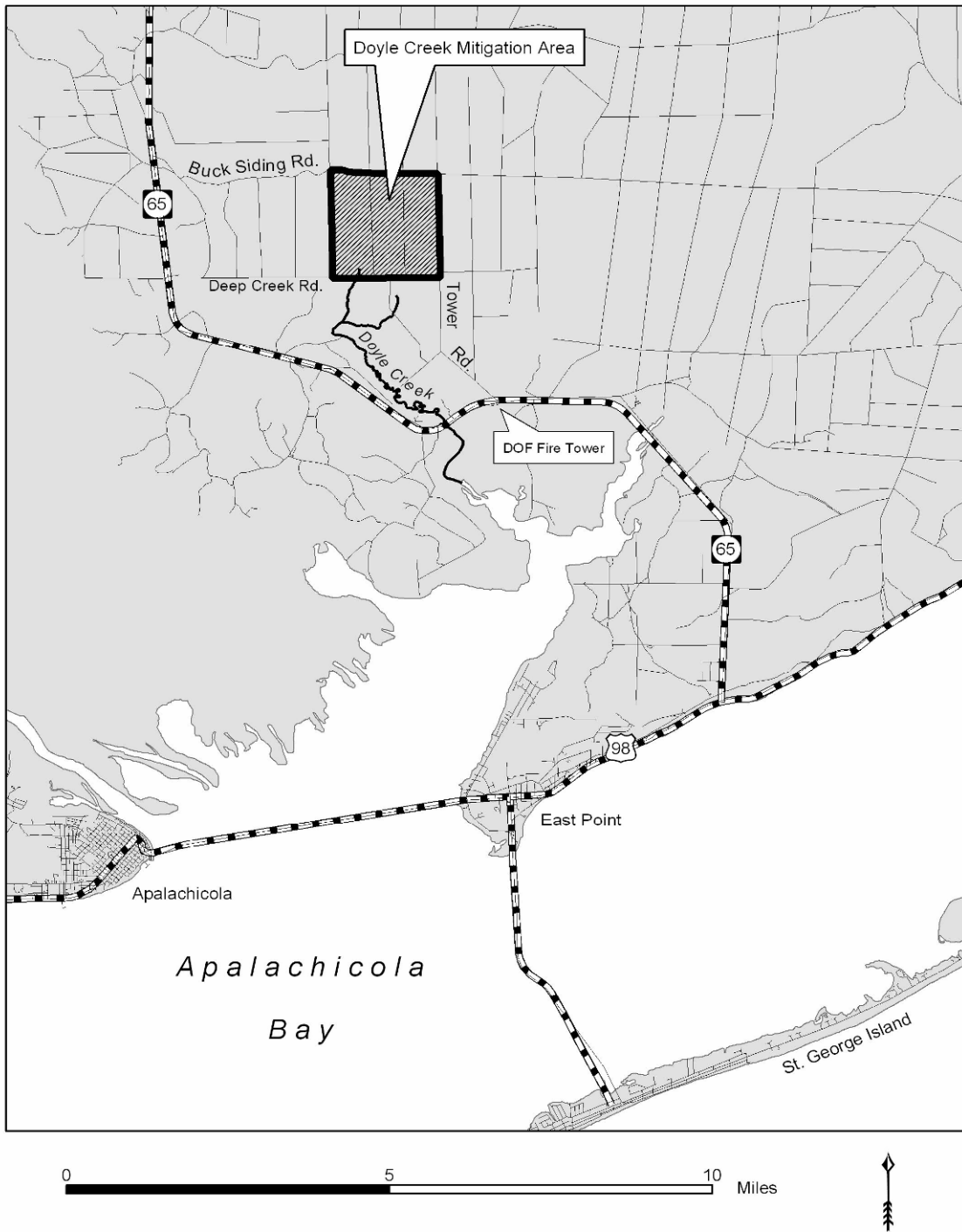


Figure 1. General location of the Doyle Creek mitigation site.

Doyle Creek Mitigation Area



Figure 2. Doyle Creek mitigation site with location of each construction activity. Sites #1-2 are road removals; sites #3-5 are hardened low-water crossings.



Figure 3. Road removal site #1 (westernmost road) after roadbed material was pushed into adjacent ditches and contoured to existing adjacent natural grade.



Figure 4. Road removal site #1 (westernmost road) after natural recolonization of vegetation. Photograph was taken about 16 months after completion of construction and can be compared with that in Figure 3.



Figure 5. Road removal site #2 (easternmost road) after roadbed was pushed into adjacent ditches and contoured to existing adjacent natural grade.



Figure 6. Road removal site #2 (easternmost road) after natural recolonization of vegetation. Photograph was taken about 16 months after completion of construction and can be compared with that in Figure 5.



Figure 7. Hardened low-water crossing at site #4 after completion of construction. Water is flowing from right to left across the structure after a recent rain.

Table 1. Groundcover species list for western road removal site (#1) at Doyle Creek.

Scientific Name	Common Name	Tree	Shrub	Vine	Herb
<i>Andropogon glomeratus</i>	Bushy bluestem				X
<i>Andropogon virginicus</i>	Broom sedge				X
<i>Carex sp.</i>	Caric sedge				X
<i>Centella asiatica</i>	Centella				X
<i>Cliftonia monophylla</i>	Black ti ti		X		
<i>Cyperus sp.</i>	Sedge				X
<i>Dichantherium aciculare</i>	Needleleaf witchgrass				X
<i>Dicantherium spp.</i>	Witch grass				X
<i>Echinochloa colonum</i>	Jungle grass				X
<i>Eleocharis atropurpurea</i>	Annual spikegrass				X
<i>Eragrostis elliottii</i>	Elliott lovegrass				X
<i>Euthamia caroliniana</i>	Flat-topped goldenrod				X
<i>Fuirena squarrosa</i>	Lake-rush				X
<i>Juncus megacephalus</i>	Large headed rush				X
<i>Hypericum brachyphyllum</i>	St. John's wort				X
<i>Hypericum gentianoides</i>	Orange grass				X
<i>Ilex glabra</i>	Gall berry		X		
<i>Leersia sp.</i>	Cut grass				X
<i>Lachnanthes caroliniana</i>	Redroot				X
<i>Lachnocaulon minus</i>	Small's bog button				X
<i>Ludwigia arcuata</i>	Ludwigia				X
<i>Ludwigia microcarpa</i>	Little seedbox				X
<i>Ludwigia sp.</i>	Seedbox				X
<i>Lycopodium aloperuroides</i>	Fox clubmoss				X
<i>Nymphaea odorata</i>	Fragrant water lily				X
<i>Polypremum procumbens</i>	Rustweed				X
<i>Pluchea foetida</i>	Camphor weed				X
<i>Rhexia sp.</i>	Meadow beauty				X
<i>Rynchospora intermixa</i>	Tufted beakrush				X
<i>Scirpus cyperinus</i>	Wool-grass				X
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Stillingia aquatica</i>	Corkwood		X		
<i>Utricularia subulata</i>	Zig-zag bladderwort				X
<i>Viola lanceolata</i>	Bog white violet				X
<i>Xyris flabelliformis</i>	Yellow-eyed grass				X
<i>Xyris sp.</i>	Yellow-eyed grass				X

Wildlife observations (Western Road Removal Site)

Deer (tracks)
Raccoon (tracks and scat)
Oak toad
Crayfish chimney

Table 2. Groundcover species list for eastern road removal site (#2) at Doyle Creek.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Tree</u>	<u>Shrub</u>	<u>Vine</u>	<u>Herb</u>
<i>Andropogon glomeratus</i>	Bushy bluestem				X
<i>Andropogon virginicus</i>	Broom sedge				X
<i>Centella asiatica</i>	Centella				X
<i>Cliftonia monophylla</i>	Black ti ti		X		
<i>Cyperus</i> sp.	Sedge				X
<i>Dicanthelium</i> spp.	Witch grass				X
<i>Echinochloa colonum</i>	Jungle grass				X
<i>Eleocharis atropurpurea</i>	Annual spikegrass				X
<i>Eragrostis elliottii</i>	Elliott lovegrass				X
<i>Euthamia caroliniana</i>	Flat-topped goldenrod				X
<i>Fuirena squarrosa</i>	Lake-rush				X
<i>Juncus megacephalus</i>	Large headed rush				X
<i>Hypericum brachyphyllum</i>	St. John's wort				X
<i>Hypericum gentianoides</i>	Orange grass				X
<i>Ilex vomitoria</i>	Yaupon		X		
<i>Leersia</i> sp.	Cut grass				X
<i>Lachnanthes caroliniana</i>	Redroot				X
<i>Lachnocaulon minus</i>	Small's bog button				X
<i>Ludwigia arcuata</i>	Ludwigia				X
<i>Ludwigia microcarpa</i>	Little seedbox				X
<i>Ludwigia</i> sp.	Seedbox				X
<i>Lycopodium aloperuroides</i>	Fox clubmoss				X
<i>Nymphaea odorata</i>	Fragrant water lily				X
<i>Rynchospora intermixa</i>	Tufted beakrush				X
<i>Scirpus cyperinus</i>	Wool-grass				X
<i>Smilax laurifolia</i>	Greenbriar			X	
<i>Stillingia aquatica</i>	Corkwood		X		
<i>Utricularia subulata</i>	Zig-zag bladderwort				X
<i>Viola lanceolata</i>	Bog white violet				X
<i>Xyris</i> sp.	Yellow-eyed grass				X

Wildlife observations (Eastern Road Removal Site)

Deer (tracks)
Raccoon (tracks and scat)
Oak toad
Crayfish chimney
Armadillo (tracks)
Rabbit (tracks and scat)
Mourning dove
Snipe