Second Annual Monitoring Report for the Ward Creek West Restoration Site (2009)
ACOE Permit No. SAJ-2006-4624-IP-DEB (St. Andrew Bay Watershed)

Site Description:

Ward Creek West is a 724-acre tract located ¼ mile west of SR 79 in Bay Co. within the West Bay subbasin of the St. Andrew Bay watershed (Figure 1). Approximately 675 acres (93%) are wetlands and 49 acres (7%) uplands. The headwaters of Ward Creek, a first-order stream flowing east to West Bay, occur within this tract.

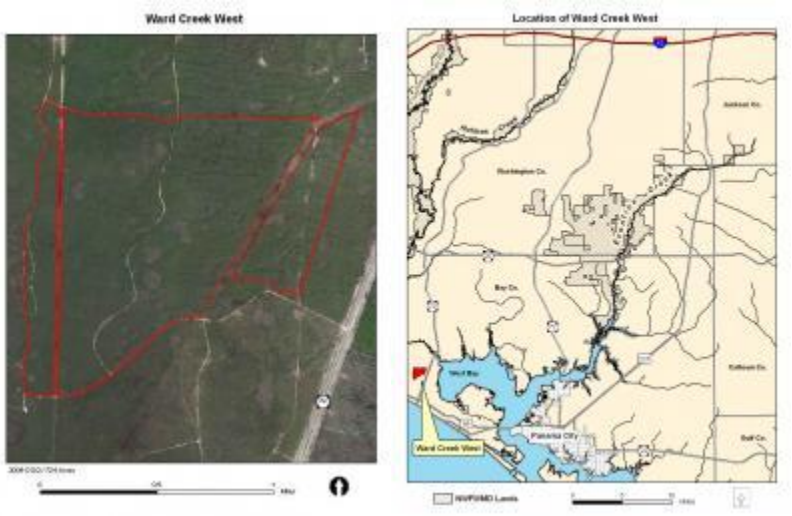

Figure 1. Location Map and Aerial Boundaries

Prior to initiation of restoration activities in May of 2008, this site consisted largely of bedded slash pine plantation (FLUCCS 441), titi (FLUCCS 614), and pockets of gum swamp (FLUCCS 613) with cypress inclusions (FLUCCS 621). Historic aerials suggest this area was once dominated by hydric pine flatwoods (FLUCCS 625) and hydric pine savanna (FLUCCS 626), with conversion to pine plantation occurring sometime after 1964. Impacts to this site include ditching, bedding and other silvicultural activities. Located within the Regional General Permit (RPG) and Ecosystem Management Area (EMA), most of the pine plantation stands in this area have according to St. Joe Co. documents been through one or more rotations. The goal of this project is restoration of hydric pine flatwoods (FLUCCS 625), hydric pine savanna (FLUCCS 626), and pockets of cypress (FLUCCS 621) coupled with enhancement of pockets of gum swamp (FLUCCS 613) and cypress (FLUCCS 621). The restored site will be owned and managed in perpetuity for ecological integrity by the NWFWMD.

Restoration Activities:

Hydric pine flatwoods (FLUCCS 625) and hydric pine savanna (FLUCCS 626) will be restored from existing pine plantation and titi shrub scrub via Gyrto-Trac, thinning of bedded slash pine, ditch plugs where applicable, seeding of herbaceous vegetation, prescribed fire and perpetual ecological management. In wet areas, slash pine will be thinned to no more than 112 trees per acre. Slash pine in areas to be restored to hydric pine savanna will be thinned to less

than 112 trees per acre. Areas determined in the field to be upland will have all slash pine removed and will be replanted with longleaf pine at no more than 200 trees per acre (Figure 2). Mechanical reduction of shrubs and herbicide reduction may be employed. Initial dormant-season fuel reduction fires will be followed by implementation of growing-season burns on 2 to 3-years cycles, subject to on-the-ground conditions. Nuisance and exotic species would be managed and eradicated as necessary. Nuisance/exotic management may include the use of approved herbicides.

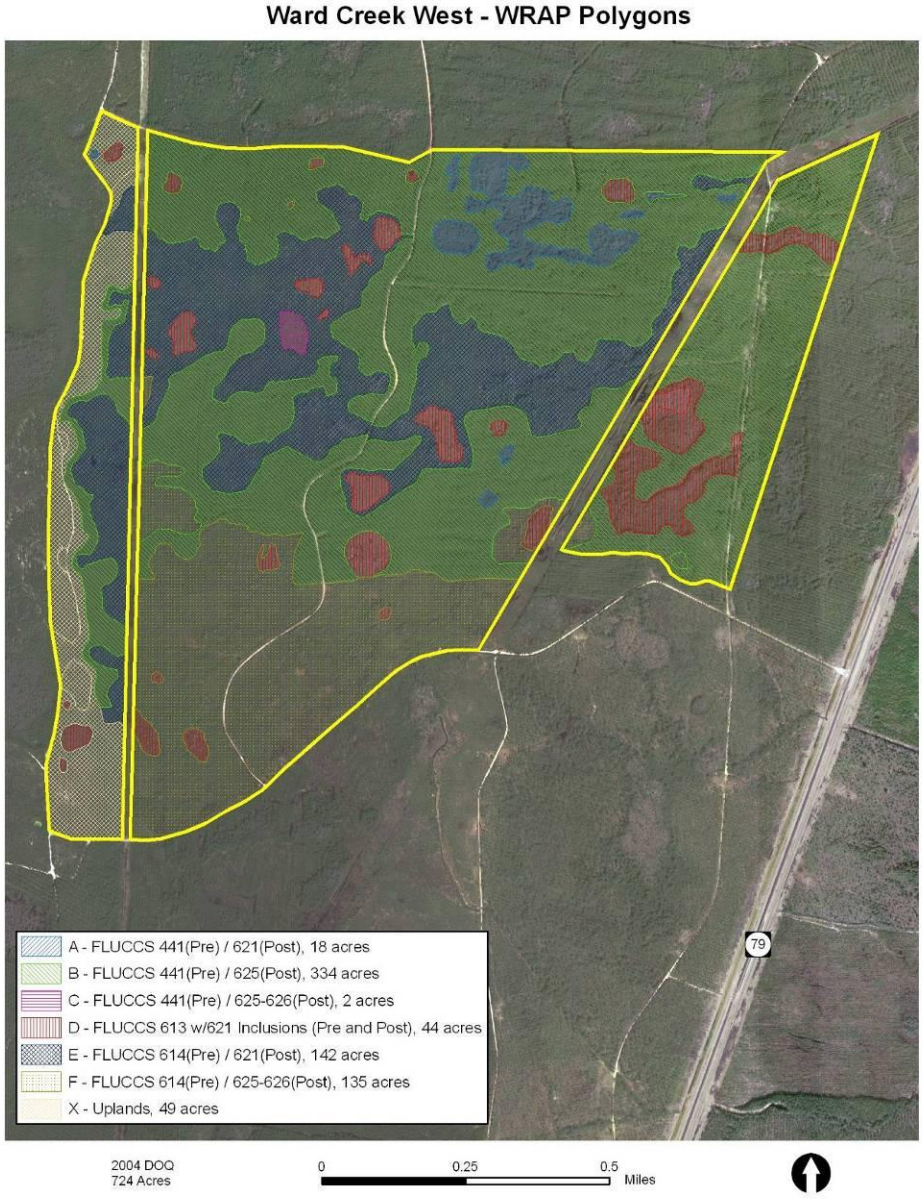

Figure 2. Post Restoration FLUCCS Map

Success Criteria:

Success criteria below are derived from Chapter 11 of the UWRMP. Specific success criteria are established prior to development of a mitigation area and therefore must indicate that mitigation objectives have been met. Each criterion shall be modified based on the characteristics of a specific mitigation site.

1. No observable decline in vegetation community health. **Vegetation community appears slightly stress from the herbicide treatments though desirable species cover and number increase though the site is recovering.**
2. Species diversity is either stable or increasing in each wetland type. **Diversity in wetlands is increasing (See species list)**
3. No more than 1% coverage of invasive exotics and 5% coverage of nuisance native and non-invasive exotic species. **Nuisance native or exotic species have not been observed on the site…**
4. No more than 112 slash pine trees per acre in hydric pine flatwood and savanna areas. **Pines will be harvested out of the pine plantations within a year.**
5. No more than 200 longleaf pine trees per acre in upland areas. **Less than 200 trees per acre occur within the pine plantations following the third row cut.**

Monitoring:

Monitoring protocols necessary to ensure effective preservation, enhancement and restoration are described in Chapter 11.0 of the UWRMP. Specific monitoring to be implemented at this site follows.

1. Annual WRAP assessment.
2. 15+ minute pedestrian surveys in each polygon type; number of survey paths to be determined in field.
3. Permanent 360^{o} photographic station; photos taken annually; number of photo-points to be determined in the field.

Mitigation Activities: Following the acquisition of the property in early 2008, the NWFWMD completed a survey of the property boundaries and installed gaits at the property boundaries. In April 2008 preparation for the timber cruise was initiated and completed in November 2008. The timber cruise was initiated in june and was completed in August. The timber cruise and sale took longer than expected due to the dense shrub understory and wetness of the site. The site is expected to be harvested from February of 2010 until March of 2011. Initial shrub reduction has been completed for 140 acres of historic wet prairie that had degraded to shrub wetlands due to the absence of fire. Twenty foot shrubs were reduced to ground level using a Gyro-Trac. The Gyro-Trac work was initiated in June of 2008 and completed by September of 2008. The initial removal of the shrub cover released the seed bank and wet prairie vegetation was once again emerging on the site. In order to further reduce the shrub layer, a cool season burn was scheduled for the site in January of 2009. However, with the winter rains the wetlands filled prohibiting a successful burn. Throughout 2009, the site continued to be to wet to burn. A warm

season burn is planned for the summer of 2010. The reduced shrub cover started sprouting in late 2008 and early 2009 and stem densities were greater than 200 per meter square. According to the restoration guidelines, shrub cover should be a minor component of the flora. To help reduce the shrub densities, select herbicides were applied. These herbicides targeted the shrubs without impacting the native herbaceous species. To date the herbicide treatment has been successful in significantly reducing shrub cover without reducing native herbaceous cover. In 2010, some minor herbicide work will continue to ensure a reduced shrub cover. During the winter 2009/2010, 31 acres of wire grass, 11 acres of tooth ache grass and 26 acres of cypress seedlings will be planted in the 125 acre to the wet prairie restoration (Figure 3). As part of the approved restoration activities, a species list has been generated for each of the habitat types (Table 1-5) (Table 3). Finally, a baseline and current WRAP has been included (Figure 4).

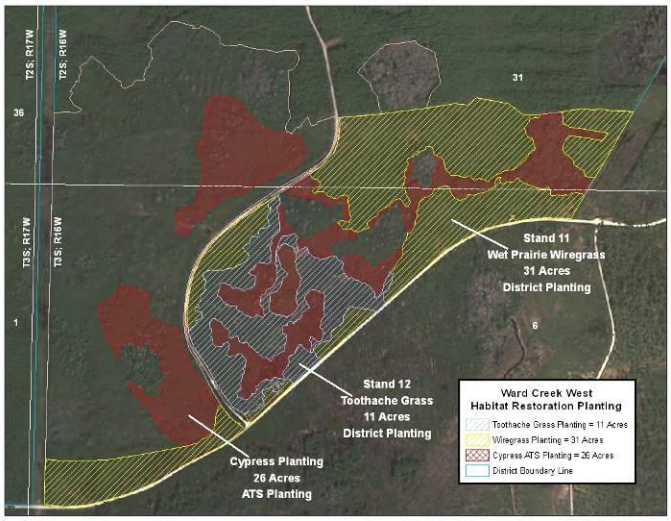

Figure 3. Winter 2009/2010 Ward Creek Restoration Planting

Ward Creek West
Wrap Scores

Polygon	Acres	Initial WRAP Score	Current WRAP Score
A	18	0.65	0.96
B	334	0.65	0.96
C	2	0.65	0.70
D	44	0.92	0.95
E	142	0.75	0.75
F	135	0.75	0.80
Total:	675		

Figure 4. Ward Creek West Initial and Current Wrap Scores

Table 1. Ward Creek West Pine Plantation (3rd Row Cut) 200 trees per acre

Wildlife Observed: turkey tracks, deer tracks, raccoon tracks					
Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Andropogon virginicus L. var. glaucus	Chalky bluestem				X
Clethra alinfolia	Sweet pepper bush		X		
Cliftonia monoplylla	Black titi		X		
Cyrilla racemiflora	Red titi		X		
Dicanthelium sp.	Panic grass				X
Hypericum sp.	St. Johns wort				X
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gallberry		X		
Ilex myrtifolia	Myrtle leaf holly	X			
Lachnanthes caroliana	Redroot				X
Lyonia fruticosa	Coastalplain staggerbush		X		
Lyonia lucida	Fetterbush		X		
Magnolia virginiana	Silver bay	X			
Myrica inodorata	Odorless wax myrtle		X		
Nyssa sylvatica	Black gum	X			
Persea paulistris	Silk bay	X			
Pinus elliottii	Slash pine	X			
Rhexia sp.	Meadow beauty				X
Rhynchospora sp.	Beakrush				X
Rubus cuneifolius	Sand blackberry		X		
Serenoa repens	Saw palmetto		X		
Smilax laurifolia	Greenbriar			X	
Taxodium ascendens	Pond cypress	X			
Vaccinium corymbosum	Swamp blueberry		X		
Vitus rotundifolia	Muscadine grape			X	
Xyris caroliniana	Yellow-eyed grass				X
Xyris sp.	Yellow-eyed grass				X

Table 2. Ward Creek West Unharvested Pine Plantation

Wildlife Observed: titmouse					
Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Clethra alinfolia	Sweet pepper bush		X		
Cliftonia monoplylla	Black titi		X		
Cyrilla racemiflora	Red titi		X		
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gallberry		X		
Leucothoe racemosa	Swamp hobble		X		
Lyonia fruticosa	Coastalplain staggerbush		X		
Lyonia lucida	Fetterbush		X		
Magnolia virginiana	Silver bay	X			
Pinus elliottii	Slash pine	X			
Serenoa repens	Saw palmetto		X		
Smilax laurifolia	Greenbriar			X	
Taxodium ascendens	Pond cypress	X			

Vitus rotundifolia	Muscadine grape			X	

Table 3. Ward Creek West Gyro-Trac Shrub Wetlands

Wildlife Observed: deer tracks, fish crow, crawfish chimney, raccoon tracks					
Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Andropogon virginicus	Broom sedge				X
Andropogon virginicus L. var. glaucus	Chalky bluestem				X
Aristida beyrichiana	Wiregrass				X
Aristida spiciformis	Bottlebrush threeawn				X
Carphephorus odoratissimus	False vanilla leaf				X
Centella asiatica	Centella				X
Clethra alnifolia	Sweet pepperbush		X		
Cliftonia monoplylla	Black titi		X		
Ctenium aromaticum	Toothache grass				X
Cuscuta sp.	Scaldweed			X	
Cyrilla racemiflora	Red titi		X		
Dicanthelium sp.	Panic grass				X
Drosera capillaris	Pink sundew				X
Eleocharis inundata	Spikerush				X
Eleocharis vivipara	Viviparous spikerush				X
Eriocaulon compressum	Pipewort				X
Eupatorium album	White thoroughwort				X
Gaylussacia dumosa	Dwarf huckleberry		X		
Gelsemium sempervirens	Yellow jessamine			X	
Hypericum sp.	St. Johns wort				X
Ilex coriacea	Large gallberry		X		
Ilex glabra	Gallberry		X		
Ilex myrtifolia	Myrtle leaf holly	X			
Juncus marginatus	Rush				X
Lachnanthes caroliana	Redroot				X
Leucothoe racemosa	Swamp doghobble		X		
Lycopodiella alopecuroides	Foxtail club moss				X
Lyonia fruticosa	Coastalplain staggerbush		X		
Lyonia lucida	Fetterbush		X		
Magnolia virginiana	Silver bay	X			
Myrica caroliniensis	Northern bayberry		X		
Myrica cerifera	Wax myrtle		X		
Photinia pyrifolia	Red chokeberry		X		
Pinus elliottii	Slash pine	X			
Polygala cruciata	Drumheads				X
Polygala lutea	Orange milkwort				X
Pteridium aquilinum	Brachen fern				X
Quercus pumila	Runner oak		X		
Rhexia alifanus	Savannah meadowbeauty				X
Rhexia mariana	Meadow beauty				X
Rhynchospora sp.	Beakrush				X

Saccharum giganteum	Giant plume grass				X
Sarracenia flava	Yellow pitcher plant				X
Serenoa repens	Saw palmetto		X		
Smilax laurifolia	Greenbriar			X	
Solidago odora var. chapmanii	Chapman's goldenrod				X
Taxodium ascendens	Pond cypress	X			
Vaccinium corymbosum	Swamp blueberry		X		
Vitis rotundifolia	Muscadine			X	
Xyris sp.	Yellow-eyed grass				X

Table 4. Ward Creek West Cypress Wetland

Wildlife Observed: None					
Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Clethra alinfolia	Sweet pepper bush		X		
Cliftonia monoplylla	Black titi		X		
Ilex myrtifolia	Myrtle-leaved holly		X		
Leucothoe racemosa	Swamp hobble		X		
Lyonia lucida	Fetterbush		X		
Nyssa biflora	Swamp blackgum	X			
Pinus palustris	Longleaf pine	X			
Rhododendron canescens	Sweet pinxter azalea		X		
Serenoa repens	Saw palmetto		X		
Smilax laurifolia	Greenbriar			X	
Taxodium ascendens	Pond cypress	X			

Table 5. Ward Creek West Sand Pine Plantation

Wildlife observed: deer tracks, raccoon tracks, armadillo tracks					
Scientific Name	Common Name	Tree	Shrub	Vine	Herb
Aristida stricta var. beyrichiana	Wiregrass				X
Balduina angustifolia	Coastal plain honeycomb head				X
Conradina canescens	False rosemary		X		
Eupatorium compositifolium	Dog fennel		X		X
Ilex glabra	Gallberry			X	
Ilex vomitoria	Yaupon		X		
Lupinus westianus	Gulf coast lupine				X
Persea borbonia	Red Bay	X			
Pinus clausa	Sand pine	X			
Pityopsis aspera	Pineland silkgrass				X
Pteridium aquilinum	Bracken fern				X
Opuntia humifusa	Prickly-pear cactus				X

Quercus elliottii	Runner oak		X		
Quercus laevis	Turkey oak	X			
Quercus margaretta	Sand post oak	X			
Quercus myrtifolia	Myrtle oak		X		
Quercus virginiana	Live oak	X			
Serenoa repens	Saw palmetto		X		
Smilax pumila	Greenbriar				X
Yucca filamentosa	Adam's needle				X

Hydric Pine Restoration: Fall 09

Hydric Pine: Fall 09

Ward Creek West Fall 09

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