

BELLAMY MITIGATION SITE
Annual Monitoring Report, Year 3
November 7, 2011

a) PROJECT OVERVIEW

Impact: Calhoun County Airport Expansion Offsite Mitigation
USACE Permit No.: SAJ-2007-6119 (IP-DEB), issued 6/4/2009
Mitigation: Bellamy Tract, Jackson County
Permittee/Consultant: Calhoun County Board of County Commissioners
c/o Maxey Waldorf
20859 Central Ave.
East Blountstown, FL 32424
Responsible Party for Monitoring: Northwest Florida Water Management District (NFWFMD)
81 Water Management Dr.
Havana, FL 32333
Date of Inspection: November 4, 2011
Inspectors: Leigh Brooks, Graham Lewis, Robert Lide

Purpose of the Approved Project

This project is to provide a partial offset for wetland impacts caused by expansion of the Calhoun County Airport. Approximately 7.18 acres of palustrine forested wetlands are directly impacted, with additional direct and secondary impacts to other waters of the United States. Compensatory mitigation for the Airport expansion is being implemented at three locations (onsite, Sam Atkins Park, and the Bellamy Tract). Mitigation at the Bellamy Tract consists of preservation and enhancement of 50 acres of forested floodplain along the Chipola River (48 acres palustrine forested wetlands; 2 acres forested upland buffers). The NFWFMD is responsible only for mitigation at the Bellamy Tract.

Location and Directions

The Bellamy Mitigation Tract (30°50'34"/85°14'23") is located approximately 3.5 miles north of Marianna in Jackson County on the east side of the Chipola River ([Figure 1a](#)). The site may be reached from US 90 in Marianna by driving north on Jefferson Road/Caverns Road for 2.9 miles. At the junction with CR 167, turn left and head north for 3.7 miles. Turn left on Bellamy Bridge Road (south of CR 162/Jacob Road) and head west for 2 miles. The road dead ends at the Arborgen Bellamy Seed Orchard property. Drive through the seed orchard to get to the site. The contact at the seed orchard is Tim Slichter, 850-594-6001. The property is located adjacent to NFWFMD-owned land along the Chipola River ([Figure 1c](#)).

Project Summary

Mitigation commenced with acquisition of the 338.70-acre Bellamy Property in March, 2009 as an addition to Upper Chipola River Water Management Area ([Figure 1c](#)). A 50-acre portion of this property was designated as the mitigation site ([Figure 1c](#)). Management recommendations pertain to the upland area ([Figure 1d](#), Polygon D) and include: control invasive non-native plants,

harvest planted sand pine and cedar trees, and burn site if possible to promote a more natural upland community. Control of non-native invasive species on the upland periphery was implemented in 2009. In December 2010, additional herbicide treatment was conducted to control Chinaberry tree (*Melia azedarach*), Japanese climbing fern (*Lygodium japonicum*), and Chinese Privet (*Ligustrum sinense*),

b) MONITORING REQUIREMENTS

- Photo-documentation
- Meandering vegetation survey by qualified personnel¹
- Frequency
 - Semi-annual for first three years²
 - Annual for a minimum of an additional two years
- Annual reports submitted to the USACE for duration of monitoring

During the most recent site inspection, all performance standards were found to be met. It was noted that the degraded upland area in Polygon D is not trending to a more natural community at this time.

Enhancement Success Criteria	Performance Standard	Condition Met
EC1	Desired species showing evidence of stable or increasing coverage.	Yes
EC2	Invasive exotic species cover $\leq 1\%$ and nuisance native and non-invasive exotic species cover $\leq 5\%$ (pursuant to the most current list established by the Florida Exotic Pest Plant Council).	Yes
EC3	Increase or stable appropriate species diversity.	Yes
EC4	Kind and total coverage of species appropriate for management goals and target natural community.	Yes
EC5	Kind and total coverage of herbaceous species appropriate for management goals and target natural community.	Yes
EC6	Kind and total coverage of tree species appropriate for management goals and target natural community.	Yes
EC7	Maintain the ecological conditions so that the mitigation UMAM scores are met for each of the specified community types.	Yes

c) SUMMARY DATA AND PHOTOS

The current monitoring was carried out on November 4, 2011, and consisted of a meandering pedestrian survey with representative photographs taken at points within each of the designated UMAM polygons. Photo points are shown in [Figures 2](#) and [3](#) along with general locations of observed invasive species. Plant species list taken from the previous annual report is included for completeness ([Table 1](#)).

¹ Meandering vegetation survey in 2011 focused on non-native plants and previously undocumented species.

² Semi-annual monitoring was not conducted in 2011.

Polygons A and B: At the time of monitoring, the bottomland hardwood forest (Polygons A and B) was not inundated nor was the spring flowing. With no flow, the spring took on the characteristics of a karst window ([Photo 1](#)). Although not distinct during this survey, a clearly defined spring run was noted previously in the field. In addition, LiDAR imagery ([Figure 2](#)) indicates two outflows: one relatively well defined channel to the west and a more diffuse outlet to the southeast through a cypress slough ([Photo 2](#)). Sunfish were swimming in the spring pool. Old barbed wire was discarded along the south spring bank. Although previously described as a second-magnitude spring, no records of spring discharge have been found. In fact, the spring does not appear in any published references on springs. Flows appear to have been estimated and need to be confirmed with future measurements.

In the bottomlands in Polygon B, several small plants of Chinese privet were seen. Two very small plants were hand pulled while three larger ones remain; others may be present but were not observed. Wild taro (*Colocasia esculenta*) reported in the prior annual report was not seen. Plants not previously noted that were observed during this monitoring included climbing milkweed (*Matelea* sp.), grape fern (*Botrychium* sp.), purple lobelia (*Lobelia* sp.), pawpaw (*Asimina triloba*), Florida bully (*Sideroxylon reclinatum*), and climbing hydrangea (*Decumaria barbara*). The climbing milkweed was not in flower or seed, therefore the species could not be determined. Both species known from Jackson County are state-endangered. Both Polygons A and B contain a well-developed bottomland hardwood forest with an open, yet diverse understory; [Photo 3](#) is representative of this area. A pileated woodpecker was heard.

Polygon C: The mesic slope forest in Polygon C was open and well-developed ([Photo 4](#); however, some invasive species were observed ([Figure 2](#)). Japanese climbing fern was seen on the road down to the spring and Japanese honeysuckle (*Lonicera japonica*) was growing by the sinkhole. Round-holed animal burrows were observed in several locations.

Polygon D: Land ownership signage has been clearly posted and trees blazed along the Bellamy property boundary shared by the seed orchard.

In the upland buffer area, primarily along the existing woods road in Polygon D, Japanese climbing fern and scattered kudzu (*Pueraria montana* var. *lobata*) were observed ([Figures 2 and 3](#), [Photo 5](#)). Japanese honeysuckle and Chinese privet were not observed and appear to be under control. Chinaberry was noted in the prior annual report, but not observed anywhere during the current monitoring.

Also in Polygon D, a number of slender shortleaf pine (*Pinus echinata*), previously misidentified as sand pine, and cedars had been cut down, evidenced by cut stumps and dead trees on the ground. There was no clear pattern to the tree cutting and many mature trees of these species remain standing, creating thickets in several areas with smilax intertwining ([Photo 6](#)). Along the road, several small chinkapins (*Castanea pumila*) were observed near a colony of Chickasaw plum (*Prunus angustifolia*). Several animal burrows were observed.

The mitigation plan calls for prescribed fire to be implemented in the upland buffer on a 3-5 year burn regime to help restore a degraded sandhill community. However, this area did not appear to these investigators, or previous ones (see earlier Annual Reports), to be a typical sandhill habitat.

Soil was not composed of course sand, but rather hardened reddish clay or a sandy clayey mixture. Prior monitoring reports indicated this area may have been an upland mixed hardwood habitat and suggested a re-evaluation of the proposed fire interval to assist in management. While not a sandhill, current observations indicate a clayhill rather than an upland mixed hardwood community.

As noted by FNAI (2010), the more typical sandhills observed below the Cody Scarp are replaced in some areas with a similar community (i.e., clayhills) if conditions are appropriate. These clayhill communities primarily occur on the rolling hills of northern Florida north of the Cody Scarp where the soils, classed as ultisols, are composed of sandy loams and loamy sands with clayey subsoils. The presence of clay helps retain soil moisture, creating more mesic conditions than are found on the deep sands that support sandhill. Thus, some plant species (e.g., gallberry, Darrow's blueberry) are found here that, on more sandy soils, are restricted to lowlands such as mesic flatwoods. Clayhill communities also occur in a few locations south of the Cody Scarp in the Florida Panhandle, and in the northern peninsula on soils that are influenced by clays, or where limestone is near the surface (FNAI 2010). Management of the clayhill community, despite some vegetation differences, is similar to that of sandhills. Previous discussion (i.e., prior annual reports) of the need to re-evaluate an appropriate fire interval may not be warranted.



Photo 1. Bellamy unnamed spring had no outflow at the time of site inspection and appeared as a karst window, Polygon A. Photo Point 1, looking south. 11/04/2011.

[RTN](#)



Photo 2. Bellamy cypress slough, Polygon A. Photo Point 2, looking southeast. 11/04/2011.

[RTN](#)



Photo 3. Bellamy bottomland, Polygon B. Photo Point 3, looking northeast. 11/04/2011.

[RTN](#)



Photo 4. Bellamy transition to upland forest, Polygon C. Photo Point 4, looking northwest. 11/04/2011.

[RTN](#)



Photo 5. Bellamy upland buffer with Japanese climbing fern and kudzu, Polygon D. Photo Point 5, looking southeast. 11/04/2011.

[RTN](#)



Photo 6. Bellamy upland buffer with cedar and shortleaf pine, Polygon D. Photo Point 6, looking east. 11/04/2011.

[RTN](#)

Table 1. Plant Species Observed in 2010.

Scientific Name	Common Name	Polygon			
		A	B	C	D
<i>Acer floridanum</i>	Florida maple	X	X	X	
<i>Acer rubrum</i>	Red maple	X	X	X	
<i>Acer saccharinum</i>	Silver maple				
<i>Aesculus pavia</i>	Red buckeye				
<i>Agalinis fasciculatum.</i>	False fox glove				X
<i>Arnoglossum sulcatum</i>	Georgia Indian plantain		X		
<i>Arisaema dracontium</i>	Green dragon				
<i>Arisema triphyllum</i>	Jack-in-the- pulpit				
<i>Aristolochia serpentaria</i>	Virginia snakeroot	X			
<i>Arundinaria gigantea</i>	Giant cane	X	X	X	
<i>Asplenium platyneuron</i>	Ebony spleenwort		X		
<i>Bignonia capreolata</i>	Cross vine			X	
<i>Botrychium virginianum</i>	Rattlesnake fern		X		
<i>Boehmeria cylindrica</i>	Falsenettle	X	X		
<i>Callicarpa Americana</i>	Beauty berry				X
<i>Campsis radicans</i>	Trumpet vine	X	X		
<i>Carex gigantea</i>	Sedge		X		
<i>Carpinus caroliniana</i>	Ironwood	X	X	X	
<i>Carya tomentosa</i>	Mockernut hickory			X	
<i>Carya aquatic</i>	Water hickory		X		
<i>Castanea pumila</i>	Chinquapin				X
<i>Carya cordiformis</i>	Bitternut hickory	X		X	
<i>Celtis laevigata</i>	Sugarberry	X		X	
<i>Cephalanthus occidentalis</i>	Button bush	X			
<i>Cercis Canadensis</i>	Red bud	X		X	
<i>Chaerophyllum procumbens</i>	Spreading chervil				
<i>Chasmanthium nitidum</i>	Shiny woodoats	X	X		
<i>Chrysogonum virginianum</i>	Green N gold				
<i>Colocasia esculenta***</i>	Wild taro		X		
<i>Cornus florida</i>	Flowering dogwood			X	
<i>Cornus foemina</i>	Swamp dogwood		X		
<i>Cladonia sp.</i>	Reindeer lichen				X
<i>Crataegus aestivalis</i>	May haw		X		
<i>Crataegus marshallii</i>	Parsley haw		X		
<i>Crinum sp.</i>	Swamp lily		X		
<i>Crotolaria rotundifolia</i>	Round leaved rattlebox				X
<i>Dichanthelium acuminatum</i>	Tapered witchgrass				X
<i>Dichanthelium dichotomum</i>	Cypress witchgrass	X	X		
<i>Dichanthelium sp.</i>	Witch grass	X	X		
<i>Diospyros virginiana</i>	Persimon				X
<i>Eupatorium compositifolium</i>	Yankeeweed				X
<i>Fagus grandifolia</i>	American beech	X			
<i>Fraxinus pennsylvanica</i>	Green ash	X	X		
<i>Galium tinctorium</i>	Stiff marsh bedstraw	X	X		
<i>Gelsemium rankinii</i>	Swamp jessamine		X		
<i>Gelsemium sempervirens</i>	Florida jessamine			X	X
<i>Gleditsia aquatic</i>	Water locust		X		
<i>Halesia dipteral</i>	Two-winged silver bells				
<i>Hydrocotyle verticillata</i>	Swamp penny wort		X		
<i>Hymenocallis sp.</i>	Spider-lily		X		
<i>Hypericum sp.</i>	St. Johns wort	X	X	X	X
<i>Ilex opaca</i>	American holly			X	
<i>Ilex vomitoria</i>	Yaupon holly			X	X
<i>Iris sp.</i>	Iris		X		
<i>Juncus gymnocarpus*</i>	Coville's rush				

Scientific Name	Common Name	Polygon			
		A	B	C	D
<i>Juniperus virginiana</i>	Red cedar	X		X	
<i>Kummerowia striata</i>	Japanese clover				X
<i>Ligustrum sinense</i> ***	Chinese privet			X	
<i>Liquidambar styraciflua</i>	Sweet gum	X	X	X	X
<i>Liriodendron tulipifera</i>	Tuliptree			X	
<i>Lonicera japonica</i> ***	Japanese honey suckle				
<i>Ludwigia sp.</i>	Rattlebox		X		
<i>Lygodium japonicum</i> ***	Japanese climbing fern	X	X		
<i>Magnolia grandiflora</i>	Southern magnolia	X		X	
<i>Melia azedarach</i> ***	Chinaberry tree			X	
<i>Menispermum canadense</i>	Moonseed	X	X		
<i>Mitchella repens</i>	Partridgeberry	X	X		
<i>Monarda punctata</i>	Spotted beebalm			X	
<i>Nyssa ogechee</i>	Ogeechee tupelo		X		
<i>Nyssa sylvatica</i> var. <i>biflora</i>	Black gum		X		
<i>Onoclea sensibilis</i>	Sensitive fern				
<i>Ostrya virginica</i>	Hop hornbeam	X	X		
<i>Panicum sp.</i>	Panic grass				X
<i>Persea borbonia</i>	Red bay	X	X	X	
<i>Phanopyrum gymnocarpon</i>	Savanna panicum		X		
<i>Pinus echinata</i> ****	Shortleaf pine				X
<i>Pinus glabra</i>	Spruce pine				X
<i>Pinus taeda</i>	Loblolly pine	X	X		X
<i>Pityopsis graminifolia</i>	Narrowleaved silkgrass				X
<i>Planera aquatic</i>	Planar tree	X	X		
<i>Platanus occidentalis</i>	Sycamore	X			
<i>Pluchea odorata</i>	Camphorweed	X	X		
<i>Polygala sp.</i>	Smart weed				
<i>Prunus angustifolia</i>	Chickasaw plum				X
<i>Prunus caroliniana</i>	Cherry laurel	X			
<i>Prunus serotina</i>	Black cherry			X	X
<i>Quercus alba</i>	White oak				X
<i>Quercus falcate</i>	Southern red oak				X
<i>Quercus hemisphaerica</i>	Diamond oak				X
<i>Quercus laurifolia</i>	Laurel oak	X	X	X	
<i>Quercus lyrata</i>	Overcup oak	X	X		
<i>Quercus michauxii</i>	Basket oak	X			
<i>Quercus nigra</i>	Water oak	X	X	X	
<i>Quercus velutina</i>	Black oak				X
<i>Quercus virginiana</i>	Live oak	X		X	
<i>Ruellia caroliniensis</i>	Carolina wild petunia	X	X		
<i>Rhapidophyllum hystrix</i>	Needle palm	X	X		
<i>Rhus copallinum</i>	Winged sumac				X
<i>Rubus argutus</i>	Sawtooth blackberry	X		X	
<i>Rubus cuneifolius</i>	Sand blackberry				X
<i>Rubus trivialis</i>	Dewberry	X	X	X	
<i>Saccharum alopecuroides</i>	Silver plumegrass				X
<i>Sabal minor</i>	Bluestem palm	X	X		
<i>Sabatia calycina</i>	Coastal rosegentian				
<i>Samolus ebracteatus</i>	Water pimpernel				
<i>Sapindus saponaria</i> ***	Soap berry				
<i>Sebastiania fruticosa</i>	Sebastian bush				
<i>Smilax bona-nox</i>	Green briar	X	X	X	X
<i>Smilax ecirrhata</i>	Upright carrion flower	X	X	X	X
<i>Smilax glauca</i>	Cat greenbriar				
<i>Smilax laurifolia</i>	Laurel greenbriar	X	X		

Scientific Name	Common Name	Polygon			
		A	B	C	D
<i>Solidago caesia</i>	Bluestem goldenrod				X
<i>Solidago rugosa</i> ssp. <i>aspera</i>	Wrinkle-leaf goldenrod				X
<i>Spiranthes ovalis</i>	October ladiestresses				
<i>Symphotrichum</i> sp.	Blue eyed grass				X
<i>Symplocos tinctoria</i>	Horse sugar	X	X	X	
<i>Taxodium distichum</i>	Bald cypress		X		
<i>Thyrsanthella difformis</i>	Climbing dogbane	X	X		
<i>Tilia americana</i> var. <i>caroliniana</i>	Carolina basswood	X	X		
<i>Toxicodendron radicans</i>	Poison ivy	X	X		
<i>Trichostema setaceum</i>	Narrow-leaved blue curls				X
<i>Trillium decipiens</i>	Chattahoochee river wakerobin				
<i>Ulmus alata</i>	Winged elm				
<i>Ulmus Americana</i>	American elm	X	X		
<i>Ulmus rubra</i>	Slippery elm	X	X		
<i>Vaccinium arboretum</i>	Sparkleberry				X
<i>Vaccinium corymbosum</i>	High bush blueberry	X	X		
<i>Vaccinium elliotii</i>	Elliott's blueberry	X	X		
<i>Vaccinium staminium</i>	Deerberry				X
<i>Verbena brasiliensis</i>	Brazilian vervain				X
<i>Viburnum dentatum</i>	Arrow wood	X	X		
<i>Viburnum obovatum</i>	Walter's viburnum	X			
<i>Viola affinis</i>	Florida violet		X		
<i>Viola walteri</i>	Walter's violet				
<i>Vitis rotundifolia</i>	Wild muscadine	X		X	X
<i>Yeatesia viridiflora</i>	Green-flowered yeatesia				
<i>Yucca filamentosa</i>	Adam's needle				X

* State Endangered, **State Threatened, *** Nuisance exotic, ****previously identified as sand pine (*Pinus clausa*).

[RTN](#)

d) MAPS AND PLANS

Location of Bellamy Property



a. General location of mitigation site.



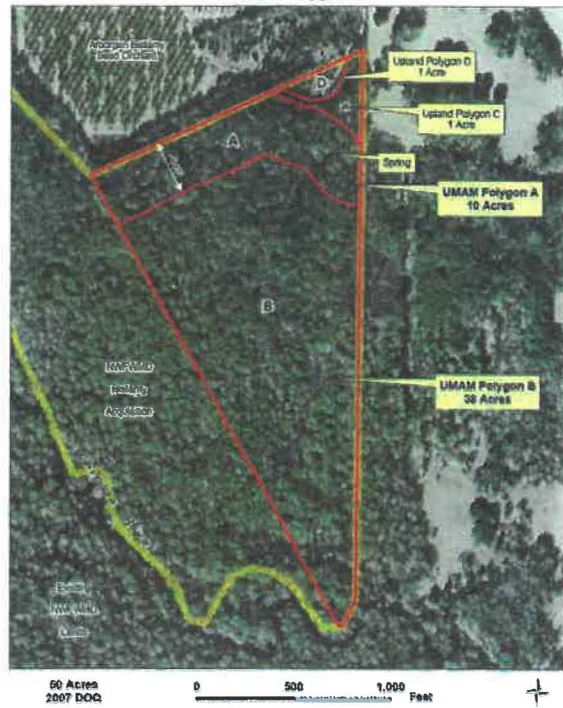
b. Regional context of mitigation site. [RTN](#)

Bellamy Property (288.7 +/- Acres)



c. Bellamy property.

UMAM Polygons



d. Bellamy mitigation site.

Figure 1. Location and site maps. [RTN](#)

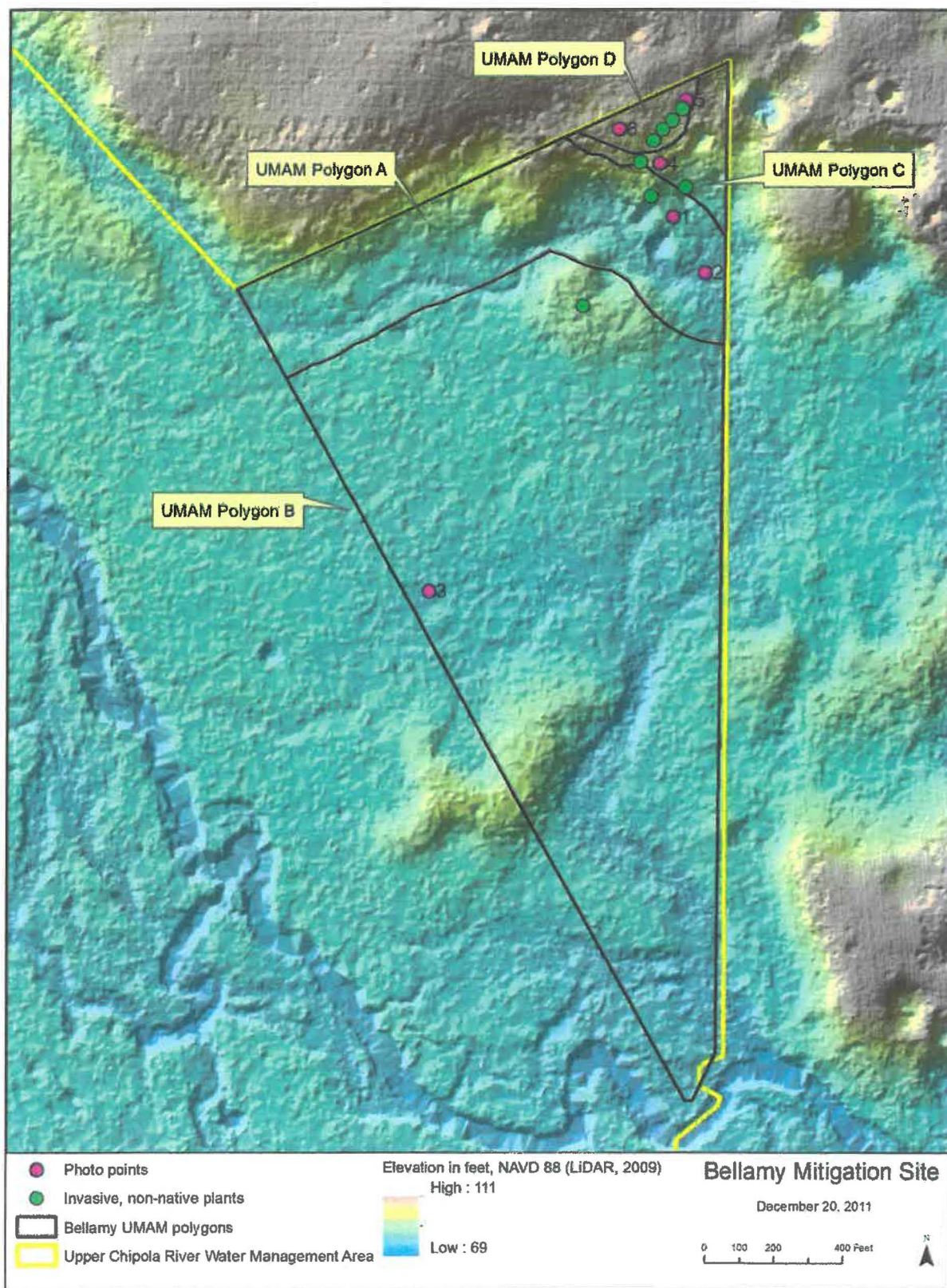


Figure 2. Topography of mitigation site with numbered photo points.

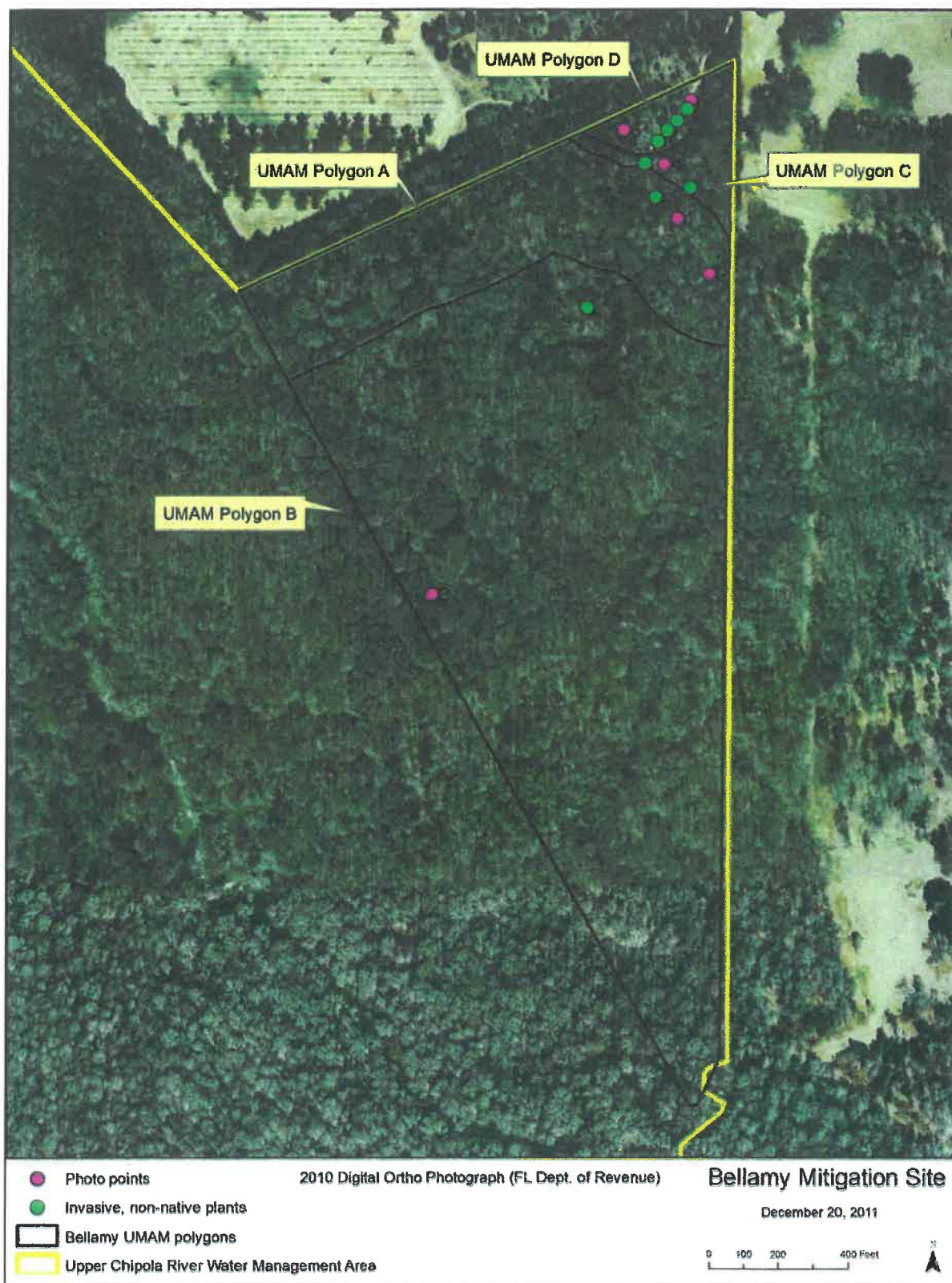


Figure 3. 2010 aerial photograph of mitigation site with numbered photo points.

e) CONCLUSIONS

The condition of the floodplain area of the mitigation site is high quality. The structure of bottomland forest and sloughs was generally very open with mature canopy trees of appropriate species. During the current survey, no flow was observed from the spring and questions arise as to historical documented discharge. That it was not flowing during an extreme drought may not be of concern by itself; however, there is high consumptive use of groundwater in the region to support agriculture that could contribute to a lowering of the Floridan Aquifer. Nearby lands making use of central pivot irrigation are visible in the aerial photo of the Upper Chipola Region ([Figure 1b](#)). Should aquifer levels in this karst region remain low for an extended time, continued viability of the spring may be an issue and wetlands on site may exhibit change over time toward dryer species.

The historic natural community type of the upland area in Polygon D was probably upland mixed woodland or perhaps upland pine rather than sandhill. Long-term vegetation management and fire frequency should be re-evaluated for this area, as discussed in previous monitoring reports, with this adjusted target in mind. For example, mature sand pine and cedar that appear to have been planted in an orchard could be cut. Non-native invasive plants continue to occur in this area and will require ongoing control efforts. Kudzu was newly seen in several places and Japanese climbing fern is persistent. Soapberry (*Sapindus saponaria*) was listed in the mitigation plan as a nuisance exotic in the upland periphery. According to Godfrey (1988), the plant is mainly but not exclusively coastal and is known to occur in calcareous woodlands. The plants may or may not be naturally occurring on the site. Rather than attempt herbicide control, the plants could be watched to see if they exhibit an invasive tendency and managed accordingly. Soapberry was not observed during the current monitoring.

The Detailed Work Plan in the Mitigation Plan specifies continual management of nuisance faunal species (e.g., feral pig and beaver) with inclusion of quarterly faunal control reports in the annual report. In practice, problems with feral pigs and beavers have not been observed on the site; thus no animal control reports are included. Annual monitoring to find evidence of nuisance species will continue. The mitigation site is open for hunting as part of the larger Chipola River Wildlife Management Area.

f) REFERENCES

- Florida Natural Areas Inventory (FNAI). 2010. Guide to the natural communities of Florida: 2010 edition. Florida Natural Areas Inventory, Tallahassee, FL.
- Godfrey, R. K. 1988. Trees, Shrubs, and Woody Vines of Northern Florida and Adjacent Georgia and Alabama. The University of Georgia Press, Athens, GA, 734pp.