



EEP Project Closeout Summary

Project ID & Status

Project Name/Number: ABC Site
EEP ID: 6
County: Beaufort
Project Type: Wetland Restoration, Enhancement & Preservation
Current Status: 5 Years of Monitoring complete

Project Setting

Basin: Tar Pam
 Physiographic Region: Coastal Plain
 Ecoregion: Northern Outer Coastal Plain
 USGS Hydro Unit: 03020104

Project Performers

DOT Project Transfer in 2005

Project Timeline

Milestone	Date
Construction Completed	2001
Monitoring Year-1	Nov 2001
Monitoring Year-2	2002
Monitoring Year-3	2003
Monitoring Year-4	2004
Monitoring Year-5	2005

	Restoration Component	Level	Ratio	Acres	WMU	Wetland Type
			Multip			
	nonriverine restoration	R	1.00	101.63	101.63	N RIP
	nonriverine preservation	P	0.20	27.57	5.51	N RIP
	nonriverineBLM Creation	C	0.33	9.24	3.08	N RIP
Stream	Asset Data					
		Level	Multip	Feet	SMU	
	Stream Enhancement	EII	2	2,375	1187.5	
Buffer				Acres	BMU	
	Riparian Buffer	R	1	10.90	10.9	

Asset Summary

Level	Multip	Acres	WMU
R	1.00	101.63	101.63
E	0.50	0.00	0.00
C	0.33	9.24	3.08
P	0.20	27.57	5.51
		138.44	110.22

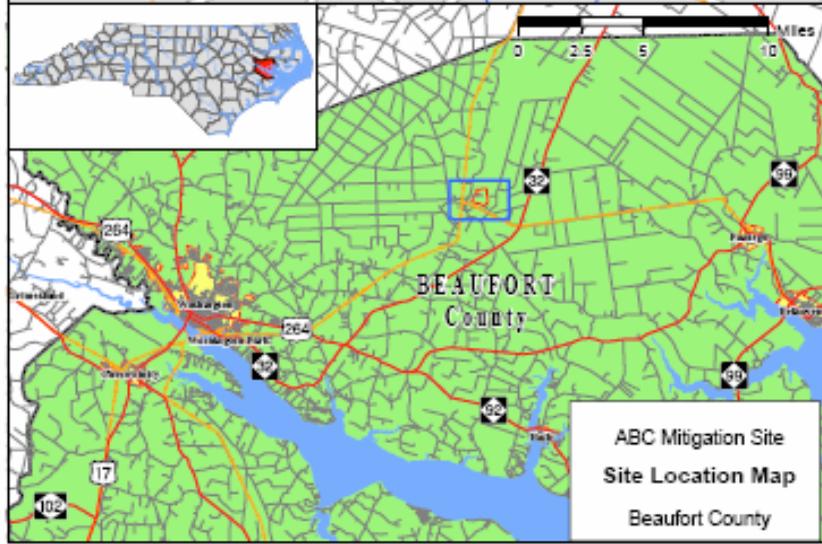
Standard Ratios

	Level	Ratio	Multiplier
Wetland	R	1	1.000
Wetland	E	2	0.500
Wetland	C	3	0.333
Wetland	P	5	0.200
Stream	E	2	0.500
Buffer	R	1	1.000

. The site had been cleared, ditched, and drained, with wetlands effectively removed to facilitate agricultural production and to convey runoff into Acre Swamp located along the southeastern border of the site. Wetland mitigation activities were designed to restore wetland features and functions similar to those exhibited by reference wetlands in the region. Site alterations, designed to restore characteristic wetland soil features and groundwater wetland hydrology, include depression construction (B-horizon contouring), impervious ditch plug construction, ditch backfilling, field crown removal, and ripping/scarification of wetland soil surfaces. Following construction, the site was planted with native vegetation characteristic of the target ecosystem. The ABC Wetland Mitigation Site has exceeded the expectations of the wetland restoration component of this project..

Note: For further information see the ABC Finding Report following this summary.

P1 = Priority I Restoration	R = Restoration
P2 = Priority II Restoration	E = Wetland Enhancement
P3 = Priority III Restoration	EI = Stream Enhancement I
	EII = Stream Enhancement II
	C = Wetland Creation
	P = Preservation
SMU = Stream Mitigation Units	
WMU = Wetland Mitigation Units	
P/I/E = Perennial, Intermittent, Ephemeral	



ABC Mitigation Site
Site Location Map
Beaufort County

Figure 1

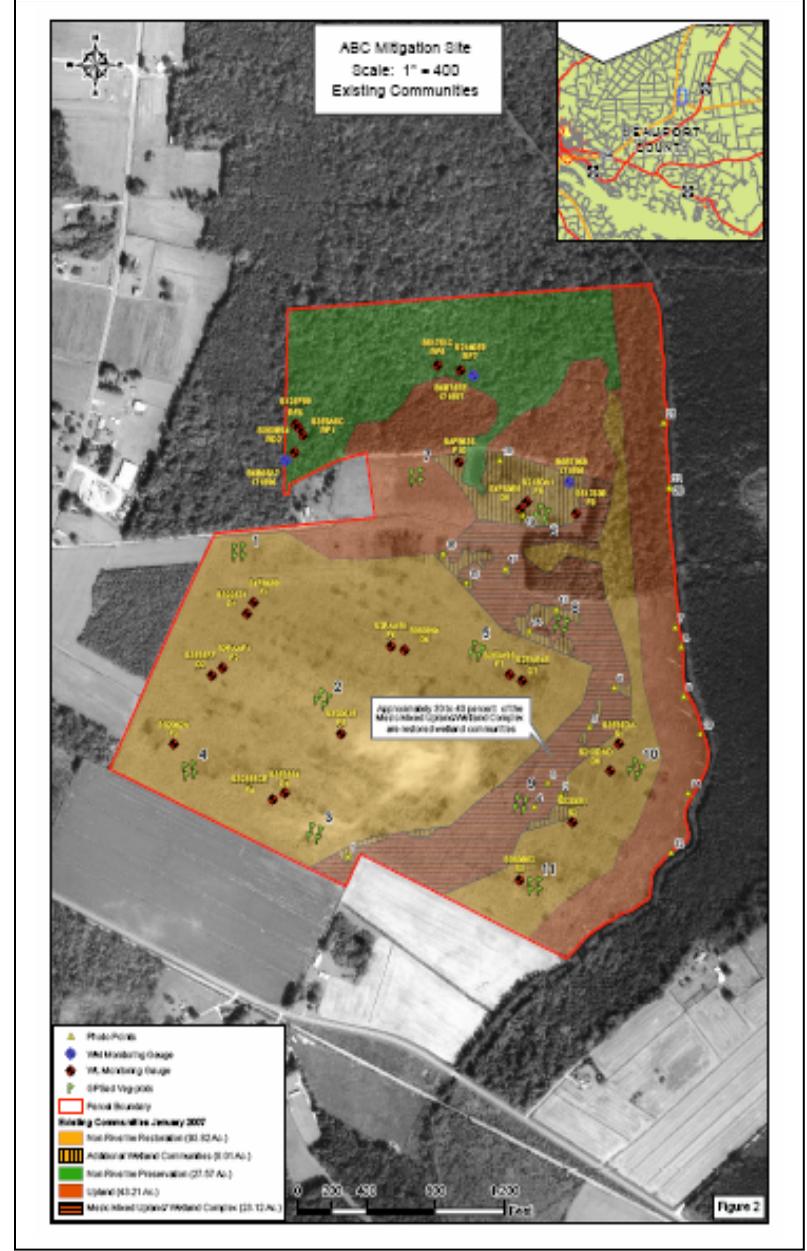


Figure 2

Table 1 A comparison between on-site and reference wetland hydroperiod for the 2001 Monitoring

Monitoring Gauges	<5%	5%-8%	8%-12.5%	> 12.5%	Actual %	Success Dates
Depressions	D1				100%	Mar 22-Nov 25
	D2				100%	Mar 21-Nov 25
	D4				100%	Mar 21-Nov 25
	D6				100%	Mar 22-Nov 25
	D7				100%	Mar 22-Nov 25
	D8				100%	Mar 21-Nov 25
	S1				12.1%	Aug 12-Sep 11
	S2				21.8%	July 19-Sep 12
	S3				28.5%	July 19-Sep 29
Base Elevation	F1				23.8%	July 19-Sep 17
	F2				23.4%	July 19-Sep 16
	F3				8.9%	Aug 14-Sep 5
	F4				26.1%	July 19-Sep 23
	F5				19.1%	July 28-Sep 14
	F6				22.2%	July 19-Sep 13
	F7				20.3%	July 28-Sep 17
Reference	RD1				58.9%	July 18-Nov 16
	RD2				100%	Mar 20-Nov 25
	RF1				14.0%	Mar 20-Apr 23
	RF2				13.2%	Mar 20-Apr 22
	RF3				7.0%	Apr 11-Apr 28

*All data refers to soil saturation within 12 inches of the surface. Gauges were recorded for 247 of the 256 growing season days (March 21 through November 25). Gauge RF3 was replaced and no data were recorded before April 11.

Fourteen of the 16 on-site groundwater gauges (87 percent) indicate that wetland hydroperiod exceeded the 12.5 percent jurisdictional threshold. Four of the five reference groundwater gauges (80 percent) exceeded the 12.5 percent (Figure 3). Overall, on-site gauges exhibit similar results with gauges in the reference community.

Table 1 A comparison between on-site and reference wetland hydroperiod for the 2002 Monitoring

Monitoring Gauges		<5%	5%-8%	8%-12.5%	> 12.5%	Actual %	Success Dates
Depressions	D1				✓	28.9	3/13-5/25 11/7-11/25
	D2				✓	28.5	3/13-5/24 11/7-11/25
	D4				✓	28.1	3/13-5/23
	D6				✓	25.8	3/13-5/17 11/6-11/25
	D7				✓	33.2	3/13-6/5
	D8				✓	23.4	3/13-5/11
	D9				✓	24.6	3/13-5/14
	D10	✓				2.0	
	S1				✓	35.2	3/13-6/10 11/6-11/25
	S2				✓	25	3/13-5/15 11/6-11/25
S3				✓	30.1	3/13-5/28	
Base Elevation	F1				✓	29.7	3/13-5/27 10/30-11/25
	F2				✓	30.5	3/13-5/29 10/30-11/25
	F3				✓	23.4	3/13-5/11 11/7-11/25
	F4				✓	36.3	3/13-6/13 11/7-11/25
	F5				✓	31.3	3/13-5/31 10/30-11/25
	F6				✓	25.8	3/13-5/17 10/30-11/25
	F7				✓	31.3	3/13-5/31 11/6-11/25
	F8				✓	18.8	3/14-4/30
	F9				✓	14.1	3/14-4/18
	F10				✓	14.5	4/9-5/15
Reference	RD1				✓	19.9	3/13-5/2
	RD2				✓	18.8	3/13-4/29
	RD3	✓				3.9	
	RD4			✓		8.6	4/8-4/28
	RD5			✓		8.6	4/8-4/28
	RF1				✓	22.7	3/13-5/9
	RF2				✓	22.3	3/13-5/8
	RF3				✓	22.7	3/13-5/9

Gauges F8, F9, F10, D9, D10, RD3, RD4, and RD5 were installed this year (2002).

Specific Gauge Problems:

- F10 experienced gauge malfunctions during installation of the gauge (March 13-April 8)
- RF2 stopped recording data (May 9-July 11)
- RD2 stopped recording data (May 18-July 11)
- RD1, RD3 experienced gauge malfunctions at the end of the growing season from (November 1-December)
- RD3, RD4, RD5 were all installed April 3, therefore no data was recorded for these gauges until after installation.
- RD5 stopped recording data (June 19-July 11)

For the 2002 monitoring year, groundwater data indicates that the average wetland hydroperiod (for consecutive days) 25 of the 29 gauges (on-site and reference) exceeds the success criteria of 12.5%. Of these 29 gauges, 21 on-site groundwater gauges indicate that wetland hydroperiod exceeded the 12.5% jurisdictional threshold. Five of the 8 reference groundwater gauges exceeded the success criteria of 12.5%. Overall, on-site gauges exhibited similar results or exceed saturation periods with gauges in the reference community.

Table 1. 2003 Hydrologic Monitoring Results

Monitoring Gauges		<5%	5%-8%	8%-12.5%	> 12.5%	Actual %	Success Dates	
Depressions	D1+				X	100	March 14-Nov 24	
	D2+				X	83.6	April 25-Nov 24	
	D4+				X	100	March 14-Nov 24	
	D6+				X	100	March 14-Nov 24	
	D7+				X	100	March 14-Nov 24	
	D8+				X	100	March 14-Nov 24	
	D9+				X	39.8	March 14-June 23 Sept 17-Oct 23 October 28-Nov 24	
	D10+				X	41	March 14-June 26 July 3-Sept 1 Sept 13-Nov 24	
	S1+				X	25.4	March 14-May 17 May 19-June 23 July 3-August 29	
	S2+				X	39.5	March 14-June 22 July 14-Sept 2	
	S3+				X	88.7	March 14-October 26	
	Base Elevation	F1+				X	100	March 14-Nov 24
		F2+				X	40.2	March 14-June 24 Sept. 18-Oct 29
F3+					X	23.4	March 14-May 12 October 29- Nov 24	
F4+					X	41.4	March 14-June 27 July 14- August 31 Sept 18- Nov 24	
F5+					X	70.7	March 14-Sept 10 Sept 12-Oct 24 October 28-Nov 24	
F6+					X	25.4	March 14-May 17 Sept 18-October 22 October 27-Nov 24	
F7+					X	42.6	March 14-June 30 July 3-Sept 3 Sept 18-Nov 24	
F8+					X	23.8	March 14-May 13 May 19-June 13	
F9+					X	13.7	March 20-April 23 October 28-Nov 17	
F10+					X	23.8	March 14-May 13 May 19-June 14 October 28-Nov 24	
Reference	RD1+				X	100	March 14-Nov 24	
	RD2+				X	100	March 14-Nov 24	
	RD3+				X	26.2	March 14-May 17 Sept 19-Nov 24	
	RD4+				X	23.4	March 14-May 12 Sept 19-Oct 17	

RD5+				X	23.8	March 14-May 13 Sept 19-Oct 16
RF1+				X	24.2	March 14-May 14 Sept 19-October 17 October 29-Nov 24
RF2+			X		11.3	April 25-May 14 Sept 19-October 17 October 29-Nov 24
RF3+				X	25	March 14-May 16 Sept 19-October 20 October 29-Nov 24

+ Gauge met the success criterion during an average rainfall month (March, August, October, and November).

Table 1. 2004 Hydrologic Monitoring Results

Monitoring Gauges	<5%	5%-8%	8%-12.5%	> 12.5%	Actual %	Success Dates	
Depressions	D1+			X	100	March 13-Nov 25	
	D2+			X	100	March 13-Nov 25	
	D4+			X	100	March 13-Nov 25	
	D8+			X	100	March 13-Nov 25	
	D7+			X	100	March 13-Nov 25	
	D8+			X	34.8	March 13-May 13 Aug 27-Nov 23	
	D9+			X	27.3	March 13-May 21	
	D10			X	27	March 13-May 20 Sept 7-Sept 27	
	S1			X	10.5	March 13-April 8	
	S2+			X	39.8	March 13-April 28 May 14-July 7 Aug 14-Nov 25	
	S3+			X	100	March 13-Nov 25	
	Base Elevation	F1+			X	53.9	March 13-July 28 Aug 27-Nov 25
		F2+			X	27.3	March 13-May 21 Sept 7-Oct 11
F3				X	10.9	March 13-April 9	
F4+				X	27	March 13-May 20 Sept 7-Oct 8	
F5+				X	100	March 13-Nov 25	
F6+				X	25	March 13-May 15 Sept 7-Oct 6	
F7+				X	30.9	March 13-May 30 Sept 7-Oct 6	
F8				X	10.2	March 13-April 7	
F9			X		5.1	April 27-May 9	
F10+				X	12.5	March 13-April 6 April 12-May 13	
Reference	RD1+			X	100	March 13-Nov 25	
	RD2+			X	100	March 13-Nov 25	
	RD3+			X	25.8	March 13-May 17	
	RD4+			X	24.2	March 13-May 13	
	RD5+			X	24.2	March 13-May 13	
	RF1+			X	24.6	March 13-May 14	
	RF2+			X	24.6	March 13-May 14	
	RF3+			X	25	March 13-May 15	

+ Gauge met the success criterion during an average rainfall month February, April, May, August, October, and November).

Table 1. 2005 Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates
Depressions	D1+			x	62.1	March 13-June 26 July 3-August 24
	D2+			x	82.8	March 13-July 27 June 30-August 24 October 8-November 25
	D4+			x	72.7	March 13-August 30 October 8-November 25
	D6+			x	55.5	March 13-May 4 July 7-August 15 October 8-November 25
	D7+			x	83.6	March 13-June 22 June 30-August 30 October 8-November 25
	D8+			x	34.0	March 13-April 27 October 8-November 17
	D9+			x	37.1	March 13-May 3 October 8-November 19
	D10			x	39.3	June 30-August 19 October 7-November 25
	S1+			x	100	March 13-November 25
	S2+			x	100	March 13-November 25

Monitoring Gauge	< 5%	5 – 8%	8 – 12%	> 12.5%	Actual %	Success Dates	
Base Elevation	S3+			x	100	March 13-November 25	
	F1+			x	98.0	March 13-October 17 October 25-November 25	
	F2+			x	71.5	March 13-May 30 June 29-August 21 October 7-November 25	
	F3+			x	31.1	March 13-April 25 October 8-November 12	
	F4+			x	72.3	March 13-May 31 June 29-August 21 October 7-November 25	
	F5+			x	100	March 13-November 25	
	F6+			x	70.7	March 13-May 28 June 29-August 21 October 7-November 25	
	F7+			x	88.3	March 13-September 2 October 5-November 25	
	F8+			x	30.5	March 13-April 25 October 7-November 10	
	F9+			x	15.6	March 13-April 21	
	F10+			x	32.8	March 13-April 27 October 8-November 14	
	Reference	RD2+			x	16.8	March 13-April 23
		RF1+			x	32.4	March 13-April 28 October 8-November 12
RF2+				x	36.3	March 13-May 3 October 8-November 17	
RF3				x		October 8-November 25	
RF4				x		October 8-November 25	
RF5+				x	44.9	March 13-May 29 October 12-November 17	
RF6+				x	46.1	March 13-May 28 October 8-November 17	
RF7+			x	36.3	March 13-May 3 October 8-November 17		

+ Gauge met the success criterion during an average rainfall month March, April, May, and September.

Table 1. 2006 Hydrologic Monitoring Results

Monitoring Gauge	< 5%	5 – 8%	8 – 12.5%	> 12.5%	Actual %	Success Dates
Depressions	D1+			x	52.3	March 13-July 24
	D2+			x	87.1	March 13-July 26 August 31-November 25
	D4+			x	88.7	March 13-July 31 September 1-November 25
	D6+			x	76.2	March 13-July 11 September 1-October 4 October 18-November 25
	D7+			x	85.2	March 13-July 22 September 1-November 25
	D8+			x	25.8	March 21-April 21 August 31-October 2
	D9+			x	31.6	May 6-June 22 August 31-October 2
	D10			x	48.4	May 6-June 24 August 31-October 4 October 18-November 25
	S1+			x	100	March 13-November 25
	S2+			x	100	March 13-November 25
	S3+			x	100	March 13-November 25

Monitoring Gauge	< 5%	5 – 8%	8 – 12.5%	> 12.5%	Actual %	Success Dates
Base Elevation	F1+			x	80.1	May 5-November 25
	F2+			x	84.0	March 13-July 18 August 31-November 25
	F3+			x	9.8	March 21-April 14
	F4+			x	84.4	March 13-July 20 September 1-November 25
	F5+			x	100	March 13-November 25
	F6+			x	93.4	March 13-August 30 September 14-November 20
	F7+			x	99.6	March 13-August 6 August 9-November 25
	F8+			x	10.2	August 31-September 25
	F9+			x	8.2	November 5-November 25
	F10+			x	11.7	September 1-September 29
Reference	RD2+		x		11.7	March 21-April 19
	RF1+			x	14.1	March 21-April 25
	RF2+			x	17.6	March 13-May 4
	RF3			x	31.6	March 13-June 1
	RF4			x	30.9	March 13-April 21 October 18-November 25
	RF5+			x	22.3	March 13-May 8
	RF6+			x	20.3	March 13-May 3
RF7+			x	11.3	October 28-November 25	

Stem Counts Per Acre By Plot

			Plots												
MY	CY	Ave	1	2	3	4	5	6	7	8	9	10	11	12	13
Y1	2001	573	680	540	570	680	583	285	531	598	570	510	598	680	622
Y2	2002	550	680	540	570	680	583	219	595	515	461	340	680	680	602
Y3	2003	527	680	560	570	663	602	197	446	433	417	340	680	659	602
Y4	2004	493	658	540	526	663	525	110	383	392	329	319	680	680	602
Y5	2005	488	636	620	648	645	563	263	148	371	329	425	659	680	563

**ABC MITIGATION SITE
WETLAND RESTORATION SITE
BEUAFORT COUNTY, NORTH CAROLINA**

Wetland Communities Assessment

DENR CONTRACT NO. D06086S-1



**North Carolina Ecosystem Enhancement Program (EEP)
North Carolina Department of Environment and Natural Resources
1652 Mail Service Center
Raleigh, NC 27699-1652**



**Findings Report
April, 2007**

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April 2007

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1.0 Project Site Identification and Location

The North Carolina Department of Transportation (NCDOT) established the ABC Wetland Mitigation Site to provide up-front wetland mitigation for unavoidable transportation-related wetland impacts in the coastal plain region of the Tar-Pamlico River Basin. The 75-hectare (184-acre) tract is situated northeast of Washington in Beaufort County, North Carolina (Figure 1). The North Carolina Ecosystem Enhancement Program (EEP) is currently responsible for post-construction monitoring activities.

The site had been cleared, ditched, and drained, with wetlands effectively removed to facilitate agricultural production and to convey runoff into Acre Swamp located along the southeastern border of the site. Wetland mitigation activities were designed to restore wetland features and functions similar to those exhibited by reference wetlands in the region. Site alterations, designed to restore characteristic wetland soil features and groundwater wetland hydrology, include depression construction (B-horizon contouring), impervious ditch plug construction, ditch backfilling, field crown removal, and ripping/scarification of wetland soil surfaces. Following construction, the site was planted with native vegetation characteristic of the target ecosystem.

Pre-construction investigations suggested that the site would support the following communities: 37 hectares (92 acres) of restored non-riverine forested wetlands; 7 hectares (19 acres) of enhanced non-riverine wetland systems; and approximately 1,252 meters (4,107 feet) of stream enhancement (including streamside plantings and riparian forest buffer restoration). In addition, groundwater recharge was expected to improve within the remaining 31 hectares (76 acres) of uplands and streamside management areas. These areas were estimated based on soil types, local topographic features, elevation and slope, landscape position, and groundwater model forecast (ABC 2006).

2.0 Purpose

The ABC Wetland Mitigation Site has been monitored for six (6) years and has met the monitoring requirements needed for closeout. However, the shape and acreage of the site in all previous reports did not match that of the Beaufort County Tax Map for this Tax Lot. Also the wetland restoration area was more successful than anticipated in the mitigation plan. The purpose of this report is to evaluate these discrepancies by reestablishing the constructed community type, boundary, and size.

3.0 Methodology

In order to determine the differences in community types, the planting plan, mitigation areas, and designed community information was digitized and geo-referenced with the existing monitoring data, gauge locations, vegetation plot locations, updated parcel boundary, and aerial imagery data. This information was then compared with observed field conditions. The result of this comparison revealed that three (3) key areas needed re-evaluation: existing wetland communities, vegetative communities, and stream enhancement areas.

Existing wetland communities were reviewed in the field using vegetation and hydrologic monitoring data for baseline comparison. The previously delineated wetland boundaries were also reviewed for accuracy and changes, post construction, by utilizing the US Army Corps of Engineers 1987 Wetlands Delineation Manual (COEWM). There are also wetland communities that are located within designated upland areas, according to the mitigation plan. These areas

were mapped out using the COEWM as a baseline guide then GPS located utilizing submeter GPS technology.

The designed vegetative communities were compared to the existing vegetative communities using monitoring data, planting plan data, and field observations utilizing geographic information system (GIS) technology. After the data comparison was completed, a field review was conducted to validate the comparison results. Where applicable, these communities were GPS located utilizing submeter GPS technology.

Stream Enhancement II and stream buffer reforestation were also a component of the ABC Wetland Mitigation Site. However, the mitigation plan is unclear what specific Stream Enhancement II practices were designed and no stream monitoring was required. Therefore, the mitigation plan was compared to existing conditions to determine the nature of the proposed stream enhancement.

All existing, digitized, and GPS located areas were integrated with the most recent parcel information available through the Beaufort County Tax and GIS Office as a basis for generating areas and project boundaries.

4.0 Findings

4.1 Existing Wetland Communities

A large portion of the ABC Wetland Mitigation Site was deemed as jurisdictional wetlands (ABC 1999) by the US Army Corps of Engineers (COE). This area is located along the northern boundary and labeled in the legend as non riverine wetland preservation in Figure 3. The non riverine wetland preservation is accounted for as existing jurisdictional wetlands in the mitigation plan but not accounted for in the mitigation units generated from the ABC Wetland Mitigation Site. A field review of the Wetland A was conducted and deemed accurate. Therefore, all pre-existing jurisdictional wetlands should be considered preservation and accounted for the closeout of the ABC Wetland Mitigation Site.

During the review of digitized data, it was noted that gauges located within designated upland areas achieved jurisdictional hydrology. Subsequently, a review of all designated upland areas was performed to assess the amount of actual wetland communities within upland areas. Figure 2 shows these results of the current wetland communities within the upland areas. These areas are labeled as additional wetland communities in the legend. The mitigation plan did not anticipate these areas achieving jurisdictional hydrology or maintaining hydrophytic vegetation. During the field review, it was clear that wetland areas exist in the designated upland areas and should be considered as wetland restoration. Other portions of the designated upland areas were marginal and had characteristics of both wetland and upland communities. This area is labeled as mesic mixed wetland/upland complex in Figure 2. It is possible that a large portion of the designated upland areas are restored wetlands but additional hydrologic monitoring data is needed to make the determination.

Wetland areas that have been identified within the designated upland area were not accounted for in the mitigation plan. The designed mitigation units are shown in Figure 3 and the wetland areas found within the upland areas are shown in Figure 2. Updated parcel boundary data has been incorporated and new designed mitigation areas (acres) have been calculated and shown in the legend of each figure.

4.2 Existing Vegetative Communities

The designed vegetative communities were digitized and compared to post construction monitoring utilizing GIS technology (Figure 3). The comparison yielded an area of discrepancy within the designated upland areas. Vegetation monitoring plots located within designed wetland restoration areas were successful while plots located with the designed upland areas struggled to meet minimal success criterion.

A field review was performed to assess the findings based on the GIS data. The field review revealed that a large portion of the designed uplands are too wet for the planted species. Most of the planted species have died and been replaced with a natural community of early successional species that most closely resembles that of a wetland vegetative community. In pictures 1 and 2 hydrophytic vegetation can be seen within the designed upland boundary. The existing vegetative community in these areas are now establishing itself as emergent marsh wetlands. The mesic mixed wetland/upland complex can be seen in pictures 3, 4a, and 4b. It is estimated that the total area of wetlands within the wetland/upland complex is 30 to 40 percent.

The conclusion of the field evaluation revealed that much of the upland designed vegetation communities have shifted in community type.

4.3 Existing Stream Bank Assessment

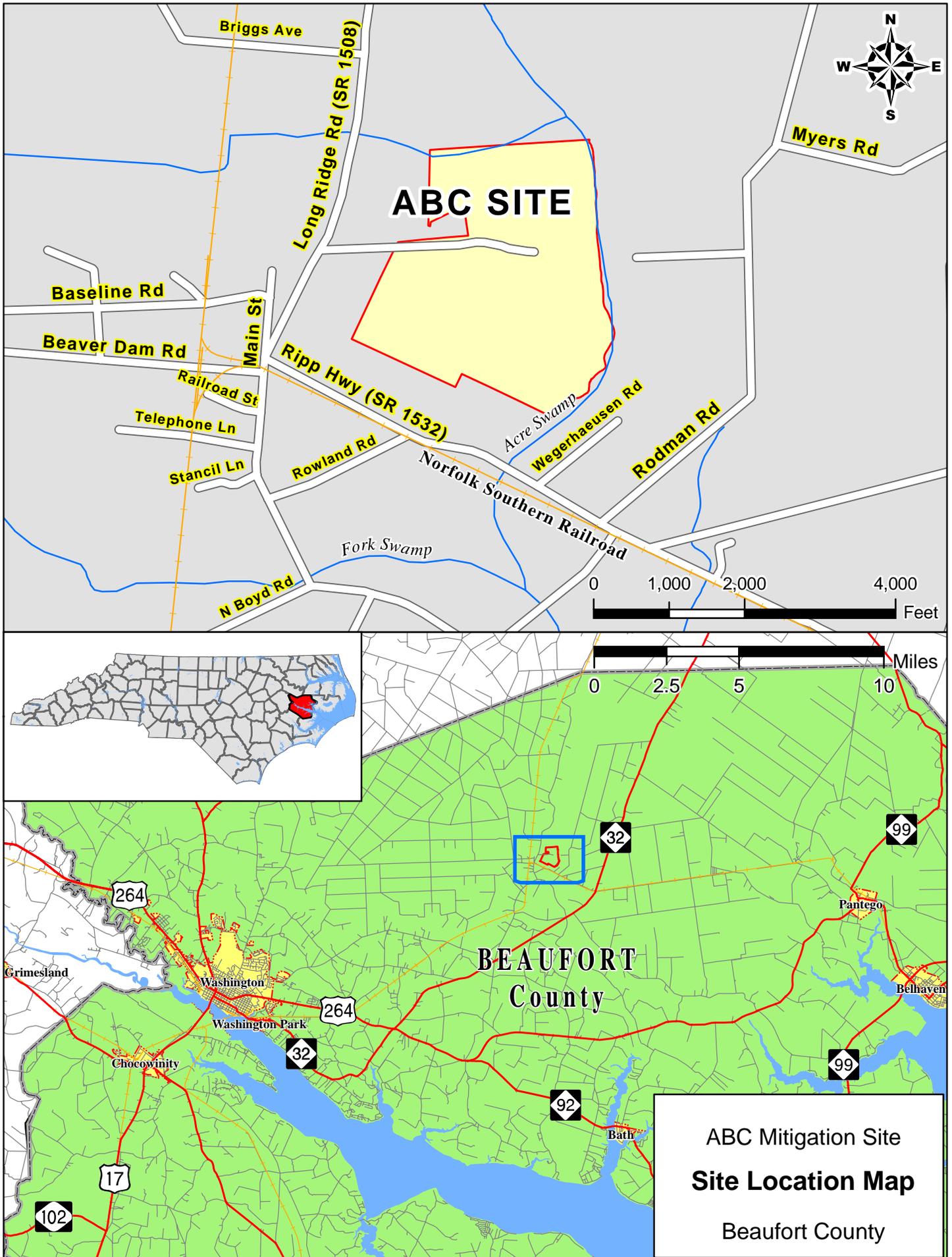
Stream Enhancement II and buffer enhancement were also a component of the ABC Wetland Site mitigation plan. Information from plan figures and planting plans were digitized and taken to the field to verify plantings and stream enhancement construction work that have taken place.

Stream Enhancement II which involves buffer planting was reviewed throughout the length of the project. Acre Swamp Canal is maintained as a canal by regular dredging; it is a straightened deep ditch with vertical sides. Stream Enhancement II and buffer enhancement information in existing monitoring reports were compared with field data. The plantings are congruent with monitoring reports and after monitoring year 6, vegetation plots 12 and 13 have met minimum success requirements. During the field observation, there were areas along the stream bank that were not densely populated with planted species. Stream Enhancement II is shown in pictures 7 through 12.

5.0 Summary

The ABC Wetland Mitigation Site has exceeded the expectations of the wetland restoration component of this project. It is recommended that EEP investigate the possibility of additional monitoring to ascertain the specific amount of restored wetlands that are located within designated upland areas not accounted for in the mitigation plan.

Existing vegetative communities have changed and are mapped in Figure 2. The difference in vegetative community is due to a different hydrologic regime, with longer soil saturation periods, that was not anticipated during site and planting plan design.

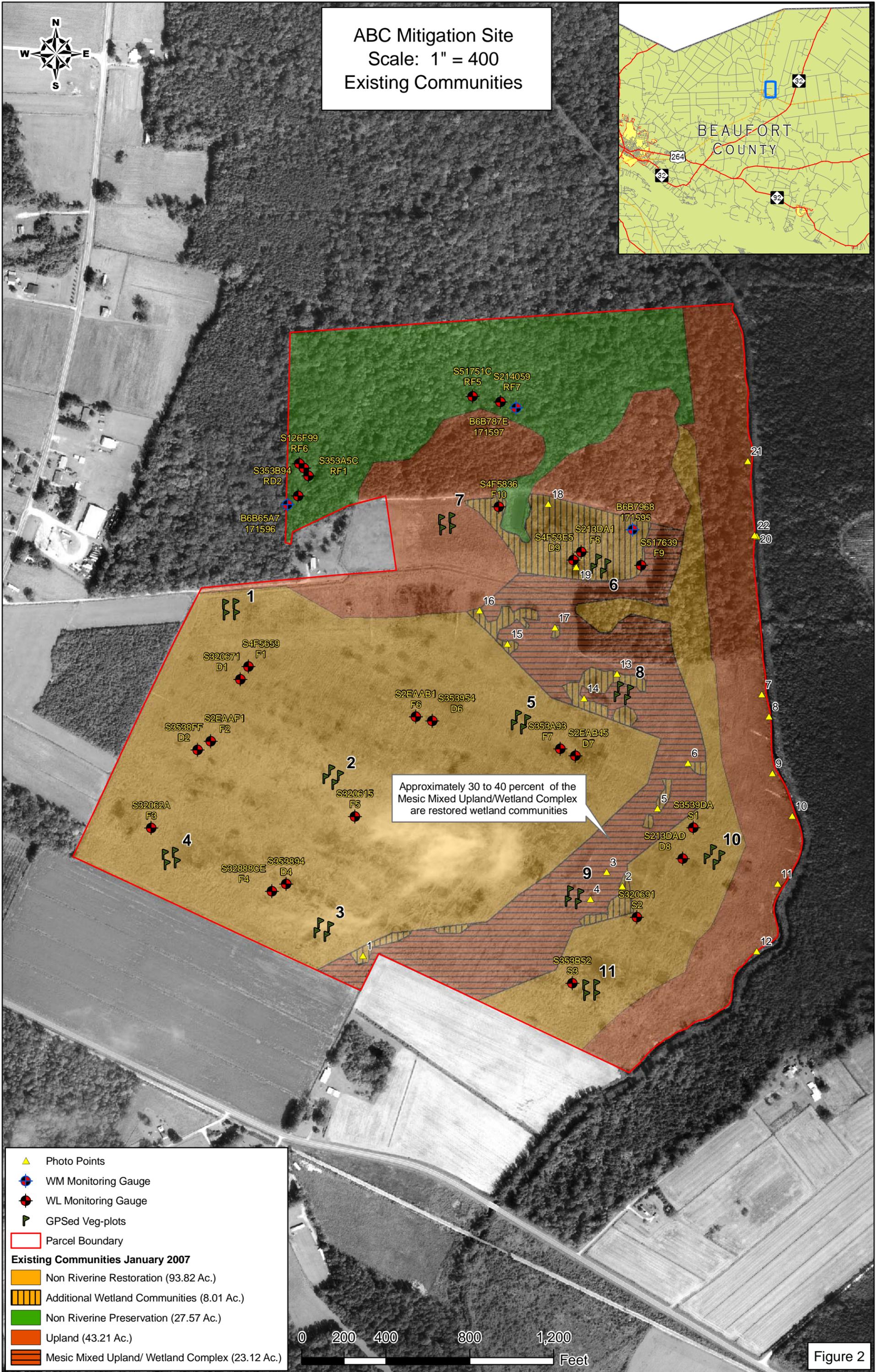
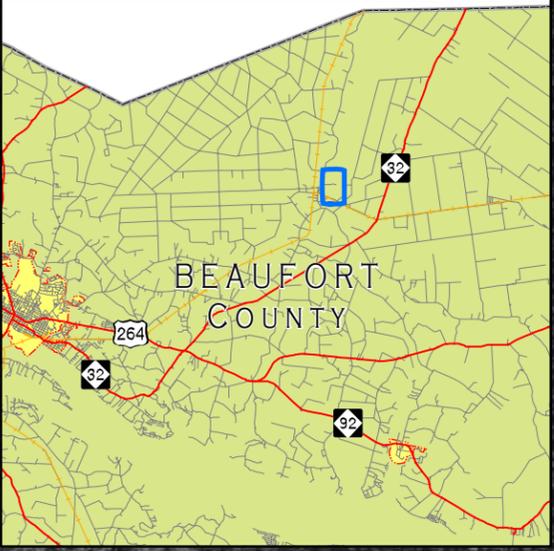


ABC Mitigation Site
Site Location Map
 Beaufort County

Figure 1



ABC Mitigation Site
Scale: 1" = 400
Existing Communities



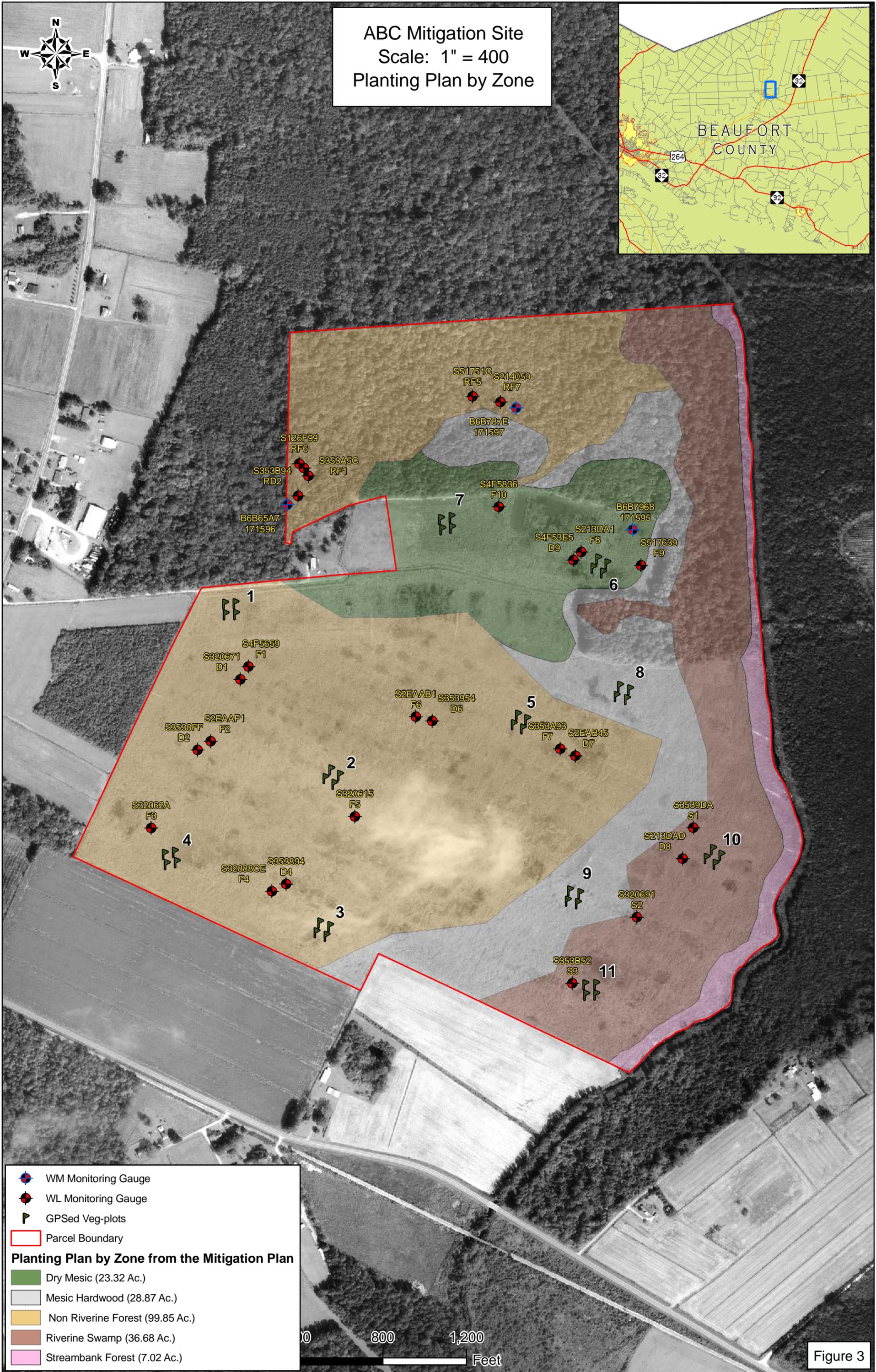
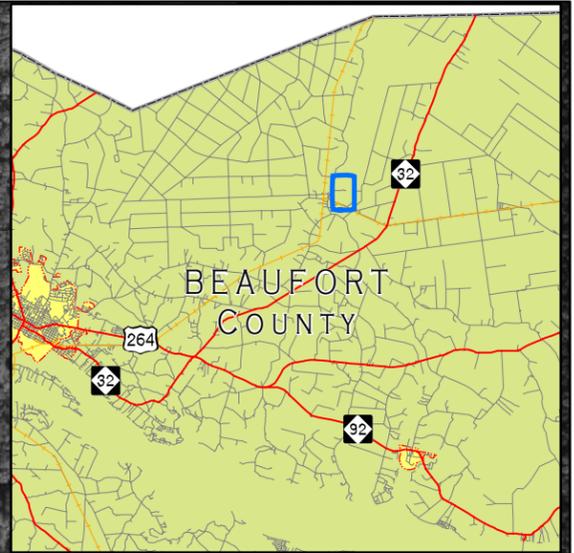
Approximately 30 to 40 percent of the Mesic Mixed Upland/Wetland Complex are restored wetland communities

- Photo Points
- WM Monitoring Gauge
- WL Monitoring Gauge
- GPSed Veg-plots
- Parcel Boundary
- Existing Communities January 2007**
- Non Riverine Restoration (93.82 Ac.)
- Additional Wetland Communities (8.01 Ac.)
- Non Riverine Preservation (27.57 Ac.)
- Upland (43.21 Ac.)
- Mesic Mixed Upland/ Wetland Complex (23.12 Ac.)

0 200 400 800 1,200 Feet

Figure 2

ABC Mitigation Site
 Scale: 1" = 400
 Planting Plan by Zone



- WM Monitoring Gauge
- WL Monitoring Gauge
- GPSed Veg-plots
- Parcel Boundary

Planting Plan by Zone from the Mitigation Plan

- Dry Mesic (23.32 Ac.)
- Mesic Hardwood (28.87 Ac.)
- Non Riverine Forest (99.85 Ac.)
- Riverine Swamp (36.68 Ac.)
- Streambank Forest (7.02 Ac.)

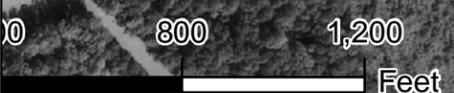
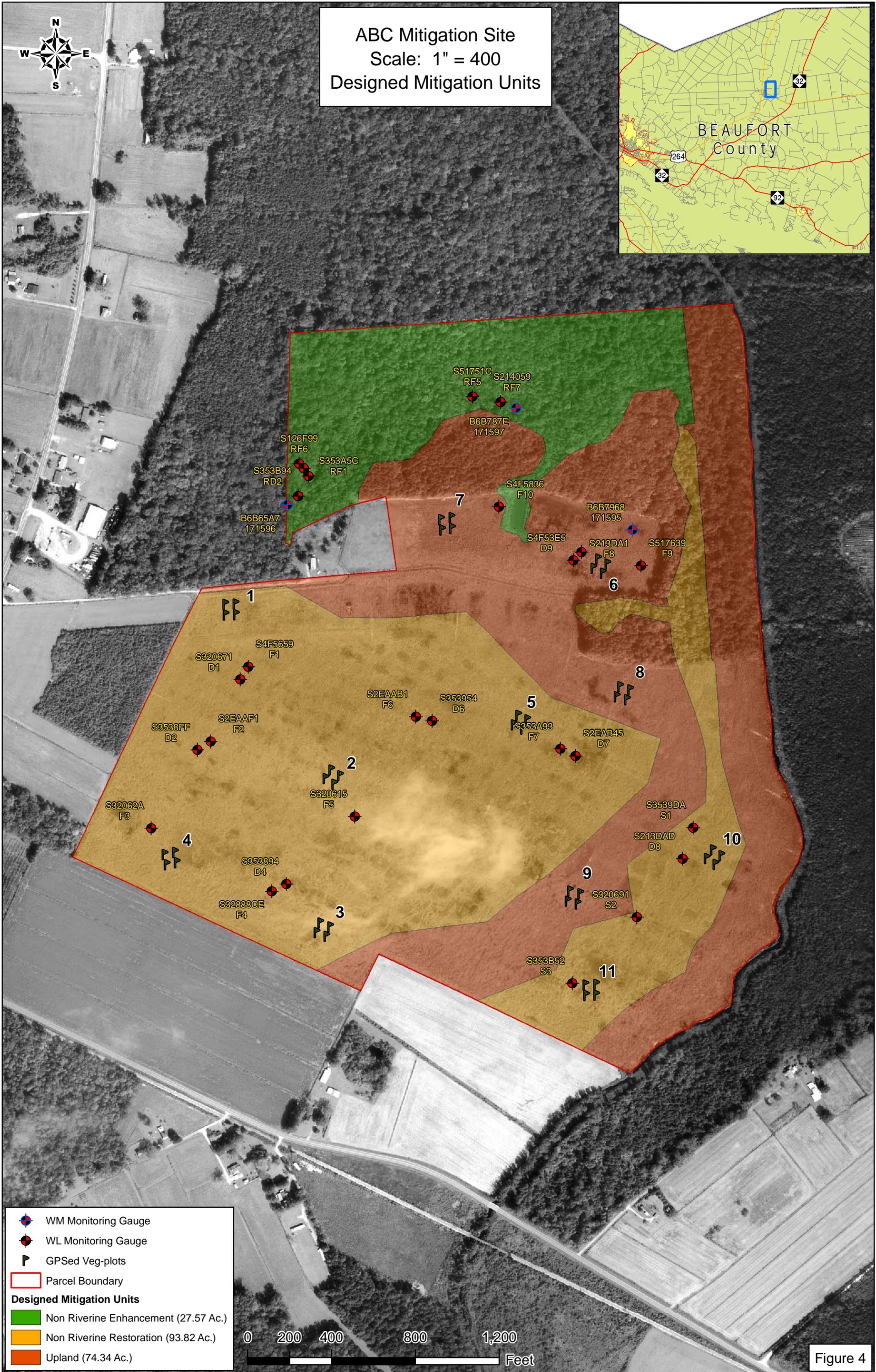
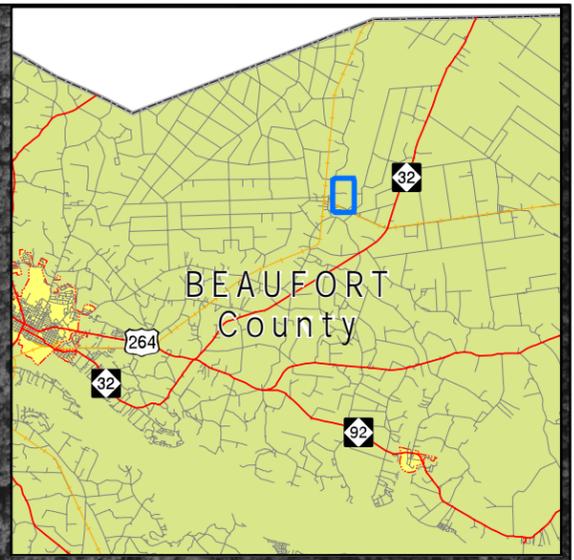


Figure 3



ABC Mitigation Site
Scale: 1" = 400
Designed Mitigation Units



- WM Monitoring Gauge
- WL Monitoring Gauge
- GPSed Veg-plots
- Parcel Boundary
- Designed Mitigation Units**
- Non Riverine Enhancement (27.57 Ac.)
- Non Riverine Restoration (93.82 Ac.)
- Upland (74.34 Ac.)

0 200 400 800 1,200
Feet

Figure 4

Appendix A

Appendix B

CITATIONS

ABC Monitoring Report for 2006. "ABC Wetland Mitigation Site Annual Report for 2006." Prepared by Rummel, Klepper, and Kahl, LLP for NCEEP. 2006.

ABC Mitigation Plan. "Wetland and Stream Mitigation Plan ABC Site Beaufort County, North Carolina." Prepared by Ecoscience Corporation for NCDOT. 1999.

Appendix C

Wetland Determination Variables Raw Data Table			
Area	Soils (Chroma)	Hydrology	Hydrophytic Vegetation
Additional Wetland Communities	1 and 2 chroma found throughout	Gauges monitored jurisdictional hydrology, standing water, and saturation in the upper 12 inches	Yes
Mesic Mixed Upland/Wetland Complex	1,2,and 3 chroma found throughout	Standing water and saturation in the upper 12 inches	N/A
Uplands	3 and 6 chroma found throughout	N/A	N/A

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

Project/Site: ABC Site Applicant/Owner: NC EEP Investigators: Pete Staffird	Project No:	Date: 8-Feb-2007 County: Beaufort State: North Carolina Plot ID: 1
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Do Normal Circumstances exist on the site? <input checked="" type="radio"/> Yes <input type="radio"/> No Is the site significantly disturbed (Atypical Situation:)? Yes <input checked="" type="radio"/> No Is the area a potential Problem Area? Yes <input checked="" type="radio"/> No (If needed, explain on the reverse side)	Community ID: Palustrine shrub/scrub Transect ID: Field Location:
--	--

VEGETATION (USFWS Region No. 2)

Dominant Plant Species(Latin/Common)	Stratum	Indicator	Plant Species(Latin/Common)	Stratum	Indicator
<i>Typha latifolia</i>	Herb	OBL	<i>Rubus betulifolius</i>	Herb	FAC
Cattail, Broad-Leaf			Blackberry		
<i>Juncus effusus</i>	Herb	FACW+	<i>Quercus lyrata</i>	Shrub	OBL
Rush, Soft			Oak, Overcup		
<i>Pinus taeda</i>	Shrub	FAC	<i>Fraxinus pennsylvanica</i>	Shrub	FACW
Pine, Loblolly			Ash, Green		

Percent of Dominant Species that are OBL, FACW or FAC: (excluding FAC-) 6/6 = 100.00%	FAC Neutral: 4/4 = 100.00% Numeric Index: 12/6 = 2.00
---	--

Remarks:

HYDROLOGY

<u>NO</u> Recorded Data(Describe in Remarks): <u>N/A</u> Stream, Lake or Tide Gauge <u>N/A</u> Aerial Photographs <u>N/A</u> Other <u>YES</u> No Recorded Data Field Observations Depth of Surface Water: None (in.) Depth to Free Water in Pit: = 2 (in.) Depth to Saturated Soil: = 0 (in.)	Wetland Hydrology Indicators Primary Indicators <u>NO</u> Inundated <u>YES</u> Saturated in Upper 12 Inches <u>YES</u> Water Marks <u>NO</u> Drift Lines <u>NO</u> Sediment Deposits <u>YES</u> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <u>YES</u> Oxidized Root Channels in Upper 12 Inches <u>YES</u> Water-Stained Leaves <u>NO</u> Local Soil Survey Data <u>YES</u> FAC-Neutral Test <u>NO</u> Other (Explain in Remarks)
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Remarks:
 Some areas within the upland areas, as specified by the ABC Site Mitigation Plan, have areas completely inundated.

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

Project/Site: ABC Site Applicant/Owner: NC EEP Investigators: Pete Staffird	Project No:	Date: 8-Feb-2007 County: Beaufort State: North Carolina Plot ID: 1
--	--------------------	---

SOILS

Map Unit Name (Series and Phase): Lenior		Map Symbol: Le		Drainage Class:		Mapped Hydric Inclusion?	
Taxonomy (Subgroup):						Field Observations Confirm Mapped Type? Yes <input type="radio"/> No <input checked="" type="radio"/>	
Profile Description							
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color (Munsell Moist)	Mottle Abundance/Contrast		Texture, Concretions, Structure, etc	
0-6	Oi	10YR3/2	N/A	N/A	N/A	Sandy clay loam	
6-13	A	10YR3/1	N/A	N/A	N/A	Sandy clay loam	
13-22+	A/B	10YR5/2	N/A	N/A	N/A	Clay loam	
Hydric Soil Indicators:							
<u>NO</u> Histosol				<u>NO</u> Concretions			
<u>NO</u> Histic Epipedon				<u>NO</u> High Organic Content in Surface Layer in Sandy Soils			
<u>NO</u> Sulfidic Odor				<u>NO</u> Organic Streaking in Sandy Soils			
<u>YES</u> Aquic Moisture Regime				<u>NO</u> Listed on Local Hydric Soils List			
<u>YES</u> Reducing Conditions				<u>NO</u> Listed on National Hydric Soils List			
<u>YES</u> Gleyed or Low Chroma Colors				<u>NO</u> Other (Explain in Remarks)			
Remarks:							

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Wetland Hydrology Present? <input checked="" type="radio"/> Yes <input type="radio"/> No Hydric Soils Present? <input checked="" type="radio"/> Yes <input type="radio"/> No	Is the Sampling Point within the Wetland? <input checked="" type="radio"/> Yes <input type="radio"/> No
Remarks:	