

**“Manning Farm Property”
Buffer Restoration Project**

**Edgecombe County, NC
Tar-Pamlico River Basin
(Cataloging Unit #03020103)**

**2009 Annual Monitoring Report (Year 4 of 5)
(Task 10)**

NC EEP Contract #D05026



Prepared For:

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



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Prepared By:

Land Management Group, Inc.
PO Box 2522
Wilmington, NC 28403



Phone. 910-452-0001

Fax. 910-452-0060

Project Manager:

Christian A. Preziosi

Office. 910-452-0001

Cell. 910-471-0515

Email. cpreziosi@lmgroup.net

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EXECUTIVE SUMMARY

Prior to project implementation, the Manning Farm Property was farmed for soybean and cotton production. The site consisted entirely of open agricultural fields with no existing riparian buffer (i.e. trees and shrubs are absent within 200 ft of existing surface waters). Under contract with the North Carolina Ecosystem Enhancement Program (EEP), Land Management Group, Inc. (LMG) implemented the restoration of 9.70 acres of riparian buffer habitat along Knight Canal (a tributary of Conetoe Creek) and contiguous surface-waters (i.e. field ditches) in Edgecombe County, NC.

The 9.70-ac project area was planted with characteristic tree and shrub species on an average density of 900 stems/ac. Planting was completed in February 2006. Five (5) permanent 0.10-ac monitoring plots (equivalent to 5% of the restoration area) were established subsequent to planting. Annual monitoring will be conducted near the end of each growing season for a period of five years beginning in October 2006. Vegetative planting will be deemed successful if survivorship of plantings and volunteers of desirable species meets or exceeds a target stem density of 320 stems/acre. Based upon Year 4 monitoring, the buffer restoration area appears to be progressing well toward the targeted stem density. A total of 377 stems (excluding red maple, sweet gum, and privet) were enumerated within the five plots (corresponding to an average density of 754 stems/acre).

The following monitoring report summarizes the restoration project and includes specific plot data from the September 2009 (Year 4) monitoring event.

I. PROJECT BACKGROUND

1. Location and Setting

Under contract with the North Carolina Ecosystem Enhancement Program (EEP), Land Management Group, Inc. (LMG) implemented the restoration of 9.70 acres of farmland located adjacent to Knight Canal (a tributary of the Tar River) and a series of contiguous surface waters (i.e. field ditches). The project area is part of the “Manning Farm”, located approximately 4.0 miles southeast of Tarboro in Edgecombe County, NC (refer to Figure 1). The site is bordered to the north by US 64 Alternate and to the west by Knight Canal (refer to Figure 2). The property is situated within TAR-3 of the lower Tar-Pamlico River Basin (USGS Cataloging Unit 03020103).

2. Mitigation Structure and Objectives

The restoration project is intended to provide suitable, high-quality riparian buffer restoration as compensatory mitigation for riparian buffer impacts authorized through the North Carolina Division of Water Quality (NC DWQ). The objective of the project is to restore riparian buffer vegetation and diffuse flow conditions to help reduce non-point source discharge of contaminants into adjacent water bodies. The restoration project has resulted in the removal of agricultural fields adjacent to Knight Creek and surface-water ditches contiguous with the creek. In doing so, the restoration project helps to reduce non-point source loading of nitrogen (N) into surface waters while increasing the nutrient removal capacity of the adjacent land. The following monitoring report summarizes conditions related to restoration site development.

3. Project History and Background

Table 1 provides the reporting and milestone history of the Manning Farm restoration project.

II. PROJECT CONDITIONS

1. Pre-Construction Conditions

The 9.70-acre riparian buffer restoration area represents a portion of a larger 250-acre tract (“Manning Farm”) formerly farmed for the production of soybean and cotton. Land use practices, including herbicide, pesticide, and fertilizer application, served as potential contributors to decreased water quality of adjacent surface waters (i.e. ditches and ‘blue-line’ streams). Application of nitrogen-rich fertilizer represented the most significant non-point source of nitrogen within the immediate project area. Woody vegetation along ditches was either absent or sparse (less than 100 stems per acre that are > 5 inches diameter at breast height). As a result, nutrient-laden runoff was discharged from agricultural fields directly into surface waters with little or no nutrient filtration/transformation. Photographs documenting pre-project conditions are provided in Appendix A.

2. Soils

The site consists predominantly of Cape Fear loam, a very poorly drained soil occurring along stream terraces and depressional drainageways. Infiltration is slow and surface runoff is slow in these areas. The seasonal high water table occurs at or near the soil surface, assuming no ditching in the vicinity. The remaining portion of the buffer area consists of Roanoke loam – a poorly drained soil characteristic of broader flats of stream terraces. Roanoke soils exhibit slow infiltration with a seasonal high water table occurring at or near the soil surface (Figure 3).

3. Restoration Activities

The restoration project included the planting of characteristic tree and shrub seedlings adjacent to open ditches and blue-line streams on the 9.70-ac restoration site (refer to Figure 4). No federal or state permits were necessary to conduct the restoration activities. The riparian buffer was planted with characteristic tree species including river birch (*Betula nigra*), sycamore (*Platanus occidentalis*), water oak (*Quercus nigra*), overcup oak (*Quercus lyrata*), tulip poplar (*Liriodendron tulipifera*), and red bay (*Persea borbonia*). Bare-root seedlings were planted at a density of 600 trees per acre. The outer 50 feet of the proposed buffer areas were planted with

characteristic shrub species including wax myrtle (*Myrica cerifera*), American beautyberry (*Callicarpa americana*), and elderberry (*Sambucus canadensis*). Shrubs were planted at a density of 1,200 plants per acre. These species are considered to be well suited for site-specific conditions, including soil characteristics and moisture regimes. In addition, each of these species is listed within NCDENR's "Guidelines for Riparian Buffer Restoration" as appropriate species for use in riparian buffer restoration projects. Approximately 7,500 trees and shrubs were planted throughout the project footprint. On-site planting was completed in February 2006. Refer to Table 2 for a list of species planted (with corresponding quantities) within the buffer restoration area.

LMG arranged for the execution of the conservation easement deed to ensure the protection of the riparian buffer restoration area in perpetuity. The easement prohibits any activities (e.g. timbering, farming, building, etc.) that would alter the environmental state of the restoration project. Post-restoration management will be consistent with allowable activities as identified in the Tar-Pamlico Buffer Rule (15A NCAC 02B.0233). The conservation easement has been transferred to the North Carolina State Property Office for long-term protection and management of the site.

III. METHODOLOGY & SUCCESS CRITERIA

Based upon standard mitigation site monitoring requirements, annual monitoring will be conducted at the end of each growing season over a period of five years. Five (5) 0.10-acre permanent plots corresponding to a total of 0.5 acres (equivalent to 5% of the restoration area) were established subsequent to site planting. The locations of the monitoring plots are depicted in Appendix C. Monitoring includes the identification and enumeration of individuals (including shrubs and trees, planted or volunteer) occurring within each plot. All tree and shrub species within the plots are identified, flagged, and recorded on field data sheets during each monitoring event. Site planting is to be deemed successful if survivorship of plantings and volunteers of desirable species¹ meets or exceeds a target stem density of 320 stems/acre. Non-preferred and invasive species are not counted toward success criteria. Thus species such as red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), and privet (*Ligustrum sinense*) are excluded from the recorded plot density data.

Monitoring reports are being submitted annually to the EEP (by January 1 of each year). These reports include results of vegetative monitoring and photographic documentation of site conditions. Monitoring reports will also identify any contingency measures that may need to be employed to remedy any site deficiencies. For instance, deer browse tubes and fencing may need to be used if evidence of significant herbivory or deer browse is observed. In addition, supplemental planting may be necessary in areas of reduced survivorship.

IV. MONITORING

A total of 622 stems (planted and volunteer shrubs/trees) were observed within the five 0.10-acre plots. Of the total observed, 377 stems (total excluding privet, red maple and sweet gum) were counted toward the success criteria (corresponding to 754 stems/acre). Individual plot totals ranged between 41 stems (Plot 4) and 115 stems (Plot 1). Of the species planted, river birch (*Betula nigra*) and American sycamore (*Platanus occidentalis*) were the most abundant trees observed. Eastern false-willow (*Baccharis halimifolia*) was the most abundant shrub observed within the five monitoring plots.

Refer to Table 3 for a comprehensive list of monitoring plot totals. Site photographs from the 2009 monitoring event are included in Appendix A and individual plot data sheets are included in Appendix B.

V. CONCLUSION

Restoration activities have demonstrated to be successful at the 9.70-acre project site through the fourth year of annual monitoring. The observed density (754 stems/acre) indicates that the site is progressing well and has exceeded the aforementioned success criteria. Based on the existing conditions observed during the Year 4 monitoring event it is expected that the site will continue to exhibit sufficient vegetative density through the final year of monitoring and will provide the intended functions of a mature, vegetated buffer ecosystem.

Reversion of agricultural land to wooded riparian buffer will decrease source nutrient loading and concurrently increase nutrient removal capacity. In addition, the project will provide ancillary benefits to aquatic and wildlife habitat via enhanced niche habitat, microclimate modification and shade, and increased food-web support. By doing so, the proposed project will help to effectively mitigate for authorized loss of riparian buffers within the Tar-Pamlico River Basin.

TABLES

Table 1. Reporting and Milestone History

Task	Project Milestone	Completion Date	COMMENTS
1	Feasibility Study, CE Document, and Public Meeting	July 1, 2005	
2	Record a Conservation Easement on the Site	January 25, 2006	Recorded in Edgecombe County Register of Deeds
3	Restoration Plan Approved by EEP	January 2006	Restoration Plan complete
4	Mitigation Site Earthwork Completed	January 15, 2006	Minimal earthwork required (only disking)
5	Mitigation Site Planting and Installation of Monitoring Devices	February 15, 2006	Approved by EEP
6	Submittal of Mitigation Plan (including as-built drawings)	June, 2006	Approved by EEP
7	Submittal of Monitoring Report #1 to EEP	December 31, 2006	Approved by EEP
8	Submittal of Monitoring Report #2 to EEP	December 31, 2007	Approved by EEP
9	Submittal of Monitoring Report #3 to EEP	December 31, 2008	Approved by EEP
10	Submittal of Monitoring Report #4 to EEP	December 31, 2009	
11	Submittal of Monitoring Report #5 to EEP	December 31, 2010	

Table 2. Manning Farm Plant List.

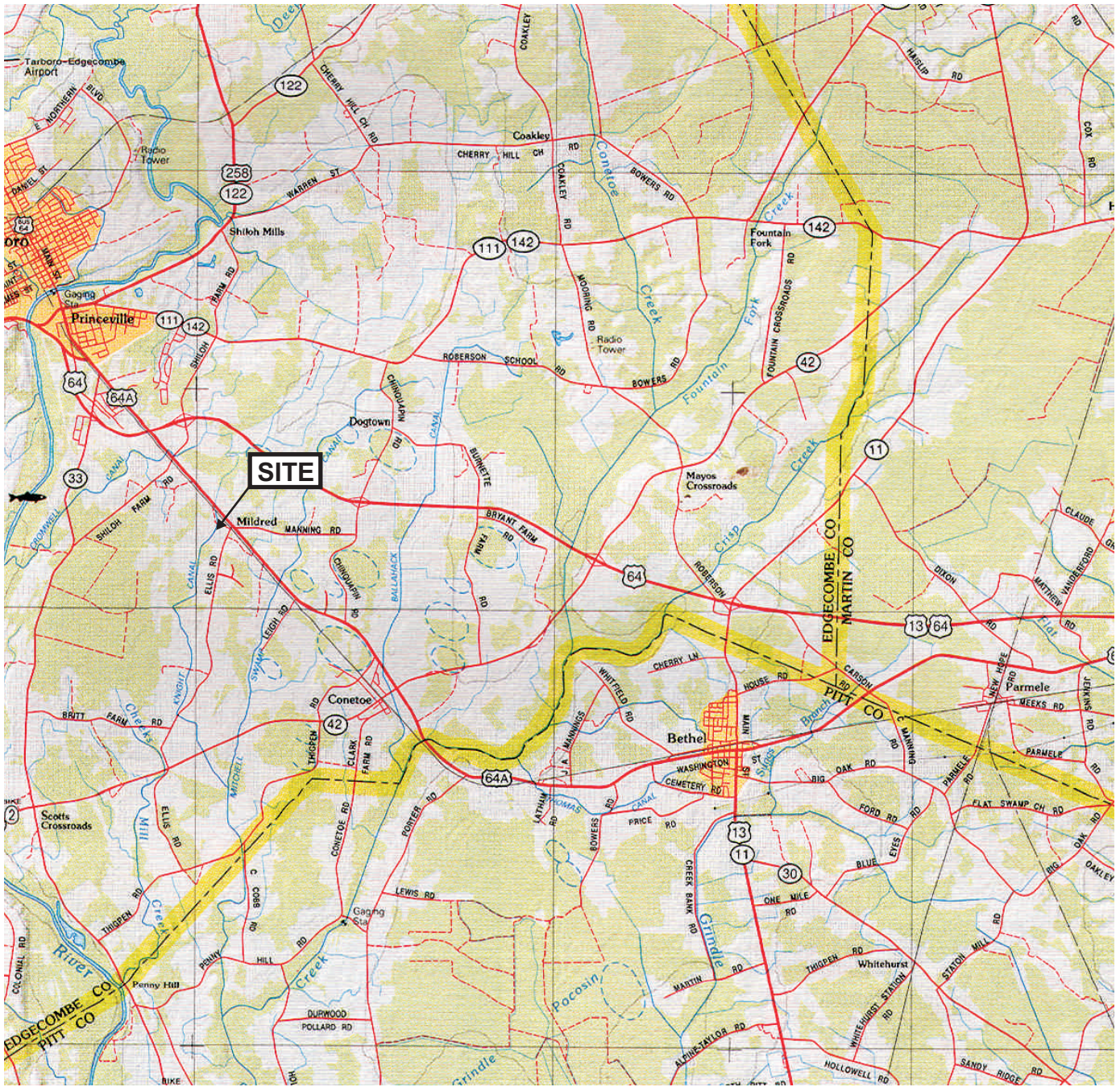
Buffer Zone	Zone 1 (Trees)	Zone 2 (Shrubs)		
Stem Target:	600/ac.	4,500	1,200/ac.	3,000
Species	# planted	(% of total)	# planted	(% of total)
River Birch (<i>Betula nigra</i>)	1,200	26.67%		
Sycamore (<i>Platanus occidentalis</i>)	800	17.78%		
Green Ash (<i>Fraxinus pennsylvanica</i>)	500	11.11%		
Overcup Oak (<i>Quercus lyrata</i>)	200	4.44%		
Water Oak (<i>Quercus nigra</i>)	500	11.11%		
Red Bay (<i>Persea borbonia</i>)	500	11.11%		
Tulip Poplar (<i>Liriodendron tulipifera</i>)	1,000	22.22%		
Sweet pepperbush (<i>Clethra alnifolia</i>)			500	16.67%
Elderberry (<i>Sambucus canadensis</i>)			1,000	33.33%
American Beautyberry (<i>Callicarpa americana</i>)			1,000	33.33%
Wax Myrtle (<i>Myrica cerifera</i>)			500	16.67%
			TOTAL	7,700

Table 3. Annual Monitoring Data (Year 4) – Vegetation Plots

Manning Farm Riparian Buffer Site

SPECIES	PLOT 1	PLOT 2	PLOT 3	PLOT 4	PLOT 5	TOTAL
American beautyberry				11	26	37
Baccharis	36	17	4	5	15	77
Elderberry		5	1	3	6	15
Green Ash				5	19	24
Loblolly Pine	3					3
Persimmon	4	2		2	2	10
Privet						0
Red Bay						0
River Birch	37	4	23			64
Sweet Gum	70	28	17	60	70	245
Sweet Pepperbush						0
Sycamore	18	14	20			52
Tulip Poplar	10	2	20			32
Water Oak	1		2	3	39	45
Willow Oak	6			11	4	17
Wax Myrtle						0
Winged Sumac			1			1
TOTAL	185	72	87	101	177	622
Total Counted toward Success	115	44	70	41	107	377
Stem Density (per ac)	1150	440	700	410	1070	754

FIGURES



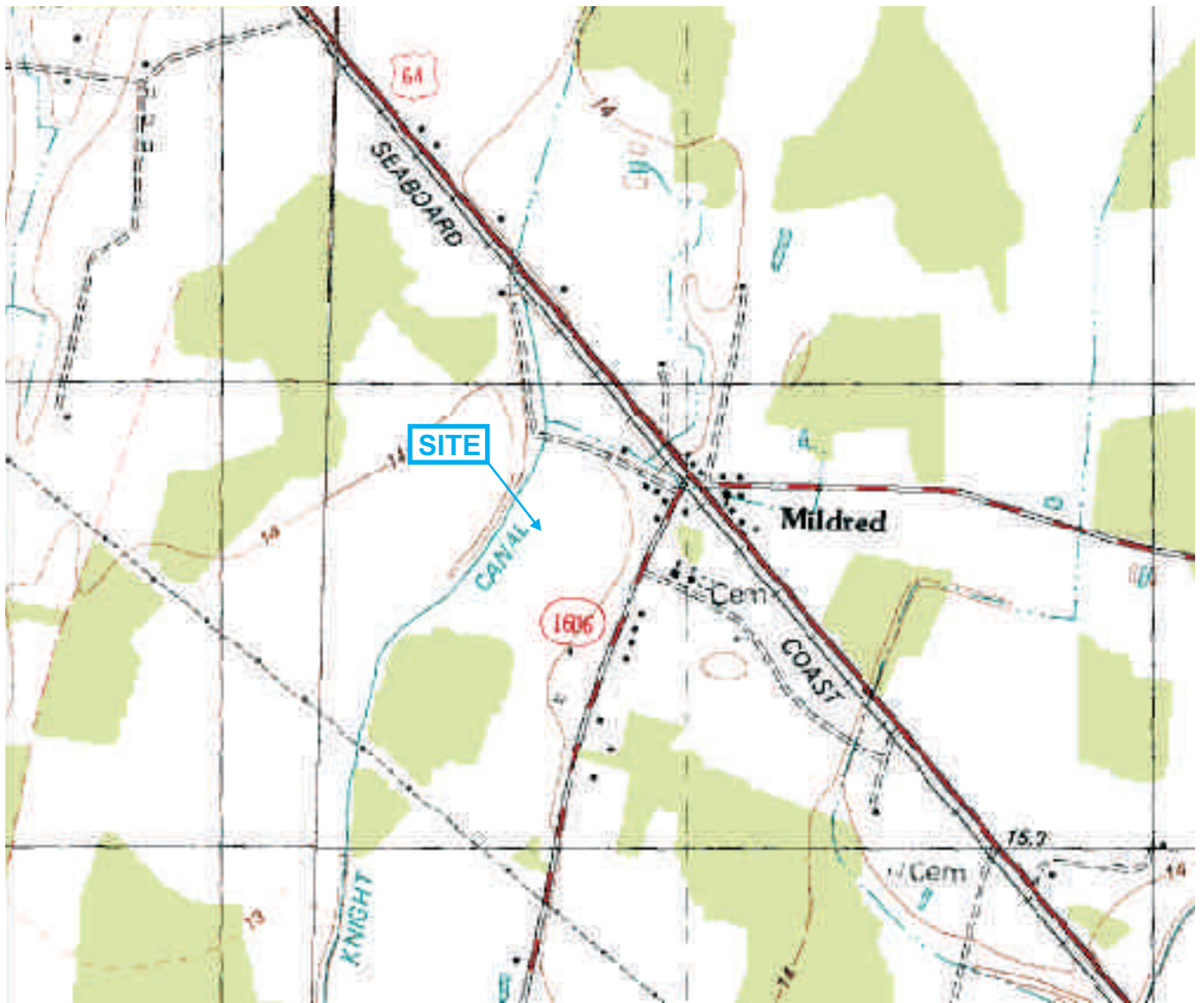
SCALE 1" = 2.0 miles

Map Source: DeLorme: North Carolina Atlas and Gazetteer., 1997 p. 46.

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Environmental Consultants
Wilmington, N.C.
November 2008

Figure 1.
Site Location Map



Boundaries are approximate
and not meant to be absolute.

Map Source: 1990, USGS 7.5' Topographic Quadrangle. Conetoe Quadrangle

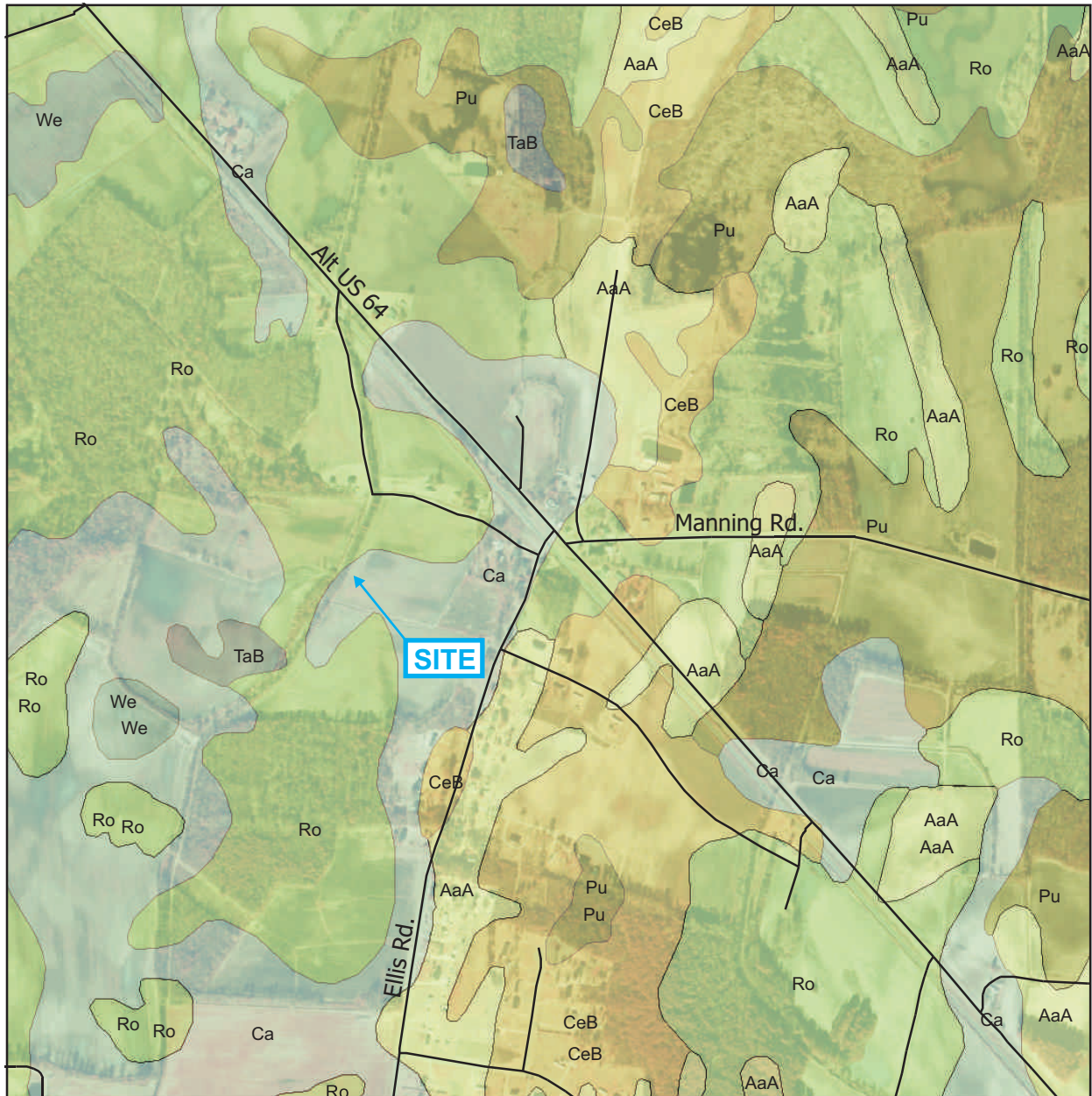


SCALE 1" = 2000'

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Figure 2.
1990 Topographic Quad



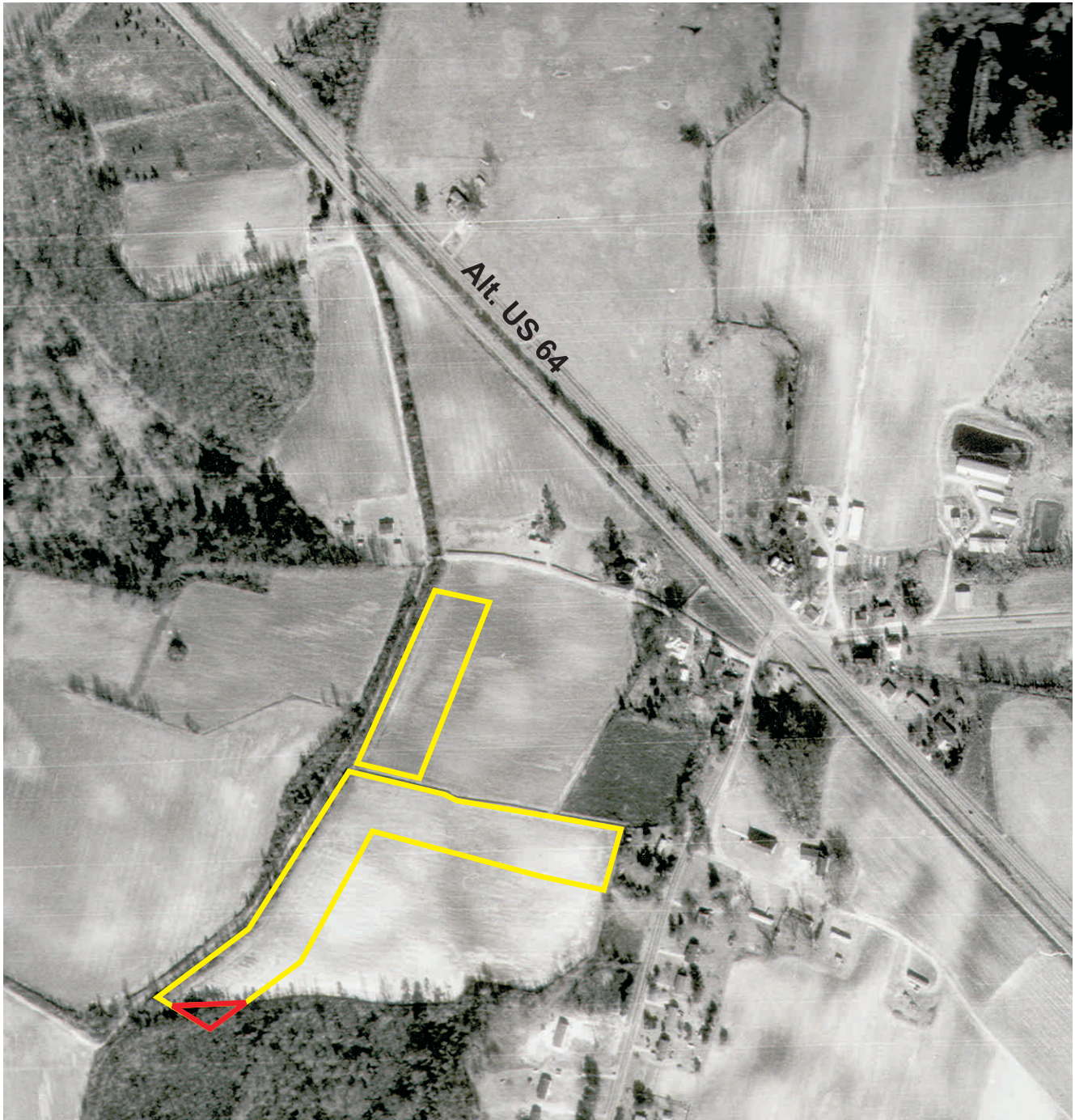
SCALE 1" = 1000'

Map Source: Soil Survey of Edgecombe County , 1977.


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Figure 3.
Generalized Soil Map
Edgecombe County, NC



 200-ft Buffer Planting Area (9.70 acres)

 Non-Restored Area -Existing Woods in Preservation (0.30 acres)



SCALE 1" = 500'

Boundaries are approximate
and not meant to be absolute.

Map Source: 1993 Aerial Photography NCGIA

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Figure 4.
Buffer Planting Overview
(updated December 2009)

APPENDIX A.

SITE PHOTOGRAPHS (SEPTEMBER 2009, YEAR 4 OF 5)

(1) Typical view of a 4th year Sycamore in plot #1.



(2) Typical view of a 4th year River Birch in Plot #1 looking NW toward Cobbs and Knight Canal



(4) View of maturing trees in Plot #4



(3) View of maturing trees in Plot #3



(5) View of Plot #4 looking north.



(6) Typical view of 4th year Green Ash in Plot #5



APPENDIX B.

VEGETATION SURVEY DATA BY PLOT

MANNING FARM RIPARIAN BUFFER SITE
 ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS

PLOT NUMBER 1

SPECIES	STRATUM	Number of Individuals	HEIGHT	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
	(T, SA, or SH)				
River Birch	SA	1	2 ft	Planted	1
River Birch	SA	2	4 ft	Planted	2
River Birch	SA	1	5 ft	Planted	1
River Birch	SA	7	6 ft	Planted	7
River Birch	SA	5	7 ft	Planted	5
River Birch	SA	10	8 ft	Planted	10
River Birch	SA	1	9 ft	Planted	1
River Birch	SA	4	10 ft	Planted	4
River Birch	SA	2	11 ft	Planted	2
River Birch	SA	4	12 ft	Planted	4
Tulip Poplar	SA	3	1 ft	Planted	3
Tulip Poplar	SA	5	2 ft	Planted	5
Tulip Poplar	SA	2	3 ft	Planted	2
American Sycamore	SA	1	3 ft	Planted	1
American Sycamore	SA	1	4 ft	Planted	1
American Sycamore	SA	1	5 ft	Planted	1
American Sycamore	SA	3	6 ft	Planted	3
American Sycamore	SA	1	9 ft	Planted	1
American Sycamore	SA	4	10 ft	Planted	4
American Sycamore	SA	1	12 ft	Planted	1
American Sycamore	SA	3	14 ft	Planted	3
American Sycamore	SA	3	15 ft	Planted	3
Willow Oak	SA	3	2 ft	Planted	3
Willow Oak	SA	1	3 ft	Planted	1
Willow Oak	SA	1	5 ft	Planted	1
Willow Oak	SA	1	12 ft	Planted	1
Water Oak	SA	1	7 ft	Planted	1

Baccharis	SH	1	3 ft	Volunteer	1
Baccharis	SH	3	4 ft	Volunteer	3
Baccharis	SH	6	5 ft	Volunteer	6
Baccharis	SH	16	6 ft	Volunteer	16
Baccharis	SH	7	7 ft	Volunteer	7
Baccharis	SH	3	8 ft	Volunteer	3
Persimmon	SA	4	2 ft	Volunteer	4
Loblolly Pine	SA	3	2 ft	Volunteer	3
Sweet Gum	SA	70	2 ft - 12 ft	Volunteer	0
Red Maple	SA	3	4 ft	Volunteer	0
	TOTAL SHRUBS	36		OBSERVED DENSITY (PER PLOT)	115
	TOTAL TREES OF PLANTED SPECIES	72		OBSERVED DENSITY (PER ACRE)	1150
	TOTAL TREES OF VOLUNTEER SPECIES	80			
	TOTAL INDIVIDUALS	188			

MANNING FARM RIPARIAN BUFFER SITE
 ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS

PLOT NUMBER 2

SPECIES	STRATUM	Number of Individuals	HEIGHT	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
	(T, SA, or SH)				
Elderberry	SH	1	2 ft	Planted	1
Elderberry	SH	2	3 ft	Planted	2
Elderberry	SH	2	4 ft	Planted	2
River Birch	SA	2	4 ft	Planted	2
River Birch	SA	1	8 ft	Planted	1
River Birch	SA	1	11 ft	Planted	1
Tulip Poplar	SA	1	1 ft	Planted	1
Tulip Poplar	SA	1	2 ft	Planted	1
American Sycamore	SA	1	3 ft	Planted	1
American Sycamore	SA	2	4 ft	Planted	2
American Sycamore	SA	2	5 ft	Planted	2
American Sycamore	SA	3	6 ft	Planted	3
American Sycamore	SA	3	7 ft	Planted	3
American Sycamore	SA	2	9 ft	Planted	2
American Sycamore	SA	1	10 ft	Planted	1
Baccharis	SH	1	3 ft	Volunteer	1
Baccharis	SH	6	4 ft	Volunteer	6
Baccharis	SH	5	5 ft	Volunteer	5
Baccharis	SH	4	6 ft	Volunteer	4
Baccharis	SH	1	8 ft	Volunteer	1
Persimmon	SA	1	2 ft	Volunteer	1
Persimmon	SA	1	3 ft	Volunteer	1
Sweet Gum	SA	28	1 ft - 3 ft	Volunteer	0
	TOTAL SHRUBS	22		OBSERVED DENSITY (PER PLOT)	44

	TOTAL TREES OF PLANTED SPECIES	20		OBSERVED DENSITY (PER ACRE)	440
	TOTAL TREES OF VOLUNTEER	30			
	TOTAL INDIVIDUALS	72			

MANNING FARM RIPARIAN BUFFER SITE
 ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS

PLOT NUMBER 3

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
River Birch	SA	1	6 ft	Planted	1
River Birch	SA	1	7 ft	Planted	1
River Birch	SA	4	8 ft	Planted	4
River Birch	SA	6	10 ft	Planted	6
River Birch	SA	3	12 ft	Planted	3
River Birch	SA	4	14 ft	Planted	4
River Birch	SA	4	15 ft	Planted	4
Sycamore	SA	1	6 ft	Planted	1
Sycamore	SA	2	7 ft	Planted	2
Sycamore	SA	2	8 ft	Planted	2
Sycamore	SA	1	10 ft	Planted	1
Sycamore	SA	5	12 ft	Planted	5
Sycamore	SA	3	14 ft	Planted	3
Sycamore	SA	5	15 ft	Planted	5
Sycamore	SA	1	16 ft	Planted	1
Tulip Poplar	SA	4	4 ft	Planted	4
Tulip Poplar	SA	8	6 ft	Planted	8
Tulip Poplar	SA	1	7 ft	Planted	1
Tulip Poplar	SA	5	8 ft	Planted	5
Tulip Poplar	SA	1	9 ft	Planted	1
Tulip Poplar	SA	1	10 ft	Planted	1
Water Oak	SA	1	2 ft	Planted	1
Water Oak	SA	1	4 ft	Planted	1
Elderberry	SH	1	5 ft	Planted	1

Baccharis	SH	1	3 ft	Volunteer	1
Baccharis	SH	1	6 ft	Volunteer	1
Baccharis	SH	1	7 ft	Volunteer	1
Baccharis	SH	1	8 ft	Volunteer	1
Sweet Gum	SA	17	2 ft - 10 ft	Volunteer	0
	TOTAL SHRUBS	5		OBSERVED DENSITY	70
				(PER PLOT)	
	TOTAL TREES OF PLANTED SPECIES	65		OBSERVED DENSITY (PER ACRE)	700
	TOTAL TREES OF VOLUNTEER SPECIES	17			
	TOTAL INDIVIDUALS	87			

MANNING FARM RIPARIAN BUFFER SITE
 ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS

PLOT NUMBER 4

SPECIES	STRATUM (T, SA, or SH)	Number of Individuals	HEIGHT	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
American Beautyberry	SH	2	3 ft	Planted	2
American Beautyberry	SH	5	4 ft	Planted	5
American Beautyberry	SH	4	5 ft	Planted	4
Water Oak	SA	1	7 ft	Planted	1
Water Oak	SA	1	8 ft	Planted	1
Water Oak	SA	1	9 ft	Planted	1
Willow Oak	SA	3	4 ft	Planted	3
Willow Oak	SA	1	5 ft	Planted	1
Willow Oak	SA	6	6 ft	Planted	6
Willow Oak	SA	1	8 ft	Planted	1
Green Ash	SA	1	3 ft	Planted	1
Green Ash	SA	1	5 ft	Planted	1
Green Ash	SA	3	6 ft	Planted	3
Elderberry	SH	1	3 ft	Planted	1
Elderberry	SH	2	4 ft	Planted	2
Persimmon	SA	1	1 ft	Volunteer	1
Persimmon	SA	1	4 ft	Volunteer	1
Winged Sumac	SH	1	2 ft	Volunteer	1
Baccharis	SH	1	5 ft	Volunteer	1
Baccharis	SH	3	6 ft	Volunteer	3
Baccharis	SH	1	8 ft	Volunteer	1
Sweet Gum	SA	60	3 ft - 5 ft	Volunteer	0
	TOTAL SHRUBS	20		OBSERVED DENSITY (PER PLOT)	41
	TOTAL TREES OF PLANTED SPECIES	19		OBSERVED DENSITY (PER ACRE)	410

	TOTAL TREES OF VOLUNTEER SPECIES	62			
	TOTAL INDIVIDUALS	101			

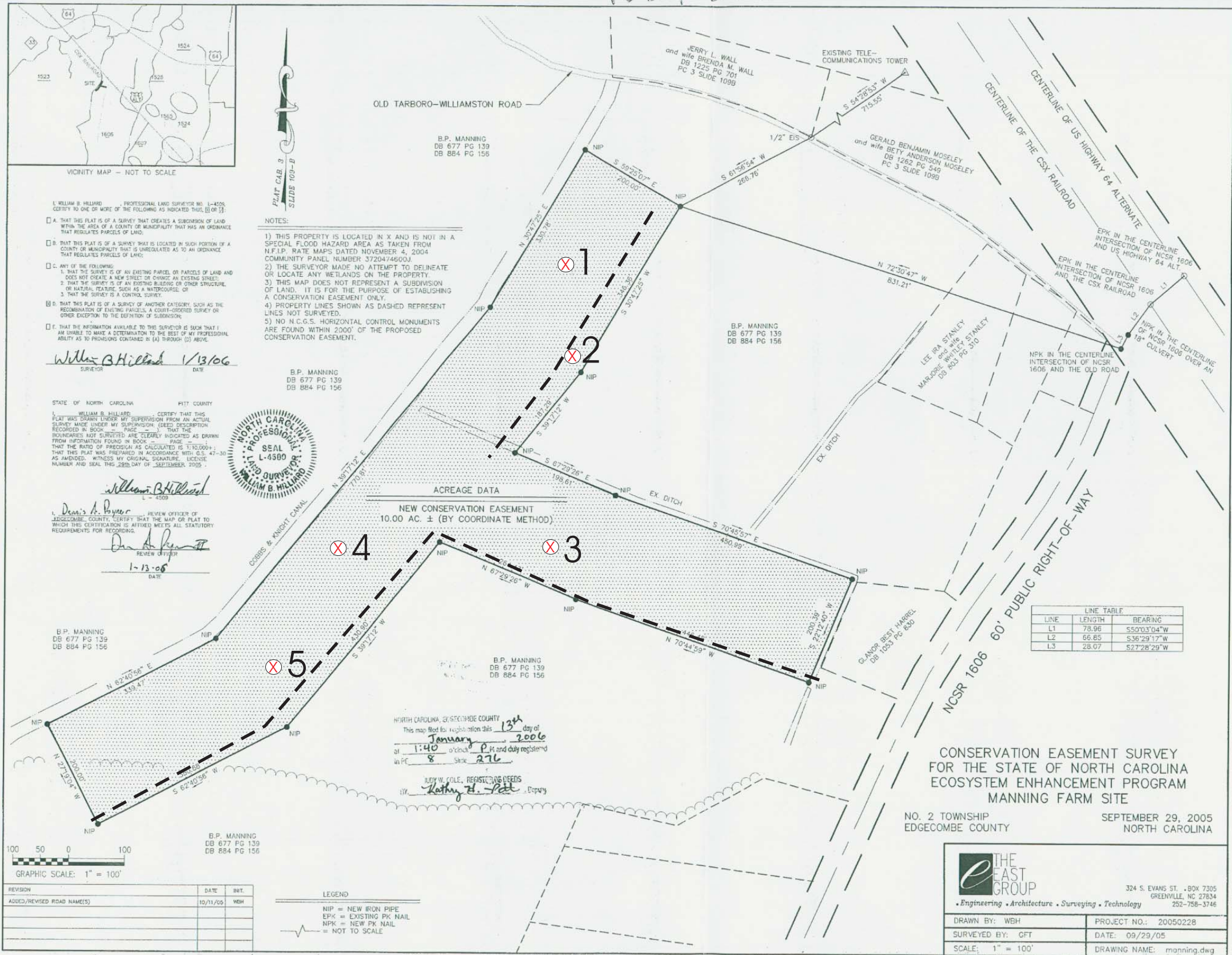
MANNING FARM RIPARIAN BUFFER SITE
 ANNUAL MONITORING DATA SHEET - VEGETATION PLOTS

PLOT NUMBER 5

SPECIES	STRATUM	Number of Individuals	HEIGHT	Planted vs. Volunteer Species	Number of Individuals Counted toward Success Criteria
	(T, SA, or SH)				
Water Oak	SA	5	3 ft	Planted	5
Water Oak	SA	11	4 ft	Planted	11
Water Oak	SA	10	5 ft	Planted	10
Water Oak	SA	3	6 ft	Planted	3
Water Oak	SA	1	7 ft	Planted	1
Water Oak	SA	3	8 ft	Planted	3
Water Oak	SA	1	9 ft	Planted	1
Green Ash	SA	3	3 ft	Planted	3
Green Ash	SA	4	4 ft	Planted	4
Green Ash	SA	5	5 ft	Planted	5
Green Ash	SA	4	6 ft	Planted	4
Green Ash	SA	3	7 ft	Planted	3
American Beautyberry	SH	3	2 ft	Planted	3
American Beautyberry	SH	10	3 ft	Planted	10
American Beautyberry	SH	17	4 ft	Planted	17
American Beautyberry	SH	1	5 ft	Planted	1
Elderberry	SH	5	2 ft	Planted	5
Elderberry	SH	1	4 ft	Planted	1
Persimmon	SA	1	1 ft	Volunteer	1
Persimmon	SA	1	2 ft	Volunteer	1
Baccharis	SH	15	3 ft - 6 ft	Volunteer	15
Sweet Gum	SA	70	3 ft - 7 ft	Volunteer	0
	TOTAL SHRUBS	52		OBSERVED DENSITY (PER PLOT)	107
	TOTAL TREES OF PLANTED SPECIES	53		OBSERVED DENSITY (PER ACRE)	1070

	TOTAL TREES OF VOLUNTEER SPECIES	72			
	TOTAL INDIVIDUALS	177			

APPENDIX C.
CONSERVATION EASEMENT PLAT
(WITH PLOT LOCATIONS)



PC 8 / S-276

PC 8 / S-276

Plot #	UTM Coordinates
1	745578.75002 233843.862283
2	745591.202791 233810.111316
3	745575.130088 233667.657117
4	745477.154439 233661.641541
5	745464.062895 233622.895396

NC EEP
Manning Farm
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Edgecombe County

Land Management Group, Inc.
Environmental Consultants
Wilmington, N.C.
November 2008

Figure 5.
Survey with Monitoring Plots