ANNUAL MONITORING REPORT
YEAR 1 (2010)

HEATH RIPARIAN BUFFER MITIGATION SITE
CRAVEN COUNTY, NORTH CAROLINA
(EEP Contract No. 002280)

Prepared for:

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
ECOSYSTEM ENHANCEMENT PROGRAM
RALEIGH, NORTH CAROLINA

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October 2010

EXECUTIVE SUMMARY

Restoration Systems, LLC completed riparian buffer restoration at the Heath Riparian Buffer Mitigation Site (hereafter referred to as the "Site") through the North Carolina Ecosystem Enhancement Program (NCEEP) Full Delivery Process (RFP 16-001383) to provide 59.45 Riparian Buffer Mitigation Units. The Site is located approximately 3.4 miles southeast of Dover in Craven County within. United States Geological Survey Hydrologic Unit and Targeted Local Watershed 03020202080010 (North Carolina Division of Water Quality Subbasin 03-04-08) of the Neuse River Basin. Site streams drain to Core Creek (Stream Index 27-90), which is included on the draft 2008 303(d) list for impaired biological integrity and low dissolved oxygen resulting from agricultural crop production.

Prior to construction, the Site was characterized by ditched agricultural land used for row crop production. Land use practices including the maintenance and removal of vegetation, regular plowing, and use of agricultural chemicals had resulted in degraded water quality.

The goals and objectives of this project focused on improving local water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat. These goals were accomplished by the following.

1. Removing nonpoint sources of pollution associated with agriculture production by a) ceasing the application of agricultural herbicides, pesticides, fertilizers, and other agricultural materials into and adjacent to Site ditches and open waterways and b) providing a vegetative buffer adjacent to ditches and waterways to treat surface runoff that may be laden with sediment and/or agricultural pollutants.
2. Reducing sedimentation/siltation within on-Site and downstream receiving waters by a) increasing retention time for surface waters entering and leaving the Site, b) reducing erosion associated with vegetation maintenance and agricultural plowing to Site ditches, and c) planting a forested vegetative buffer adjacent to Site ditches and waterways.
3. Promoting floodwater attenuation by ripping compacted soils and revegetating the Site to increase frictional resistance on floodwaters crossing the Site.
4. Providing terrestrial wildlife habitat including a forested riparian corridor within an area that was previously cleared and highly dissected by agricultural land use.

This project was constructed in late winter/early spring 2010. Planting of the entire 60.632-acre Site resulted in 59.45 Riparian Buffer Mitigation Units. The Site will be protected by a permanent conservation easement. As a whole, the densities of vegetation plots across the Site were above the required 320 stems per acre with an average of 826 planted stems per acre in the First Monitoring Year (2010). In addition, each individual plot met success criteria based on planted stems alone..

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1.0 INTRODUCTION

1.1 Location and Setting

Restoration Systems, LLC has completed riparian buffer restoration at the Heath Riparian Buffer Mitigation Site (hereafter referred to as the "Site") through the North Carolina Ecosystem Enhancement Program (NCEEP) Full Delivery Process (RFP 16-001383) to provide 59.45 Riparian Buffer Mitigation Units. The Site is located approximately 3.4 miles southeast of Dover in Craven County (Figure 1, Appendix A). The Site is located in United States Geological Survey Hydrologic Unit and Targeted Local Watershed 03020202080010 (North Carolina Division of Water Quality Subbasin 03-04-08) of the Neuse River Basin (USGS 1974).

Directions to the Site from Kinston, North Carolina:

- Take 70 East for approximately 8 miles
- Take the Dover exit and follow Old 70/Wilson Street for approximately 4.3 miles east
- Turn right over the railroad tracks to wire gate.
- Site coordinates:
    - Latitude 35.19627ºN, Longitude 77.38060ºW (NAD83/WGS84)

1.2 Project Goals and Objectives

The goals and objectives of this project focused on improving local water quality, enhancing flood attenuation, and restoring aquatic and riparian habitat. These goals were accomplished by the following.

1. Removing nonpoint sources of pollution associated with agriculture production by a) ceasing the application of agricultural herbicides, pesticides, fertilizers, and other agricultural materials into and adjacent to Site ditches and open waterways and b) providing a vegetative buffer adjacent to ditches and waterways to treat surface runoff that may be laden with sediment and/or agricultural pollutants.
2. Reducing sedimentation/siltation within on-Site and downstream receiving waters by a) increasing retention time for surface waters entering and leaving the Site, b) reducing erosion associated with vegetation maintenance and agricultural plowing to Site ditches, and c) planting a forested vegetative buffer adjacent to Site ditches and waterways.
3. Promoting floodwater attenuation by ripping compacted soils and revegetating the Site to increase frictional resistance on floodwaters crossing the Site.
4. Providing terrestrial wildlife habitat including a forested riparian corridor within an area that was previously cleared and highly dissected by agricultural land use.

1.3 Project Structure, Restoration Type, and Approach

Prior to construction, the Site was characterized by ditched agricultural land used for row crop production. Land use practices including the maintenance and removal of vegetation, regular plowing, and use of agricultural chemicals had resulted in degraded water quality.

As constructed, Site activities restored historic riparian buffer functions by planting the entire 60.632-acre Site with native riparian vegetation. This resulted in 59.45 Riparian Buffer Mitigation Units (Table 1, Appendix B and Figure 2, Appendix A). Approximately 0.632 acres of the Site is surface water associated with Site ditches and 0.55 acres of the Site received no credit due to diffuse flow requirements. These areas were planted; however, the area is not eligible to provide credit. The target natural community consisted of Coastal Plain Bottomland Hardwood Forest (Schafale and Weakley 1990). Table 5 (Appendix C) outlines

woody species planted within the Site. Completed project activities, reporting history, completion dates, project contacts, and background information are summarized in Tables 2-4 (Appendix B).

2.0 MONITORING PLAN

Monitoring of Site restoration efforts will be performed for vegetation components of the Site for five years or until success criteria are fulfilled. After planting was completed, an initial evaluation was performed to verify planting methods were successful and to determine initial species composition and density. Twenty-nine sample vegetation plots (10-meter by 10-meter) were installed within the Site as per guidelines established in CVS-EEP Protocol for Recording Vegetation, Version 4.0 (Lee et al. 2006). In each sample plot, vegetation parameters to be monitored include species composition and species density. Visual observations of the percent cover of shrub and herbaceous species will also be documented by photograph.

2.1 Vegetation Success Criteria

Characteristic Tree Species include woody tree and shrub species planted at the Site (Table 5, Appendix C) or outlined for the appropriate plant community in Schafale and Weakley (1990). An average density of 320 stems per acre of Characteristic Tree Species must be surviving after year 5 monitoring.

2.2 Maintenance and Contingency

In the event that success criteria are not fulfilled, a mechanism for contingency will be implemented. If vegetation success criteria are not achieved based on average density calculations from combined plots over the entire restoration area, supplemental planting may be performed with tree species approved by regulatory agencies. Supplemental planting will be performed as needed until achievement of vegetation success criteria.

2.3 Vegetation Sampling Results and Comparison to Success Criteria

Quantitative sampling of vegetation was conducted in September 2010. Results are provided in Appendix C. Vegetation success criteria for year 1 (320 stems per acre) were exceeded for the 2010 annual monitoring year with an average density of 826 planted stems per acre across the Site. In addition, each individual plot met success criteria based on planted stems alone.

3.0 CONCLUSIONS

As a whole, the densities of vegetation plots across the Site were above the required 320 stems per acre with an average of 826 planted stems per acre in the First Monitoring Year (2010). In addition, each individual plot met success criteria based on planted stems alone.

Summary of Planted Stem Vegetation Plot Results

Plot	Planted Stems/Acre				
	Year 1 (2010)	Year 2 (2011)	Year 3 (2012)	Year 4 (2013)	Year 5 (2014)
1	890				
2	971				
3	850				
4	1012				
5	931				
6	850				
7	1012				
8	688				
9	850				
10	1012				
11	931				
12	850				
13	728				
14	890				
15	850				
16	728				
17	931				
18	728				
19	728				
20	1052				
21	1052				
22	931				
23	1012				
24	971				
25	486				
26	486				
27	486				
28	445				
29	607				
Average Plots 1-29	**826**				

4.0 REFERENCES

Lee, M.T., R.K. Peet, S.D. Roberts, and T.R. Wentworth. 2006. CVS-EEP Protocol for Recording Vegetation. Version 4.0. North Carolina Department of Environment and Natural Resources, Ecosystem Enhancement Program. Raleigh, North Carolina.

North Carolina Division of Water Quality (NCDWQ). 2007. Redbook, Surface Waters and Wetlands Standards. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, North Carolina.

North Carolina Division of Water Quality (NCDWQ). 2008a. Draft North Carolina Water Quality Assessment and Impaired Waters List (2008 Integrated 305(b) and 303(d) Report) (online). Available: http://h2o.enr.state.nc.us/tmdl/documents/B.Draft2008303dList.pdf [November 10, 2008]. North Carolina Department of Environment and Natural Resources, Raleigh, North Carolina.

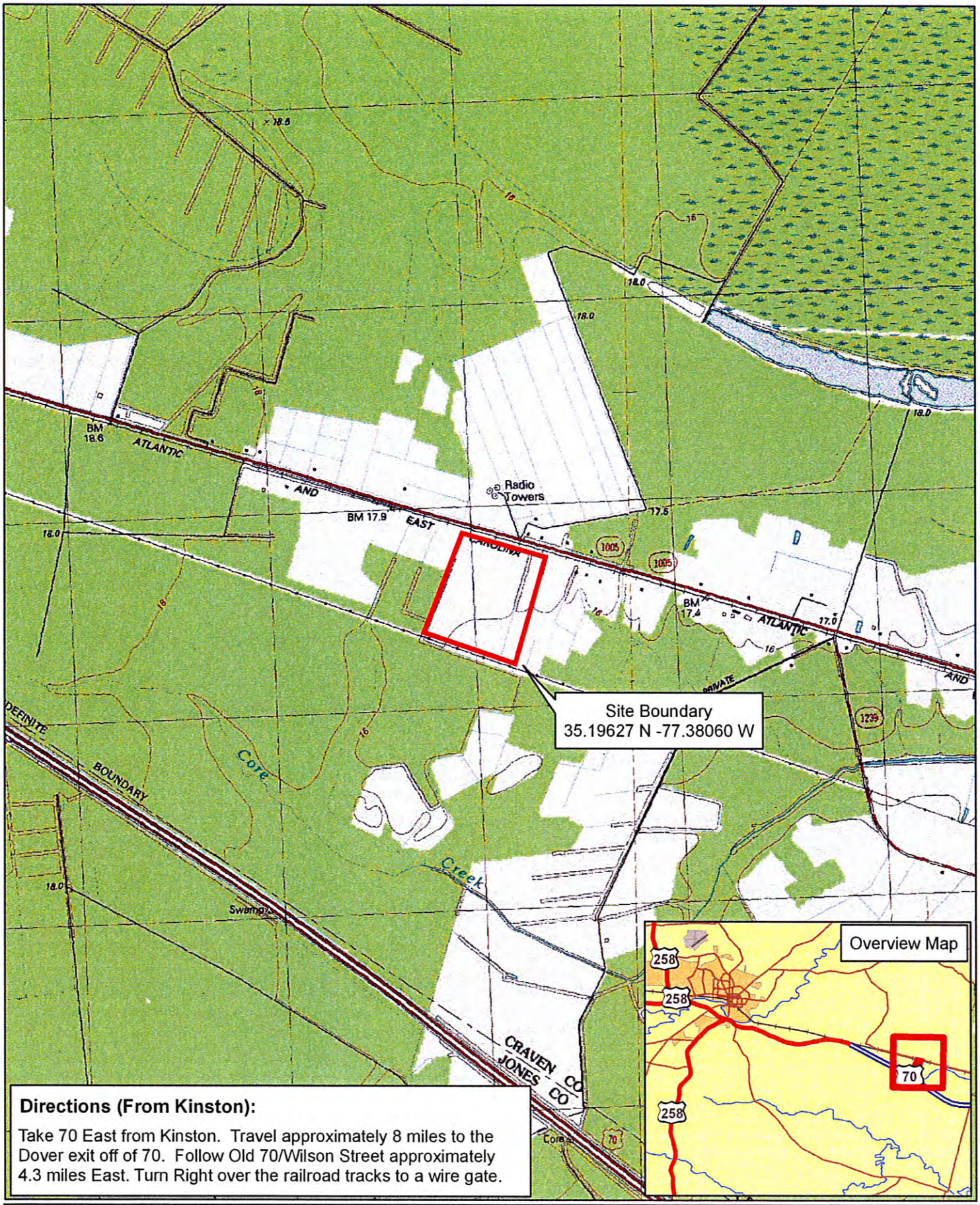
North Carolina Division of Water Quality (NCDWQ). 2008b. Draft Basinwide Planning Program: Neuse River Basinwide Water Quality Plan-June 2008. North Carolina Department of Environment and Natural Resources, Division of Water Quality. Raleigh, North Carolina.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, North Carolina Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.

United States Geological Survey (USGS). 1974. Hydrologic Unit Map - 1974. State of North Carolina.

Appendix A.
Figures

Figure 1. Site Location
Figure 2. Monitoring Plan View



Directions (From Kinston):

Take 70 East from Kinston. Travel approximately 8 miles to the Dover exit off of 70. Follow Old 70/Wilson Street approximately 4.3 miles East. Turn Right over the railroad tracks to a wire gate.

Restoration Systems, LLC
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Figure 1: Site Location

Heath Riparian Buffer Mitigation Site
Craven County, NC

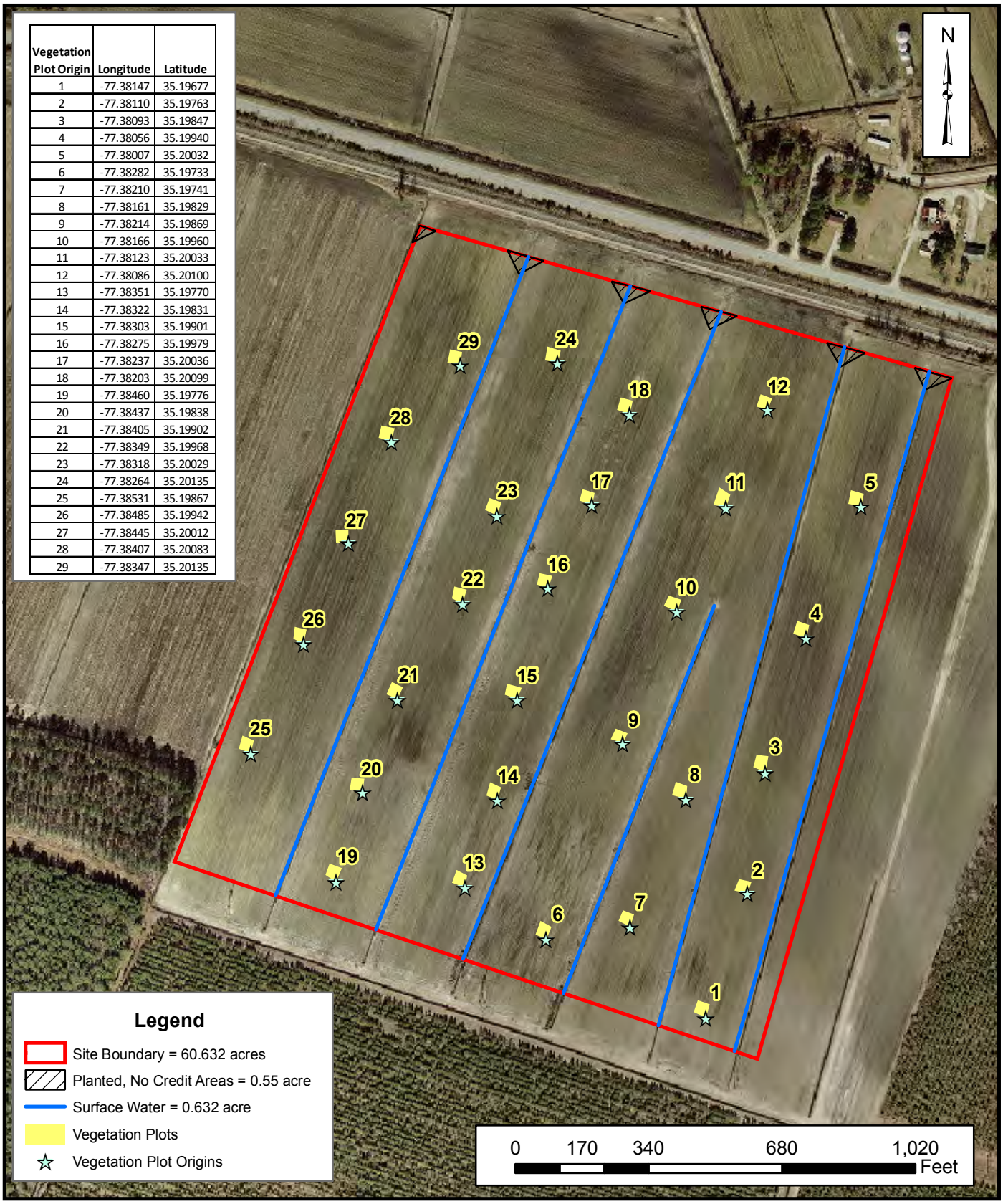
1:24,000

N

0 470 940 1,880 2,820 3,760

Feet

Vegetation Plot Origin	Longitude	Latitude
1	-77.38147	35.19677
2	-77.38110	35.19763
3	-77.38093	35.19847
4	-77.38056	35.19940
5	-77.38007	35.20032
6	-77.38282	35.19733
7	-77.38210	35.19741
8	-77.38161	35.19829
9	-77.38214	35.19869
10	-77.38166	35.19960
11	-77.38123	35.20033
12	-77.38086	35.20100
13	-77.38351	35.19770
14	-77.38322	35.19831
15	-77.38303	35.19901
16	-77.38275	35.19979
17	-77.38237	35.20036
18	-77.38203	35.20099
19	-77.38460	35.19776
20	-77.38437	35.19838
21	-77.38405	35.19902
22	-77.38349	35.19968
23	-77.38318	35.20029
24	-77.38264	35.20135
25	-77.38531	35.19867
26	-77.38485	35.19942
27	-77.38445	35.20012
28	-77.38407	35.20083
29	-77.38347	35.20135



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MONITORING PLAN VIEW
HEATH
RIPARIAN BUFFER MITIGATION SITE
Craven County, North Carolina

Dwn. by: CLF

Date: Aug 2010

Project: 10-001

FIGURE 2

Appendix B.
General Tables

Table 1. Site Restoration Structures and Objectives
Table 2. Project Activity and Reporting History
Table 3. Project Contacts Table
Table 4. Project Attributes Table

Table 1. Site Restoration Structures and Objectives

Component Summation	
Restoration Level	Riparian buffer mitigation was completed by planting the entire 60-acre Site with native forest vegetation; credit was received for 59.45 acres of the Site.
Riparian Buffer Restoration	
59.45 Buffer Mitigation Units	

Table 2. Project Activity and Reporting History

Activity or Report	Data Collection Complete	Completion or Delivery
Final Restoration Plan	--	April 2010
Site Planting	--	Late winter/early spring 2010
Mitigation Plan	April 2010	August 2010
Year 1 Monitoring	September 2010	October 2010

Table 3. Project Contacts Table

Designer	Restoration Systems, LLC 1101 Haynes Street, Suite 211 Raleigh, North Carolina 27604 (919) 755-9490
Planting Contractor	Carolina Silvics 908 Indian Trail Road Edenton, North Carolina 27932 Dwight McKinney (252) 482-8491
Monitoring Performer	Axiom Environmental, Inc. 20 Enterprise Street, Suite 7 Raleigh, North Carolina 27607 Grant Lewis (919) 215-1693

Table 4. Project Attribute Table

Project County	Craven County, North Carolina
Physiographic Region	Coastal Plain
Ecoregion	Carolina Flatwoods and Mid-Atlantic Floodplains/Low Terrace
Project River Basin	Neuse
USGS 14-digit HUC	03020202080010
NCDWQ Subbasin	03-04-08
Within EEP Watershed Plan Extent?	Yes-Targeted Local Watershed
WRC Class	Warm
% of project easement fenced	0 %
Beaver activity observed during design phase	No

Appendix C.
Vegetation Data

Table 5. Planted Woody Species
Vegetation Survey Data Tables
Vegetation Monitoring Plot Photographs

Table 5. Planted Woody Vegetation

Species	Quantity
American elm (*Ulmus americana*)	6300
Black gum (*Nyssa sylvatica*)	3200
Green ash (*Fraxinus pennsylvanica*)	9500
Ironwood (*Carpinus caroliniana*)	3200
Mockernut hickory (*Carya tomentosa*)	6300
Sugarberry (*Celtis laevigata*)	3200
Swamp chestnut oak (*Quercus michauxii*)	9500
Sweetbay magnolia (*Magnolia virginiana*)	3200
Water oak (*Quercus nigra*)	6300
Willow oak (*Quercus phellos*)	9500
TOTAL	**60,200**

CVS Database Output

Living planted stems, excluding live stakes, per acre: Negative (red) numbers indicate the project failed to reach requirements in a particular year.

Project Code	Project Name	River Basin	Year 1
Heath	Heath	Neuse	826.12

Total stems, including planted stems of all kinds (including live stakes) and natural/volunteer stems:

Project Code	Project Name	River Basin	Year 1
Heath	Heath	Neuse	909.8449629

Vigor

vigor	Count	Percent
0	17	2.6
1	2	0.3
2	56	8.7
3	264	40.9
4	270	41.9

Damage

Damage	Count	Percent Of Stems
(no damage)	488	75.7
Insects	54	8.4
Deer	47	7.3
Unknown	46	7.1
Diseased	5	0.8
Rodents	3	0.5
Human Trampled	1	0.2
(other damage)	1	0.2

Vigor by Species

Species	CommonName	4	3	2	1	0	Missing	Unknown
Carya alba	mockernut hickory					1		
Celtis laevigata	sugarberry	4	9	2		1	2	
Fraxinus pennsylvanica	green ash	72	26	4			5	
Nyssa sylvatica	blackgum	16	23	6			2	
Persea palustris	swamp bay		1					
Quercus michauxii	swamp chestnut oak	54	64	11		1	6	
Quercus nigra	water oak	47	12	2		1	1	
Quercus phellos	willow oak	42	32	18			5	
Carpinus caroliniana	American hornbeam	4	4				1	
Quercus	oak	10	11	6	1	3	5	
Carya	hickory	1	6		1			
Magnolia virginiana	sweetbay	3	9	1		6	1	
Nyssa	tupelo	4	7					
Ulmus	elm		6					
Ulmus americana	American elm	13	52	5		1	5	
Unknown			2	1		3	3	
16	**15**	**270**	**264**	**56**	**2**	**17**	**36**	

Damage by Species

Species	CommonName	Count of Damage Categories	(no damage)	Deer	Diseased	Human Trampled	Insects	Rodents	Unknown	(other damage)
Carpinus caroliniana	American hornbeam	0	9							
Carya	hickory	1	7						1	
Carya alba	mockernut hickory	0	1							
Celtis laevigata	sugarberry	6	12	3			1		2	
Fraxinus pennsylvanica	green ash	18	89	5			12	1		
Magnolia virginiana	sweetbay	3	17				2		1	
Nyssa	tupelo	4	7	3			1			
Nyssa sylvatica	blackgum	21	26	13			4		4	
Persea palustris	swamp bay	0	1							
Quercus	oak	7	29	1			1		5	
Quercus michauxii	swamp chestnut oak	35	101	7	3		15		10	
Quercus nigra	water oak	4	59	1			1		2	
Quercus phellos	willow oak	26	71	1			8		16	1
Ulmus	elm	2	4	2						
Ulmus americana	American elm	29	47	11	2	1	9	2	4	
Unknown		1	8						1	
16	**15**	**157**	**488**	**47**	**5**	**1**	**54**	**3**	**46**	**1**

Damage by Plot

plot	Count of Damage Categories	(no damage)	Deer	Diseased	Human Trampled	Insects	Rodents	Unknown	(other damage)
1	6	20	2					4	
2	5	24	2					3	
3	8	15	4	2				2	
4	6	22	4					2	
5	4	23	3					1	
6	3	22	2			1			
7	4	21	2			1		1	
8	8	11	8						
9	6	16	3			2		1	
10	8	19	3			2		2	1
11	17	9	1					16	
12	7	16	3					4	
13	8	13	3			2	2	1	
14	4	20				3		1	
15	6	15				4		2	
16	5	15				2		3	
17	4	20				2	1	1	
18	1	19				1			
19	3	17	1			2			
20	4	22				2		2	
21	12	14	1	1		10			
22	6	20	1	1		4			
23	3	23				3			
24	5	22	1			4			
25	2	10				2			
26	3	9	2			1			
27	4	8	1			3			
28	2	10			1	1			
29	3	13		1		2			
29	**157**	**488**	**47**	**5**	**1**	**54**	**3**	**46**	**1**

Plot Information

Plot	Plot Level	Year	Planted Living Stems	Planted Living Stems EXCLUDING Live Stakes	Dead/Missing Stems	Natural (Volunteer) Stems	Total Living Stems	Total Living Stems EXCLUDING Live Stakes	Planted Living Stems per ACRE	Planted Living Stems EXCLUDING Live Stakes PER ACRE	Natural (Volunteer) Stems PER ACRE	Total Living Stems PER ACRE	Total Living Stems EXCLUDING Live Stakes PER ACRE	# species
1	2	1	22	22	4	2	24	24	890	890	81	971	971	6
2	2	1	24	24	5	3	27	27	971	971	121	1093	1093	7
3	2	1	21	21	2	0	21	21	850	850	0	850	850	6
4	2	1	25	25	3	1	26	26	1012	1012	40	1052	1052	6
5	2	1	23	23	4	0	23	23	931	931	0	931	931	6
6	2	1	21	21	4	3	24	24	850	850	121	971	971	7
7	2	1	25	25	0	0	25	25	1012	1012	0	1012	1012	9
8	2	1	17	17	2	0	17	17	688	688	0	688	688	5
9	2	1	21	21	1	0	21	21	850	850	0	850	850	8
10	2	1	25	25	2	0	25	25	1012	1012	0	1012	1012	7
11	2	1	23	23	3	0	23	23	931	931	0	931	931	5
12	2	1	21	21	2	0	21	21	850	850	0	850	850	8
13	2	1	18	18	3	4	22	22	728	728	162	890	890	7
14	2	1	22	22	2	3	25	25	890	890	121	1012	1012	6
15	2	1	21	21	0	6	27	27	850	850	243	1093	1093	6
16	2	1	18	18	2	3	21	21	728	728	121	850	850	7
17	2	1	23	23	1	0	23	23	931	931	0	931	931	7
18	2	1	18	18	2	0	18	18	728	728	0	728	728	7
19	2	1	18	18	2	7	25	25	728	728	283	1012	1012	6
20	2	1	26	26	0	1	27	27	1052	1052	40	1093	1093	7
21	2	1	26	26	0	1	27	27	1052	1052	40	1093	1093	5
22	2	1	23	23	3	0	23	23	931	931	0	931	931	7
23	2	1	25	25	1	0	25	25	1012	1012	0	1012	1012	6

Plot Information (continued)

Plot	Plot Level	Year	Planted Living Stems	Planted Living Stems EXCLUDING Live Stakes	Dead/Missing Stems	Natural (Volunteer) Stems	Total Living Stems	Total Living Stems EXCLUDING Live Stakes	Planted Living Stems per ACRE	Planted Living Stems EXCLUDING Live Stakes PER ACRE	Natural (Volunteer) Stems PER ACRE	Total Living Stems PER ACRE	Total Living Stems EXCLUDING Live Stakes PER ACRE	# species
24	2	1	24	24	3	15	39	39	971	971	607	1578	1578	7
25	2	1	12	12	0	5	17	17	486	486	202	688	688	6
26	2	1	12	12	0	4	16	16	486	486	162	647	647	4
27	2	1	12	12	0	1	13	13	486	486	40	526	526	6
28	2	1	11	11	1	1	12	12	445	445	40	486	486	3
29	2	1	15	15	1	0	15	15	607	607	0	607	607	7

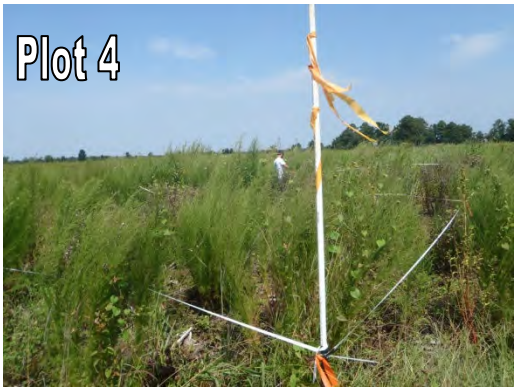
Planted Stems by Plot

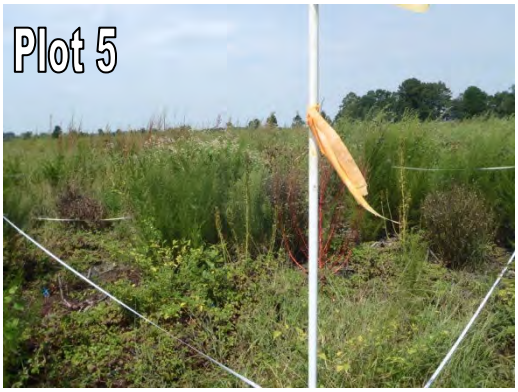
Species	Common Name	Stems	# plots	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Carpinus caroliniana	American hornbeam	8	4	2						3	3		1																			
Carya	hickory	8	7	1.14						1	1		1	1					2	1				1								
Celtis laevigata	sugarberry	15	7	2.14					3			4			1	2	1		3		1											
Fraxinus pennsylvanica	green ash	102	26	3.92		2	3	5	1	2	4	2	7	3		2	3	1		1	4	4	5	3	11	8	10	2	4	2	5	5
Magnolia virginiana	sweetbay	13	10	1.3	1	2		2	1								1			1						1		1	1			
Nyssa	tupelo	11	6	1.83						2	2			1							4	1	1									
Nyssa sylvatica	blackgum	45	12	3.75			2			2	1	7	5	8	6	3			3	1	4	3										
Persea palustris	swamp bay	1	1	1																				1								
Quercus	oak	28	18	1.56	2	1		2	1		1		1			1		3		2	1	3	1			1	1	3	1		1	
Quercus michauxii	swamp chestnut oak	129	26	4.96	10	4	6	6	16	4	1	1	2	2	2	3	2	4	9	10	3	4	8	3	3	4	7	13	1		1	
Quercus nigra	water oak	61	19	3.21	1	3					10	3	1			2			1		6	1		6	5	5	4	2	2	3	1	4
Quercus phellos	willow oak	92	24	3.83	2	1	6	3		7	2		3	8	13	7	4	9	3	2		2	1	2	3	2	1	2		3	1	
Ulmus	elm	6	3	2			2										1	3													
Ulmus americana	American elm	70	19	3.68	6	11	2	7	1							1	6	2					2	10	4	2	2	1	3	4	3	2
Unknown		3	2	1.5										2	1																
15	**14**	**592**	**15**		**22**	**24**	**21**	**25**	**23**	**21**	**25**	**17**	**21**	**25**	**23**	**21**	**18**	**22**	**21**	**18**	**23**	**18**	**18**	**26**	**26**	**23**	**25**	**24**	**12**	**12**	**12**	**11**

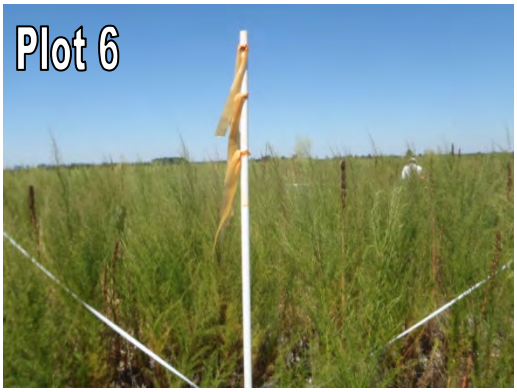
Total Stems by Plot (Includes Planted and Natural Recruit Stems)

Species	Common Name	Stems	# plots	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Acer rubrum	red maple	1	1	1																												1
Baccharis halimifolia	eastern baccharis	28	13	2.15	1	3		1		2							3	1	5	2				1	1			5		2	1	
Carpinus caroliniana	American hornbeam	8	4	2						3	3		1																			
Carya	hickory	8	7	1.14						1	1		1	1					2	1				1								
Carya alba	mockernut hickory	1	1	1																	1											
Celtis laevigata	sugarberry	16	7	2.29					3			4			2	2	1		3		1											
Fraxinus pennsylvanica	green ash	102	26	3.92		2	3	5	1	2	4	2	7	3		2	3	1		1	4	4	5	3	11	8	10	2	4	2	5	5
Liquidambar styraciflua	sweetgum	7	4	1.75	1													1					3						2			
Magnolia virginiana	sweetbay	19	11	1.73	1	3		2	1								1			1						3		2	1			1
Nyssa	tupelo	11	6	1.83						2	2			1							4	1	1									
Nyssa sylvatica	blackgum	45	12	3.75			2			2	1	7	5	8	6	3			3	1	4	3										
Persea palustris	swamp bay	1	1	1																				1								
Pinus taeda	loblolly pine	11	7	1.57													1	1	1	1			2						3	2		
Platanus occidentalis	American sycamore	1	1	1						1																						
Prunus serotina	black cherry	10	1	10																								10				
Quercus	oak	31	19	1.63	2	1		2	1		1	1	1			2		3		2	1	4	1			1	1	3	1		1	
Quercus michauxii	swamp chestnut oak	130	26	5	10	4	6	6	16	4	1	1	2	2	2	3	2	4	9	11	3	4	8	3	3	4	7	13	1		1	
Quercus nigra	water oak	62	19	3.26	2	3					10	3	1			2			1		6	1		6	5	5	4	2	2	3	1	4
Quercus phellos	willow oak	92	24	3.83	2	1	6	3		7	2		3	8	13	7	4	9	3	2		2	1	2	3	2	1	2		3	1	
Rhus copallinum	flameleaf sumac	2	1	2																			2									
Ulmus	elm	6	3	2			2										1	3														
Ulmus americana	American elm	71	19	3.74	6	11	2	8	1							1	6	2					2	10	4	2	2	1	3	4	3	2
Unknown		6	5	1.2				1	1					2	1					1												
23	**22**	**669**	**23**		**25**	**28**	**21**	**28**	**24**	**24**	**25**	**18**	**21**	**25**	**24**	**22**	**22**	**25**	**27**	**23**	**24**	**19**	**25**	**27**	**27**	**25**	**25**	**40**	**17**	**16**	**13**	**13**

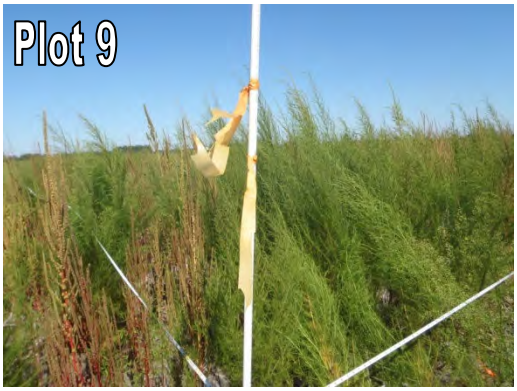
Heath
Year 1 (2010)
Vegetation Monitoring Plot Photos
Taken September 2010







Heath
Year 1 (2010)
Vegetation Monitoring Plot Photos
Taken September 2010
(continued)



Heath
Year 1 (2010)
Vegetation Monitoring Plot Photos
Taken September 2010
(continued)

Plot 23

No photo available

Heath
Year 1 (2010)
Vegetation Monitoring Plot Photos
Taken September 2010
(continued)