Project Closeout Summary—Suck Creek (2009)

Project ID & Status

Project Name/Number: **Suck Creek**
EEP ID : 368
County: Moore
Project Type: Stream Restoration
Current Status: 5 Years of Monitoring complete

Project Setting & Classifications

Basin: Cape Fear
Physiographic Region: Piedmont
Drainage: (4.8 SM)
Watershed: Rural Pasture, Imp cover <1%
Ecoregion: Triassic Basin 45g
USGS Hydro Unit: 03030003
NCDWQ Subbasin: 03-06-10
Thermal Regime: Warm

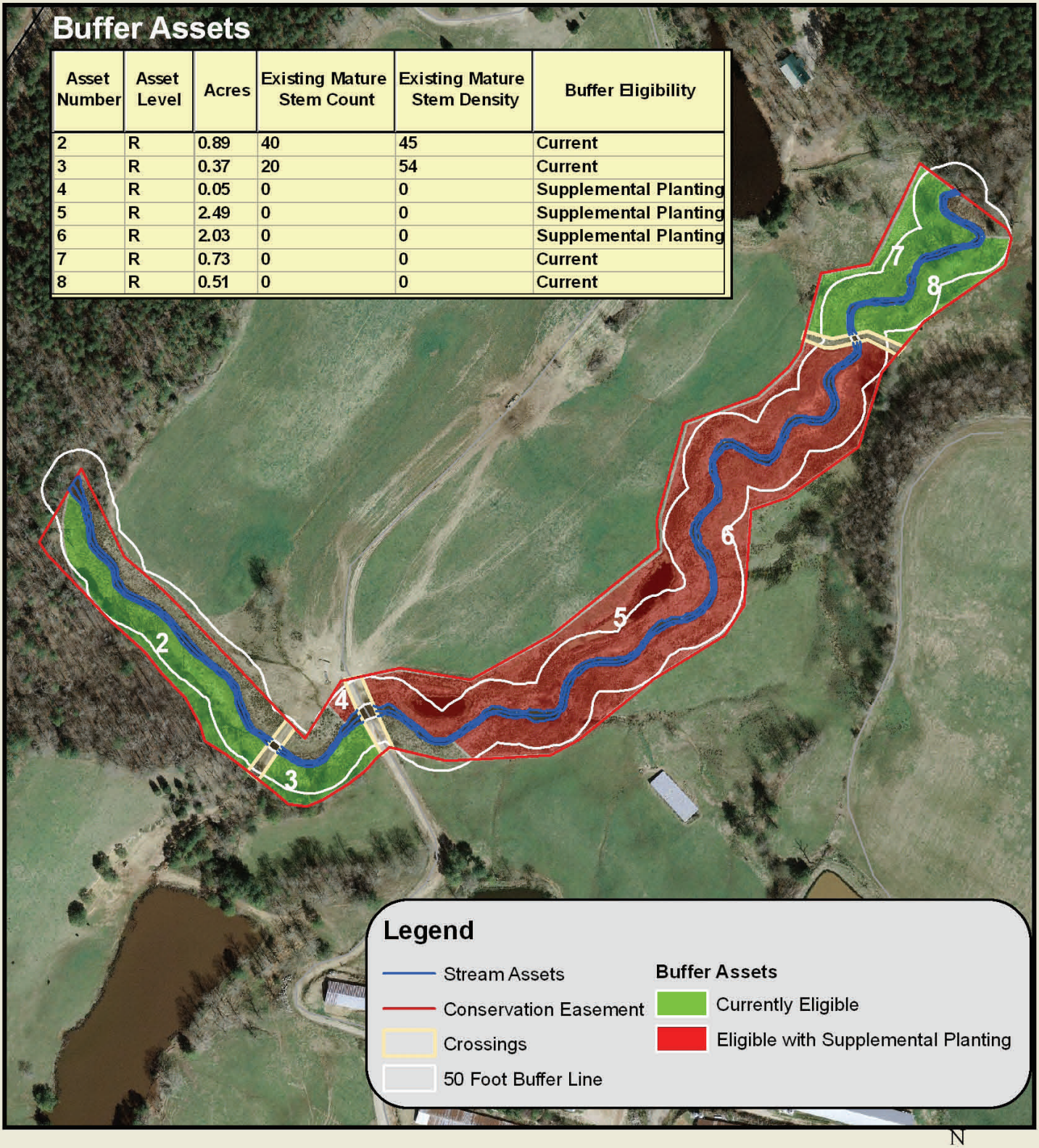
Project Timeline

Milestone	Date
Permitted	June 2002
Construction	Jan-Apr 2003
Site Planted	Apr 2004
As-Built	Mar 2004
Monitoring Year-1	Fall 2004
Monitoring Year-2	Fall 2005
Monitoring Year-3	Aug 2006
Monitoring Year-4	Jul 2007
Monitoring Year-5	Mar - Sep 2008

Table 1. Suck Creek Project Restoration Components and Mitigation Assets

Stream			Asset Data							
	Drainage/Hydrology Component	Stationing	Asset			Ratio				
			Map #	Approach	Level	Multip	Feet	SMU	Acres	Buffer
	Suck Creek	(1+00 to 29+63)	1	P1/P2	R	1.00	2889	2889		
							2889	2889		
Buffer	Currently Eligible Buffer		2,3,7,8		R	1.00			2.49	2.49
	Potential Buffer Assuming Supplemental		4,5,6		R	1.00			4.59	4.59

Suck Creek (EEP #368) Asset Map



Buffer Assets

Asset Number	Asset Level	Acres	Existing Mature Stem Count	Existing Mature Stem Density	Buffer Eligibility
2	R	0.89	40	45	Current
3	R	0.37	20	54	Current
4	R	0.05	0	0	Supplemental Planting
5	R	2.49	0	0	Supplemental Planting
6	R	2.03	0	0	Supplemental Planting
7	R	0.73	0	0	Current
8	R	0.51	0	0	Current

0 100 200 400 600 800 Feet

N W E S

Project Background and Summary

The mitigation project includes approximately 3000 linear feet of Suck Creek in Moore County. The project is located on the Richardson farm and is surrounded by cattle and poultry operations. The channel was straightened and moved in the past and had incised (mean BHR of 1.8) progressing rapidly from a G stream type towards an F and was subjected to the impacts of open access by the livestock prior to restoration. Priority Level I restoration was the approach used to convert the degraded channels to a more stable Rosgen C type channel. Construction involved establishing a new planform and profile and better connecting the bankfull discharge to a floodplain feature. Cross vanes were installed for grade control, bank stability and to provide bedform diversity/habitat . The project also involved the installation of native vegetation to establish a riparian buffer and fencing the livestock out of the easement.

Goals and Objectives

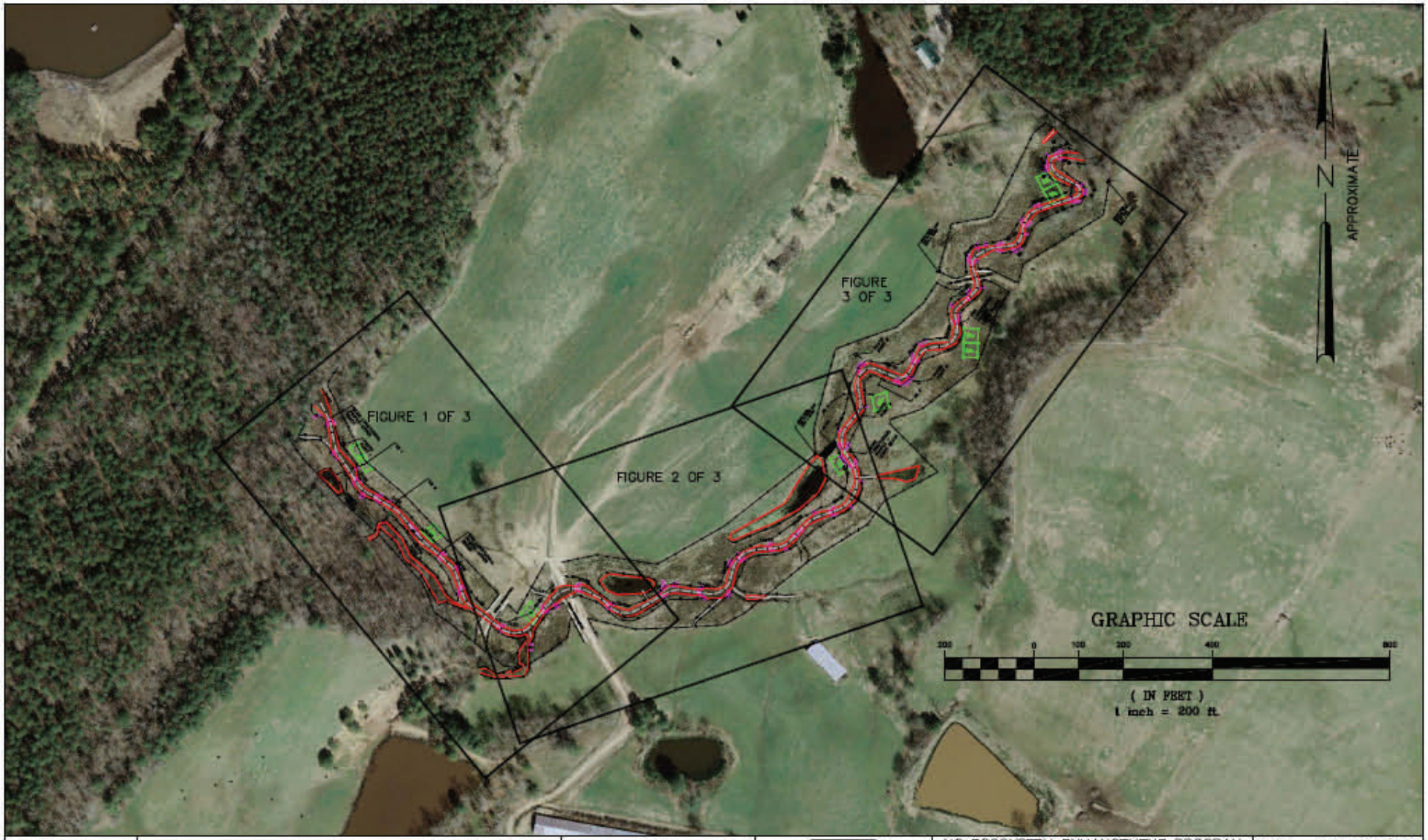
1. Improve the long-term stability of the subject stream reach by improving floodplain connection and restoring the channels dimension, pattern and profile to a more sustainable form.
2. Install instream structures to maintain grade, floodplain connection and provide bedform diversity
3. Install an appropriate riparian buffer community that will provide stability, stream shading and habitat.
4. Protect the project stream and buffer with livestock exclusion fencing and a conservation easement.

Success Criteria

Morphological Stability. The dimension, profile and pattern of the project channel should demonstrate maintenance or dynamic stability such that no adverse trends in channel aggradation, degradation or widening in the form of elevated proportions of bank erosion become evident. This was to be demonstrated through photos / visual survey and morphological measurement of the projects profile and dimension. This criterion was met.

Vegetative Success. Vegetation plots should indicate an average stem density of no less than 260 stems/acre in year 5. This criterion was met.

Hydrologic Data. A minimum of 2 bankfull events shall be documented. This criterion was met.



Ecosystem Enhancement

NOTES:
1. GENERAL SITE DATA PROVIDED BY NCEEP.
2. ALL LOCATIONS ARE APPROXIMATE.

PROJECT NO. 368
MOORE COUNTY
NORTH CAROLINA
MONITORING
YEAR 5 of 5

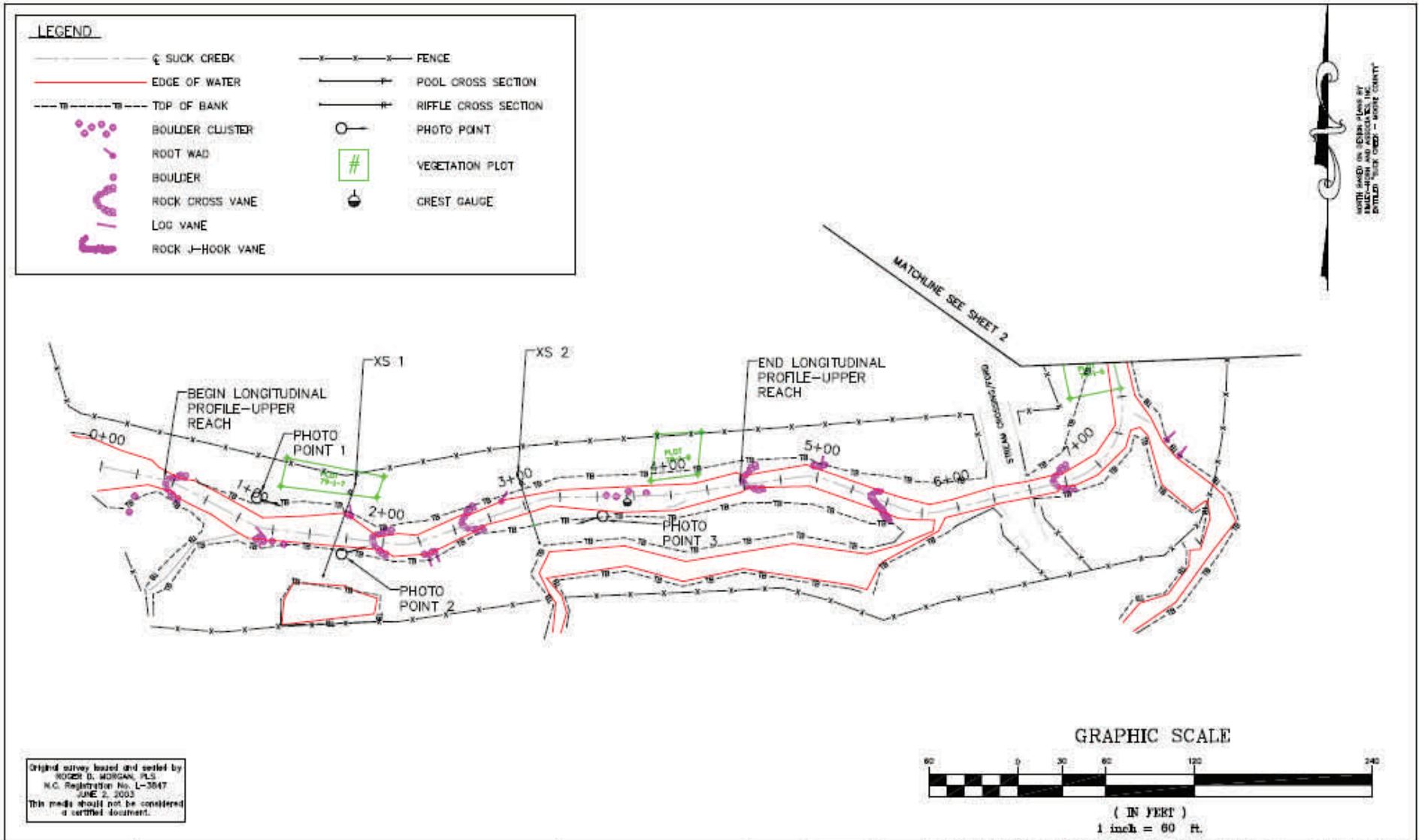
JJG

NC ECOSYSTEM ENHANCEMENT PROGRAM
SUCK CREEK STREAM RESTORATION

FIGURE 1.2
MONITORING PLAN VIEW

DATE : FEBRUARY 2009
SCALE : 1"=200'
JOB NO.: 03060004

FIGURE KEY



GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

Original survey based and sealed by
ROGER D. MORGAN, PLS
N.C. Registration No. L-3847
JUNE 2, 2003
This media should not be considered a certified document.

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MONITORING PLAN VIEW

DATE : FEBRUARY 2009
SCALE : 1"=60'
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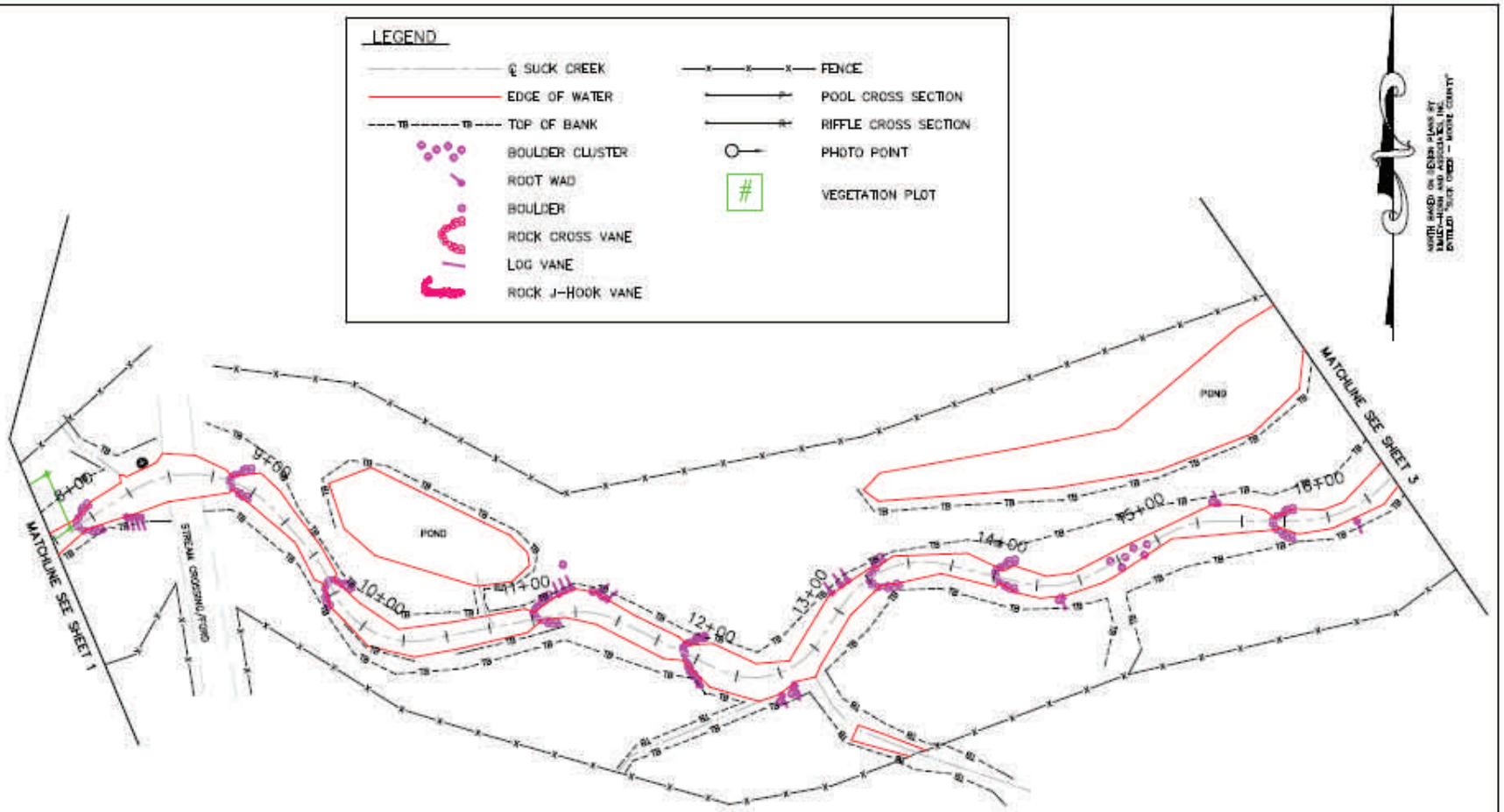
SHEET 1 OF 3



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GRAPHIC SCALE

60 0 30 60 120 240

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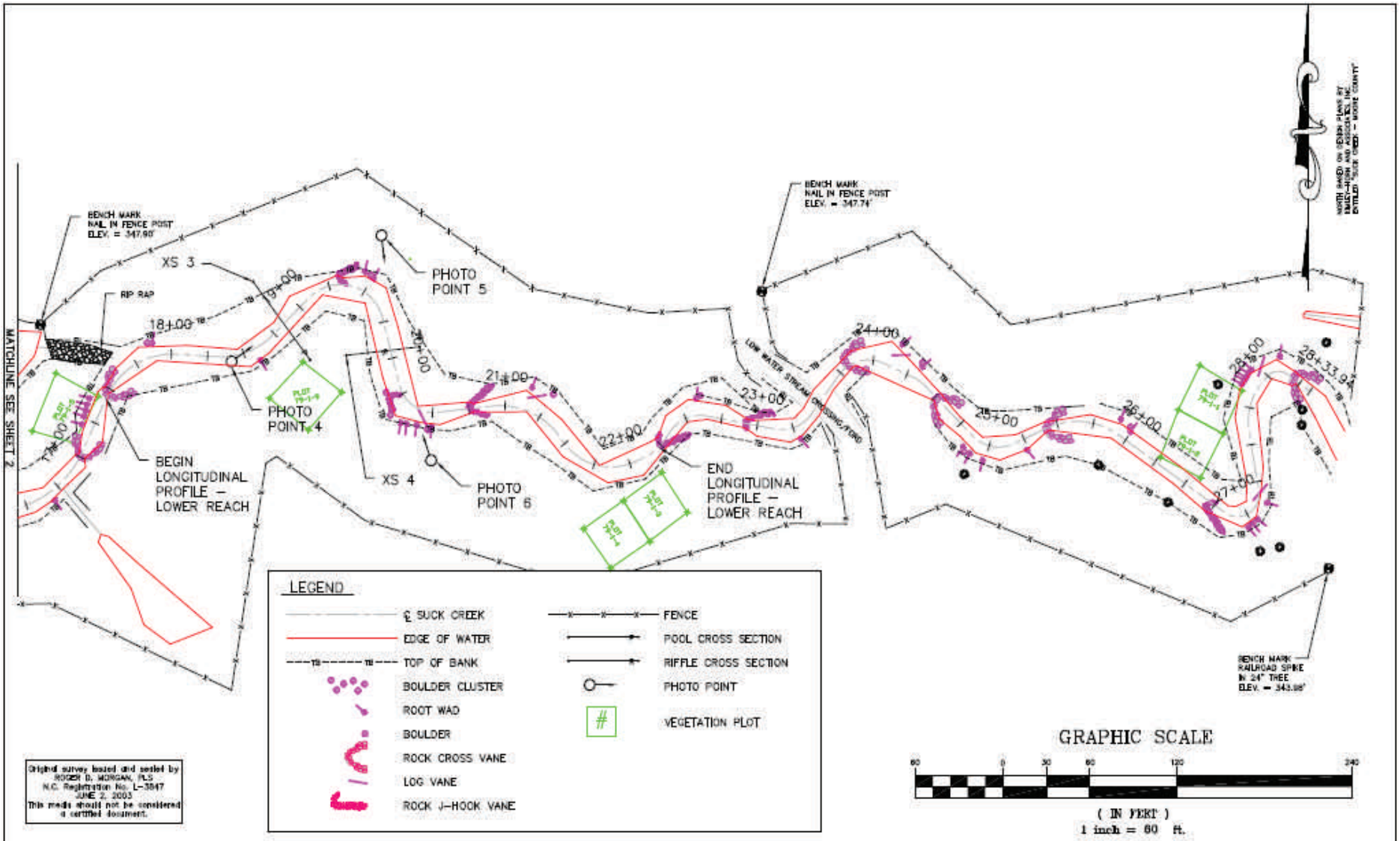
SHEET 2 OF 3



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SHEET 3 OF 3

Pre-Construction Site Conditions

Upper extent of pre-existing channel

Upper extent of pre-existing channel

Looking upstream from the existing upstream crossing

Looking downstream from ~ current sta. 8+00

Midway down project extent ~ 15+00

Lower end of project extent

Post-Construction Site Conditions- 2008 Photos

Photo Station 1 ~ 1+00

XS-1 downstream ~ 1+75

Vegetation Plot 6 ~ 7+75

Vegetation Plot 5 ~ 17+25

Photo Station 4 ~ 18+50

Vegetation Plot 4 ~ 22+00

Morphological Stability

The channel exhibited morphologic stability. No systemic trends of degradation or aggradation were evident. Bank stability was reported in 2008 at 99% and structural functions were maintained between 95 and 100% for the lower an upper reaches, respectively. Cross-section and profile overlays indicated stability (see figures in 2008 report http://www.nceep.net/eep_projects/eep_projects.html). Some fining was observed in various locations at various times over the last few years, which is likely the result of extreme drought conditions in 2007 and 2008 with groundwater levels apparently still lagging in 2009. This summer, EEP staff and their monitoring contractors have observed many piedmont streams ranging from headwater systems to drainages as large as 8 SM to be either dry or lacking any flow simply exhibiting isolated, stagnant pools. The peak drought periods in 2007 caused many streams to develop vegetation in channel, which has remained to a large extent. Until these channels are subjected to multiple years of typical hydrology, this vegetation may trap fine material to a greater extent than normal. Beaver also colonized the site in 2007 and 2008, which may have contributed to localized backwater and fining as well. The beaver and associated dams were removed by EEPs wildlife contractor.

Hydrology

The site was outfitted with a continuous stream recorder in late 2006 halfway between the upper crossing and the top of the project and multiple bankfull events were recorded in 2007 and 2008. Between site precipitation data and other regional gauges 3/2/07, 4/16/07, and 9/6/08 were unequivocal overbank events.

Vegetation

The sites vegetation plots indicated an average of 10 stems per plot, equating to a site average of approximately 400 stems per acre. Recent site visits have indicated that the site is being widely utilized by wildlife including small mammals, birds, reptiles and amphibians. There is a high density of deer bedding throughout the site and there was evidence of intensive browsing on the site vegetation. The stem densities in the middle section between the middle and lower crossings were lower than those in the upper and lower sections of the site and are not at the required 320 stems per acre for buffer credit at this time, but with supplemental planting will achieve those densities.

Table 5. Stem Count by Plot and Species

	Species	Total Planted Stems	# plots	avg# stems	plot 79-1-3-year:5	plot 79-1-4-year:5	plot 79-1-5-year:5	plot 79-1-6-year:5	plot 79-1-7-year:5	plot 79-1-8-year:5	plot 79-1-9-year:5
	Acer rubrum	4	2	2		3		1			
	Alnus serrulata	2	2	1				1		1	
	Betula nigra	32	4	8	1			9	13	9	
	Celtis occidentalis	1	1	1					1		
	Cornus amomum	1	1	1			1				
	Diospyros virginiana	1	1	1			1				
	Fraxinus pennsylvanica	7	4	2	1		3		2	1	
	Liquidambar styraciflua	1	1	1		1					
	Pinus taeda	4	3	1	1	2		1			
	Platanus occidentalis	6	2	3		1		5			
	Quercus phellos	2	2	1	1	1					
	Salix nigra	9	4	2	1		1	6	1		
TOT:	**12**	**70**	**12**	**2**	**5**	**8**	**6**	**23**	**17**	**11**	**0**

Stewardship and Easement Protection

The landowner indicated that some livestock had gotten under some fencing near the middle crossing on 2 or 3 occasions recently over the last year due to flows that had knocked over some T posts attached to the electric fencing trying to prevent this. In addition, while the fencing preventing access to the buffer is intact and has been reinforced, the middle ford crossing does not have end gates, allowing livestock access at the crossing, but not in the buffer. The landowner has indicated that he will install end gates similar to those that exist on the other 2 crossings to prevent use of the crossing for anything beyond transport of livestock from one pasture to the other. EEP has contacted the Moore County NRCS to see about grant opportunities with this landowner for fence maintenance moving into the future and to provide better treatment and stabilization of draws and inputs that may be occurring on the outside edges of the easement/fencing.