

EEP Project Closeout Summary



The restoration of **Hominy Swamp Creek** 2,232 feet, located in Wilson City Recreational Park was conducted to correct severe bank erosion, channel widening, and loss of aquatic habitat. In the past the stream was channelized and riparian vegetation was destroyed. Project goals were to develop and maintain a stable stream channel, enhance warm water fisheries, improve habitat overall, and make sediment transport more efficient. Construction was completed in September 2001.

Watershed Data and Characteristics						
Stream Type	Wetland	DA	Stream	%	Land	
P//E	Type	(SM)	Order	Imper	Use	303d
Perennial	-	5.4	3rd	30%	Urban	Yes



Project ID and Status	Project Settings & Class.	Project Timeline			
Name	Hominy Swamp	Basin	Neuse	Construction Completed	Sept 2001
EEP ID #	180	Physiographic Region	Coastal Plain	As-Built Survey	June 2002
County	Wilson	Ecoregion	Rolling Coastal Plain	Repair	
Type	Stream Restoration	USGS Hydro Unit	3020203020040	Monitoring Year-1	2002
Status	Monitoring Complete	NCDWQ Subbasin	03-04-07 Neuse R. Basin	Monitoring Year 2	2003
		Thermal Regime	warm	Monitoring Year 3	2004
		Designer	KCI	Monitoring Year 4	2005
		Monitoring	RK&K	Monitoring Year 5	2006
				Monitoring Year 6	2007



Table 1. Project Restoration Components and Mitigation Assets									
Stream				Asset Data					
	Drainage/Hydrology Component	Restoration Component		Asset			Ratio		
				Map #	Approach	Level	Multip	Feet	SMU
	Hominy Swamp Ck	Ripley Rd to Raleigh Rd		1	P1	R	1.00	2160	2160
Project Ratios					Asset Summary				
		Level	Ratio	Multiplier	Level	Ratio	Multip	Feet	SMU
	Stream/Wetland	R	1	1.000	R	1:1	1.00	2160	2160
	Wetland	E	2	0.500	E	2:1	0.50		
	Stream	EI	1.5	0.667	EI	1.5:1	0.67	0	0
	Stream	EII	2	0.500	EII	2.5:1	0.50	0	0
	Wetland	C	3	0.333	C	3:1	0.33		
	Stream/Wetland	P	5	0.200	P	5:1	0.20	0	0
								2160	2160

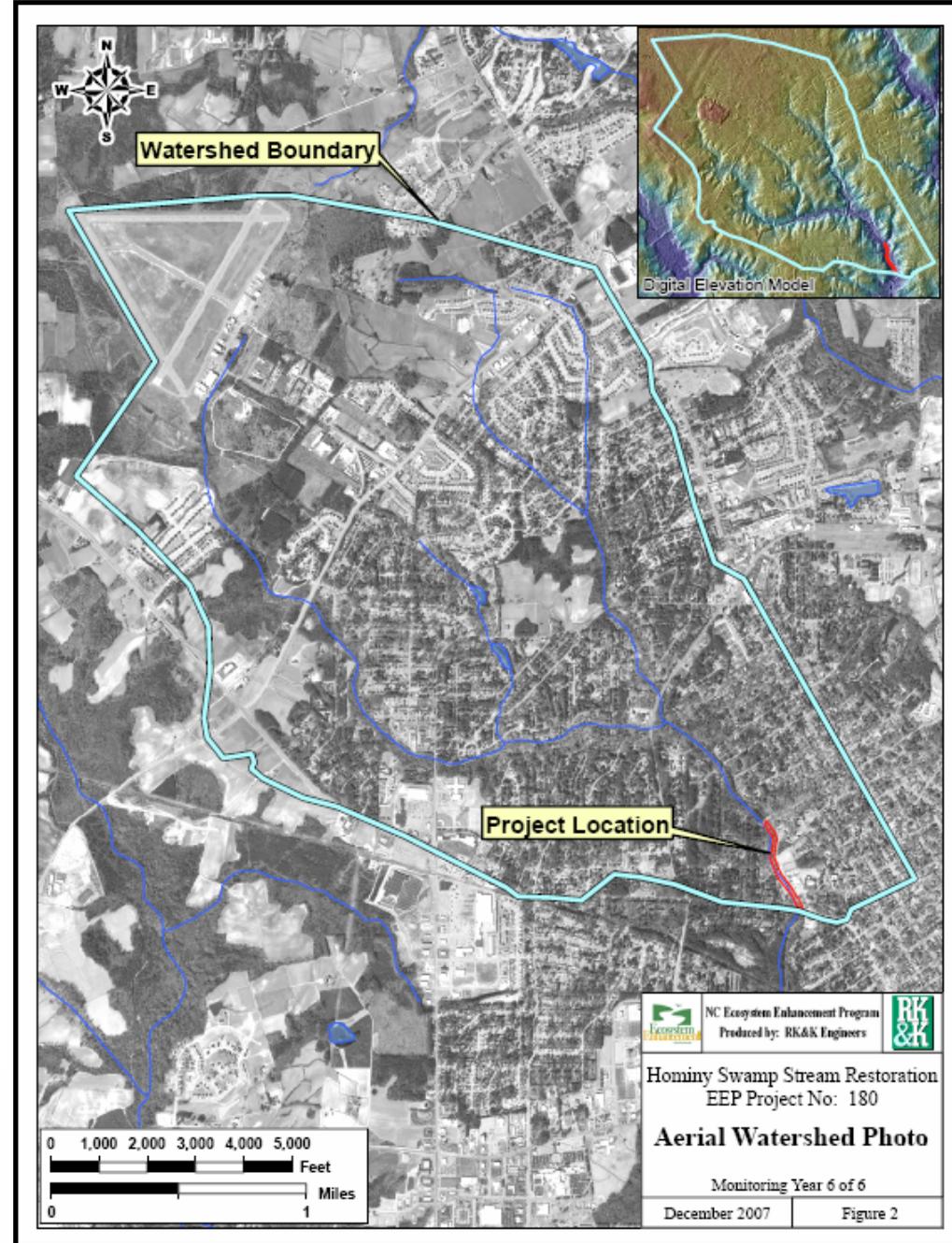
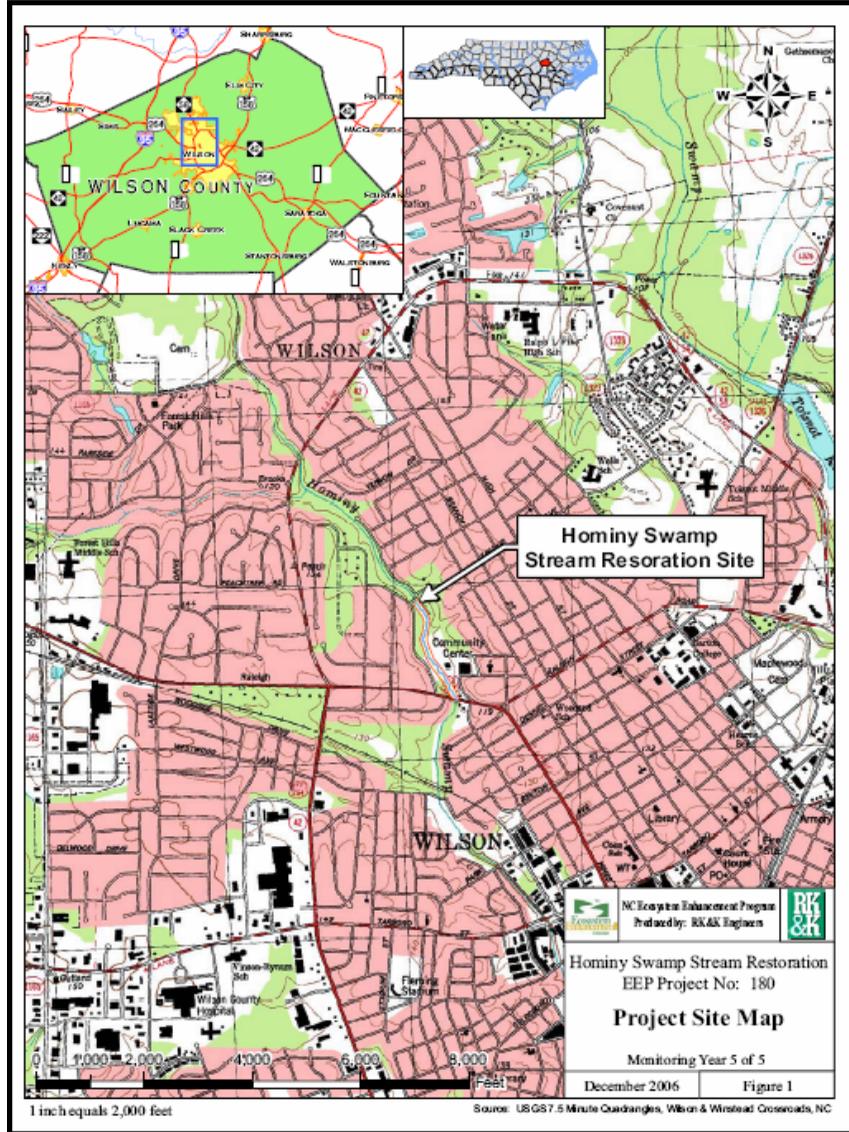


Pre-construction bank and riparian conditions.

Results

The Hominy Swamp Creek project has demonstrated morphologic stability over the 6 year monitoring period. An additional year of monitoring was undertaken due to riparian vegetation replanting. Repeat channel X-section surveys demonstrate some increase in channel dimension, but this increase does not appear to indicate project instability. Similarly, longitudinal profile data documents channel scour and fill, as is expected in a stream dominated by sand-sized substrate. However, the profile still maintains a diversity of bedform features. Total stream restoration footage was determined based on project centerline stationing (2,160 feet). Earlier project documents appear to have reported project thalweg distance (2,232) as the total restoration footage.

Site Map and Directions



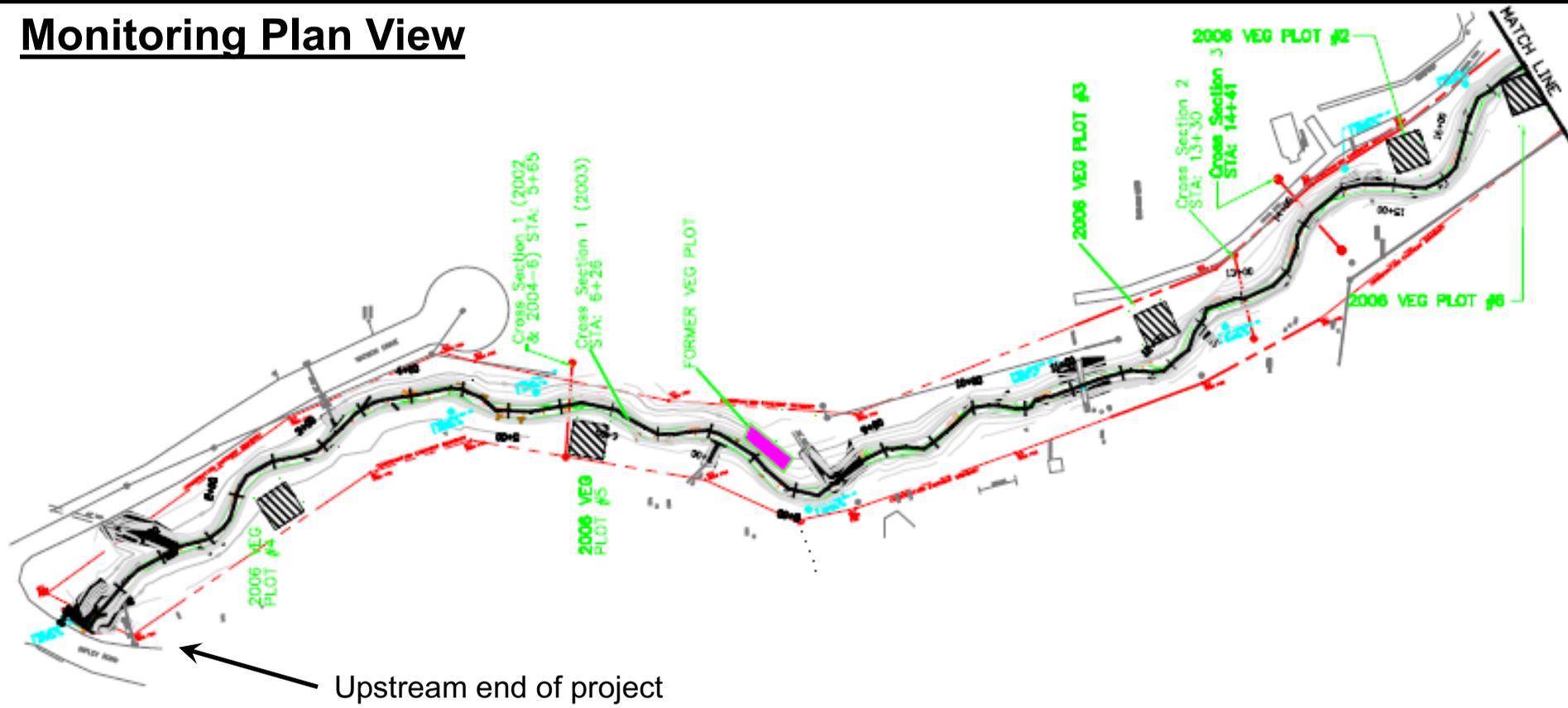
The project is located within the city limits of Wilson, North Carolina. From Raleigh, take US 64 BYP East to US 64 then US 264 (Wilson exit). Proceed east on US 264 to Exit 36B, US 264 ALT East (Raleigh Road). Continue into Wilson on Raleigh Road until you reach Ripley Road. Turn left (north) on Ripley Road and the site is immediately on the east/right side of the road. Refer to Figure 1 for project location.

Hominy Swamp Creek Pre-existing Conditions



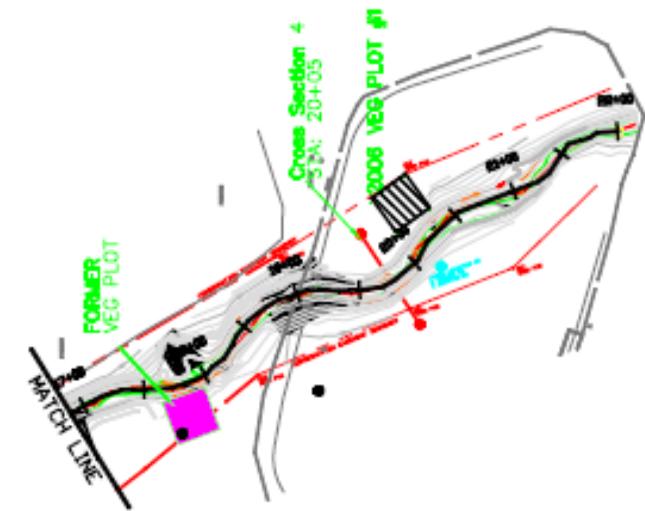
Hominy Swamp Creek pre-existing site conditions demonstrating eroding banks lacking riparian buffer. Bottom row of photographs illustrate bankfull flows still contained below the top of the channel bank.

Monitoring Plan View

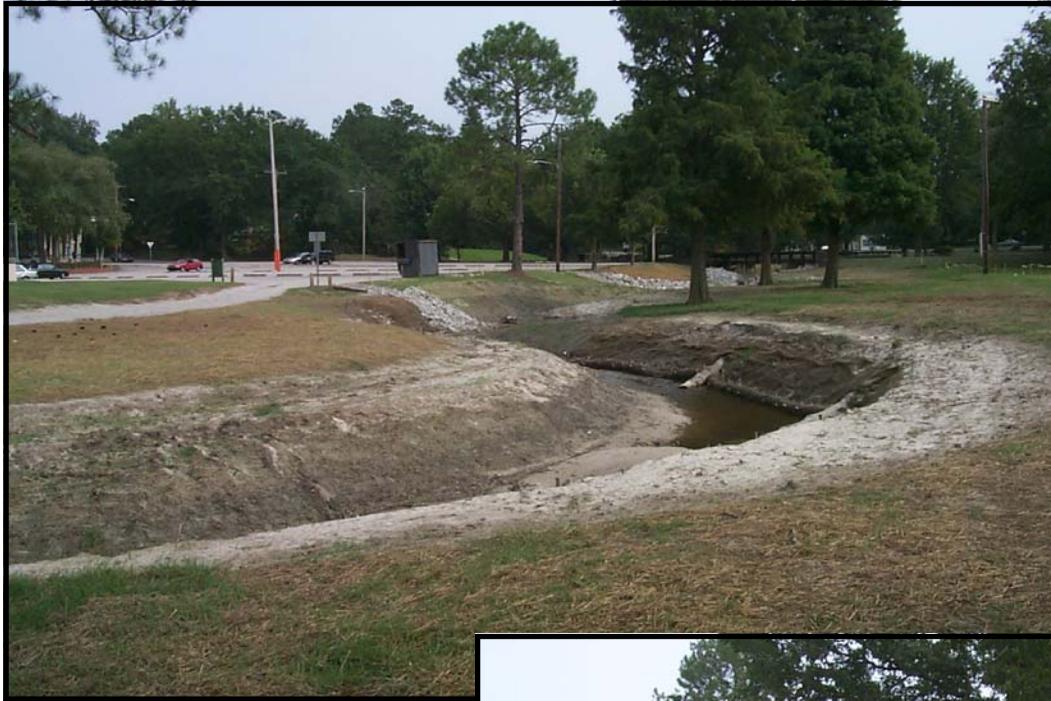


Upstream end of project

STRUCTURES LEGEND	MONITORING LEGEND
LOG VANE	BASELINE
LOG CROSS VANE	CROSS SECTION
ROCK CROSS VANE	CONSERVATION EASEMENT
ROOT WAD	VEGETATION PLOT
COIR ROLL	MINOR CONTOUR
RIP RAP	MAJOR CONTOUR

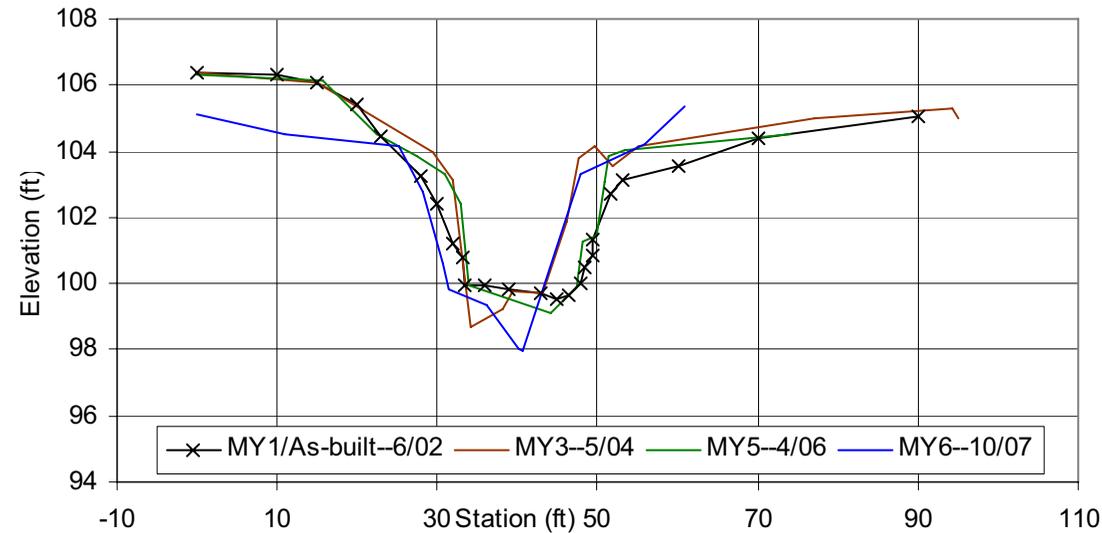


Hominy Swamp Creek Post-construction Conditions

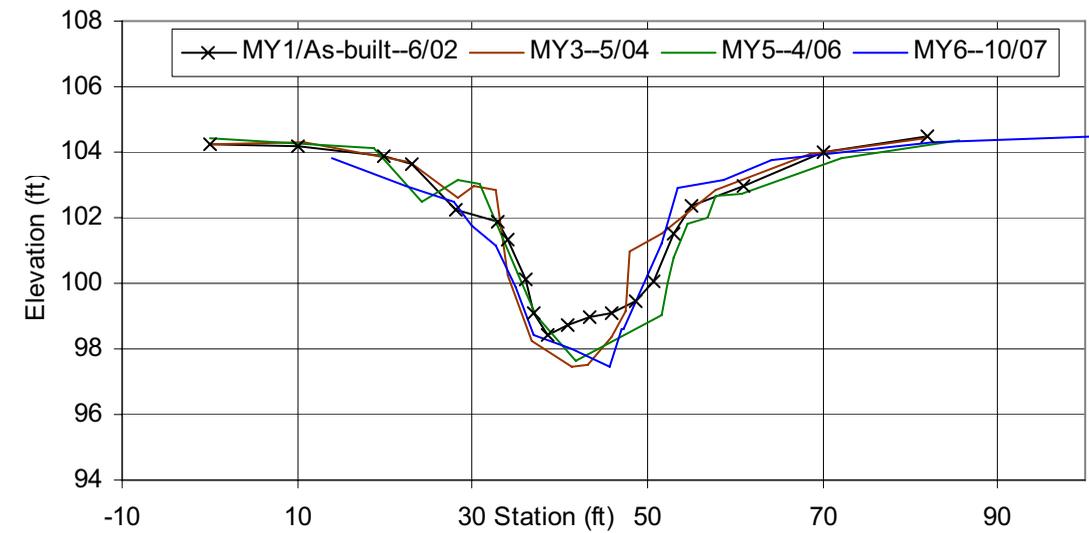


Annual X-section Survey Overlays

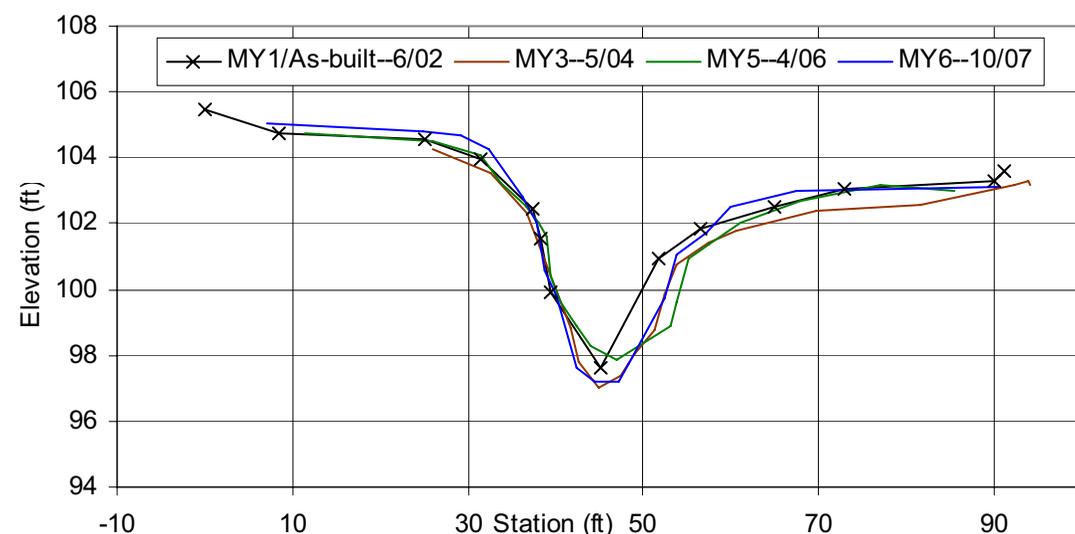
Hominy Swamp Ck X-section 1 (Riffle)



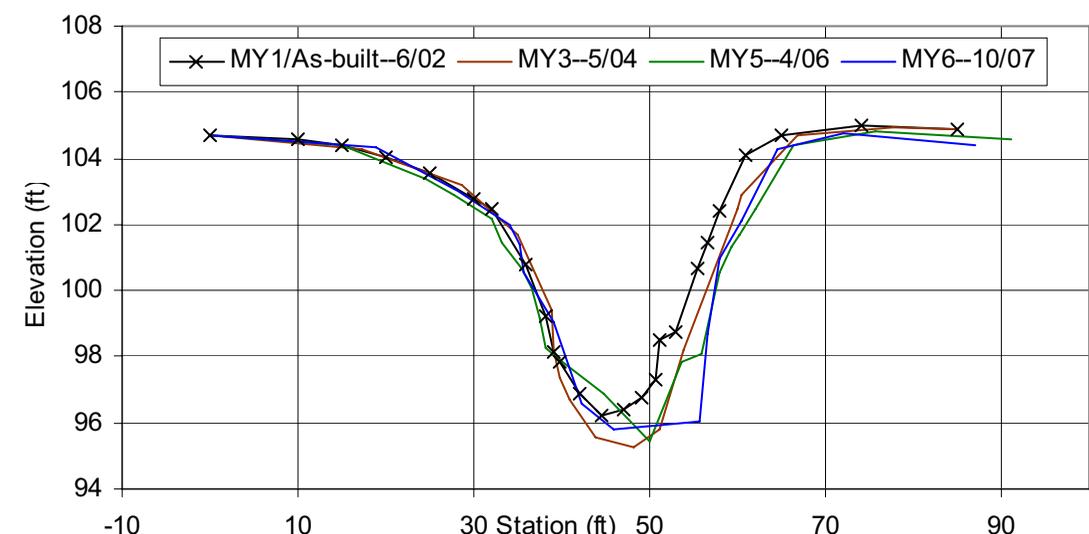
Hominy Swamp Ck X-section 2 (Riffle)



Hominy Swamp Ck X-section 3 (Pool)

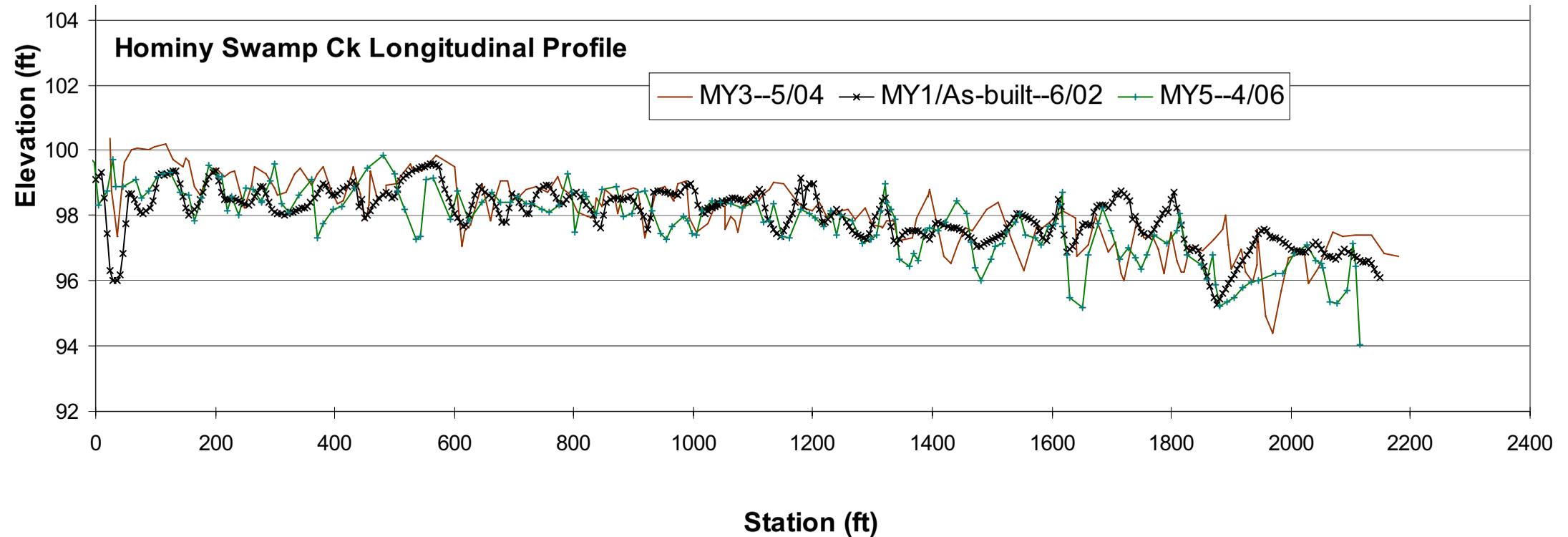


Hominy Swamp Ck X-section 4 (Pool)



Channel Stability--Dimension: overlays of repeat surveys at Hominy Swamp Ck plotted at the same scale for comparison. As-built survey was performed in June 2002 following construction the previous fall. X-section # 1 was moved in MY2. Bankfull X-sectional areas have increased over the monitoring period for X-section # 1 and # 4, but the increase does not appear to indicate project instability.

Annual Long-Profile Survey Overlays



Channel Stability—Profile: overlays of three annual long profile thalweg surveys along Hominy Swamp Ck. Some channel change is evident as sand-sized bed material has been scoured and filled. However, a diversity of bedforms is still apparent in monitoring year 5.

Substrate Particle Size Distribution

The channel substrate design D50 for Hominy Swamp Ck was 0.25 mm (fine to medium sand). Monitoring year 6 (2007) pebble counts at riffle X-sections # 1 and # 2 resulted in D50 statistics within the coarse sand range (0.5 to 1.0 mm).

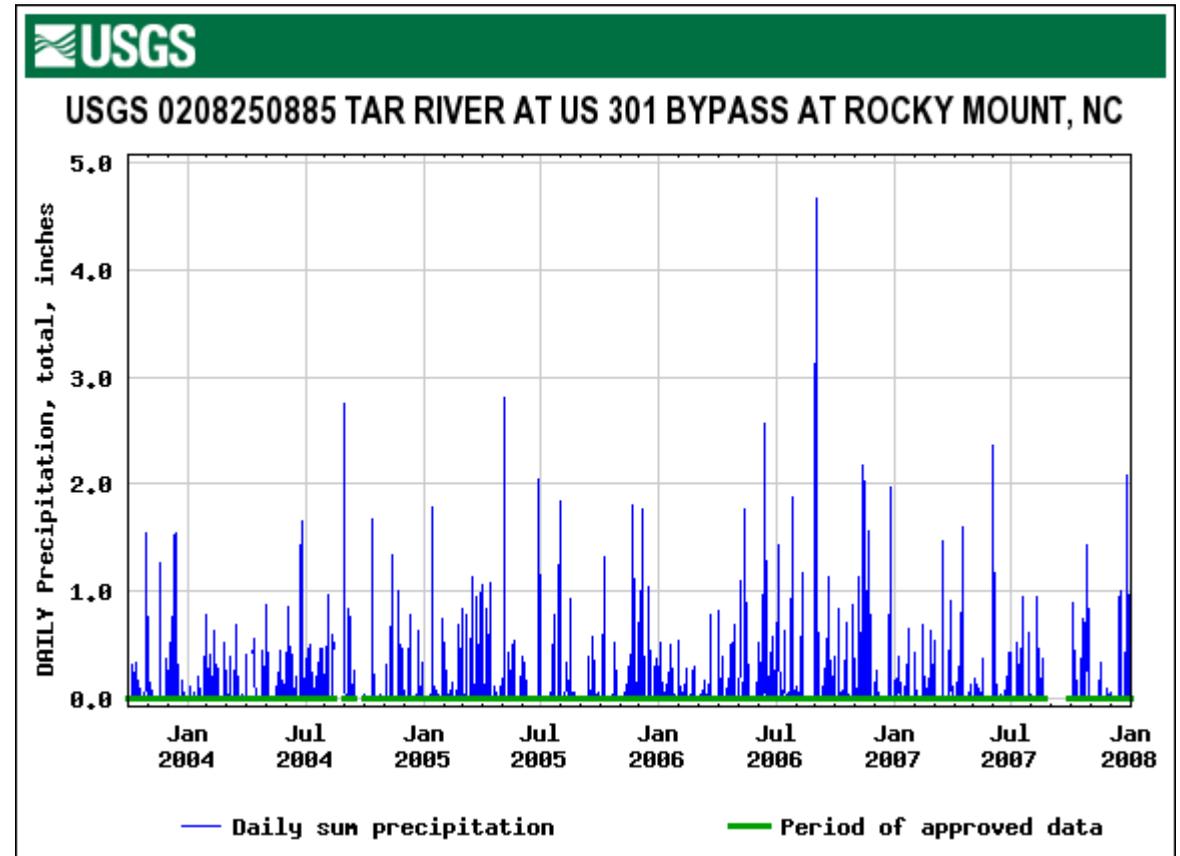
Engineered Structures

The monitoring year 6 *Visual Morphologic Stability Assessment* evaluated vane (N = 31) and rootwad (N = 13) stability and reported 25 vanes (81%) free of scour, all vanes free of piping, 11 rootwads (85%) free of scour, and all rootwads with stable footings.

Bankfull Verification

Overbank flow events in the summer of 2006 and 2007 were documented using an on-site crest gauge. Additionally there were 3 overbank events reported during the first year following project construction, and one event reported in monitoring year 3.

USGS stream gauge site # 0208250885 (Tar River at US 301 Bypass at Rocky Mount) approximately 15 miles from the project site has recorded 11 storms producing greater than 2 inch daily rainfall totals during the period 9/16/2003 through 1/1/2008 at USGS station #02081747. While it is not assumed that all of these storms produced overbank events at the project, it seems likely that the project experienced at least one overbank flow event in 2003, 2004, 2005, 2006, and 2007.



Hominy Swamp Creek Monitoring Year-1 Conditions



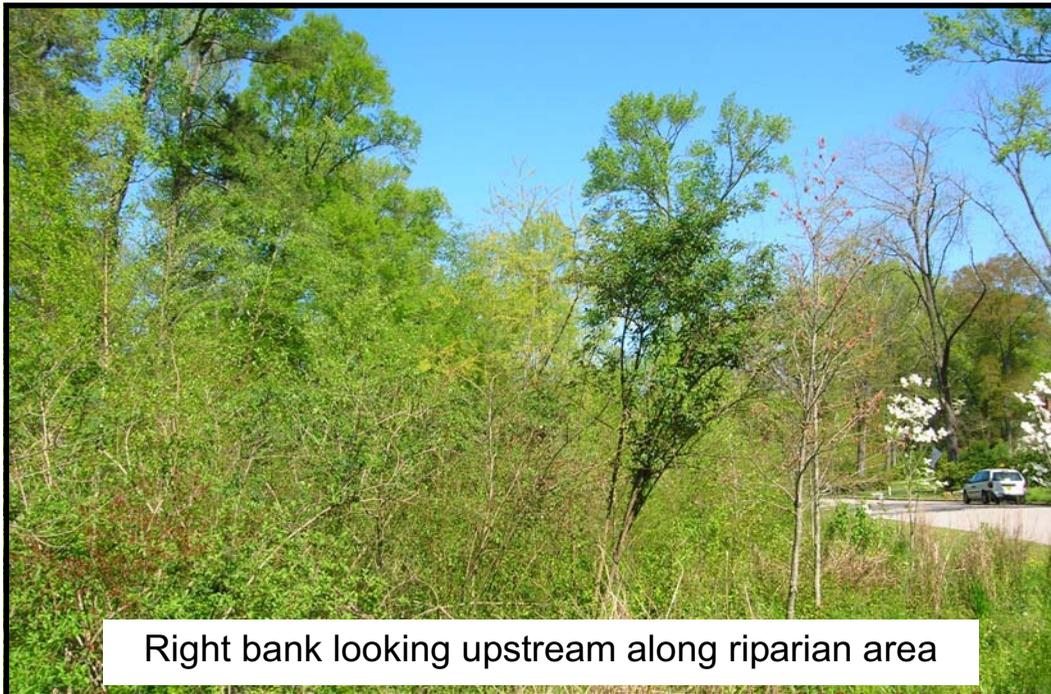
Hominy Swamp Creek Conditions April, 2008



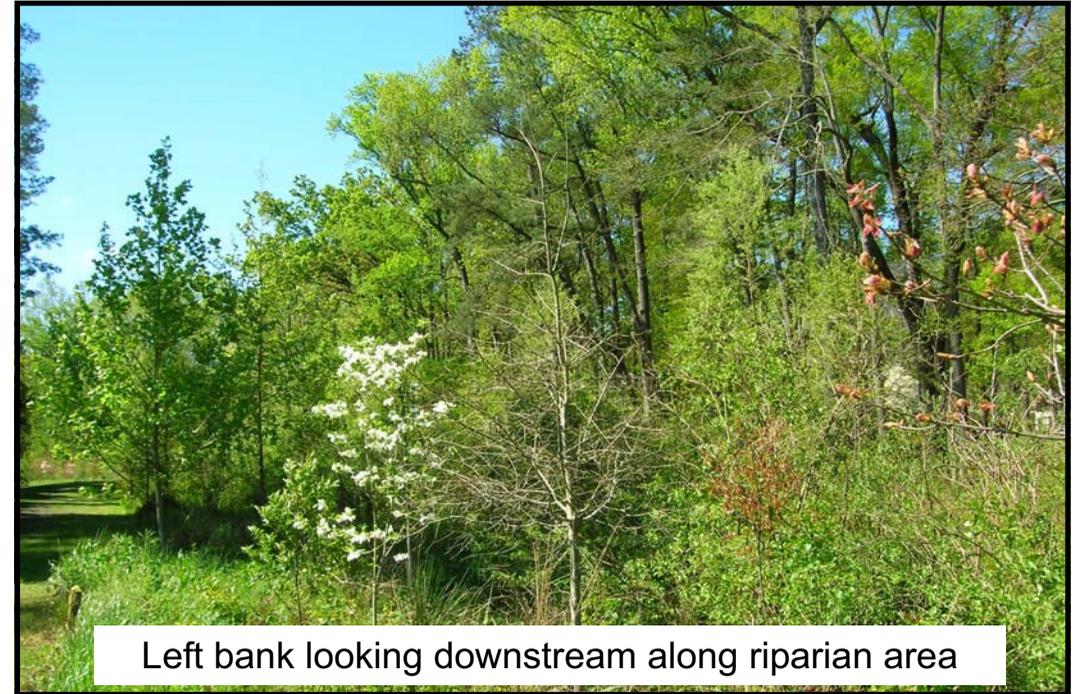
Left bank looking toward end of project



View from bridge at bottom of project



Right bank looking upstream along riparian area

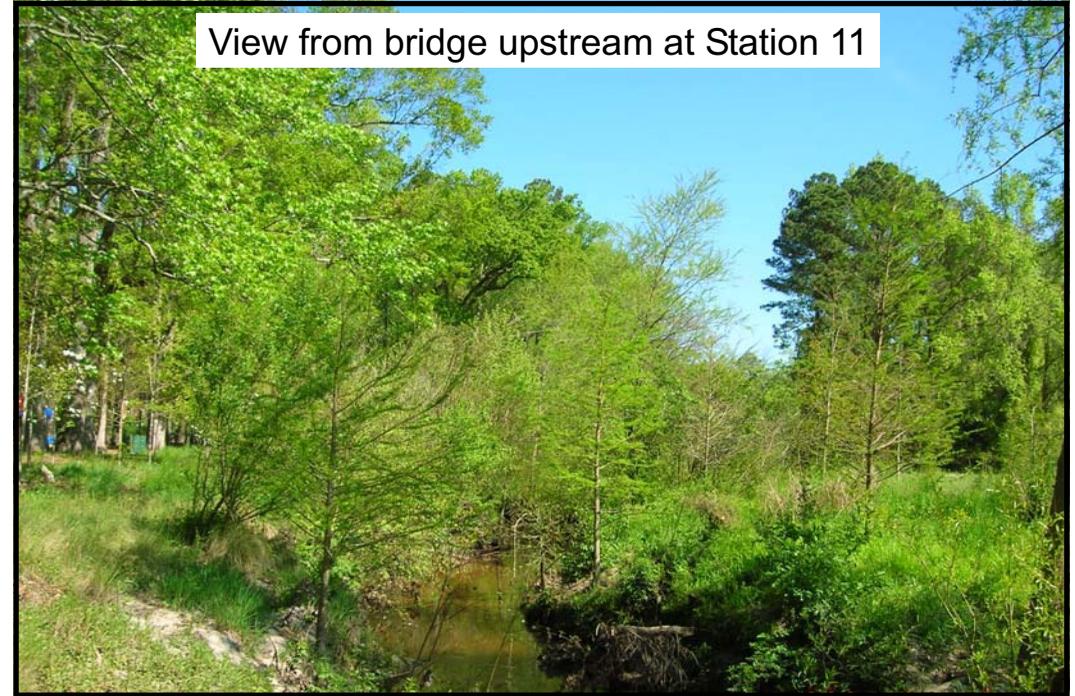


Left bank looking downstream along riparian area

Hominy Swamp Creek Conditions April, 2008



Left bank near Station 10



View from bridge upstream at Station 11



Right bank near Station 11, view upstream



View from bridge downstream at Station 11

Hominy Swamp Creek Vegetation Summary Data

Stem Counts Per Acre By Plot									
MY	CY	Ave	Plots						
			1	2	3	4	5	6	
Y1	2002	121.0	435.6	0	0	0	290.4	145.2	700 ft2 Circular Plots
Y1	2002	6795.4	6969.6	9583.2	3339.6	14084.4			300 ft2 Live Stake Bank Plots
Y2	2003	288.0	520	400	200	120	200		NCSU Quads
Y3	2004	145.0	320	120	20	120	NS		NCSU Quads
Y4	2005	107.9	40	202	162	121	40	81	EEP 2004
Y5	2006	404.7	See CVS-EEP Protocol Summary Below						CVS-EEP Protocol
Y6	2007	364.2	See CVS-EEP Protocol Summary Below						CVS-EEP Protocol

As indicated in Table 1, four different protocols for monitoring vegetation were applied to this project. However, although the data differs among years, the general trends are discernable. While planted tree mortality was very high in years 1-4, the project began to exceed the minimum planted stem requirements in year 5 at a rate of 404.7 per acre following a substantial replant, which is illustrated in Table 2. Moreover, the data for year 6 (2007) indicates the project has continued to exceed the minimum planted stem requirements at a rate of 364.2 stems per acre despite a mortality rate of 10%, which can be partially attributed to pruning of *Salix nigra* stems that achieved disproportionate stature in years 1-4. Furthermore, many of the surviving trees planted in 2005 are now achieving heights of 15'-20', and the most common tree species is *Quercus pagoda* which comprises 26.7 percent of the sampled stems.

						Living Stems						Species		Vigor							
						Planted & Natural	Planted					# spp	Most Dominant Species (most stems per project)								
							Total Live	All planted			Excl. Live Stake			4	3	2	1	0			
name	year	req'd stems	plots	Sampling Dates		per acre	per acre	diff to req	mortality	per acre	diff to req	% of stems	excel	good	weak	unlikely to survive year	dead	miss	unkn	other	
Hominy Swamp	5	260	6	08/17/06	08/17/06	404.7	404.7	84.7	0.0%	404.7	84.7	11	Quercus pagoda	26.7%	42%	35%	15%	8%			
Hominy Swamp	6	260	6	07/20/07	07/20/07	364.2	364.2	44.2	10.0%	364.2	44.2	11	Quercus pagoda	26.7%	45%	18%	20%	7%	3%	7%	