Project Closeout Summary—Caviness Site (2009)

Project ID & Status

Project Name/Number: **Caviness (Tibbs Run & West Branch)**
EEP ID : 73
County: Randolph
Project Type: Stream Restoration & Enhancement (DOT Transfer)
Current Status: 5 Years of Monitoring complete

Project Setting & Classifications

Basin: Deep River of Cape Fear
Physiographic Region: Piedmont
Drainage: Tibbs Run (3.3 SM)
West Branch (1.1 SM)
Watershed: Rural Pasture, Imp cover <1%
Ecoregion: Carolina Slate Belt
USGS Hydro Unit: 03030003
NCDWQ Subbasin: 03-06-09
Thermal Regime: Warm

Project Timeline

Milestone	Date
Permitted	May 2003
Construction	Jan 2004
Site Planted	Feb 2004
Monitoring Year-1	Fall 2004
Monitoring Year-2	Fall 2005
Monitoring Year-3	Fall 2006
Monitoring Year-4	Fall 2007
Monitoring Year-5	Fall 2008

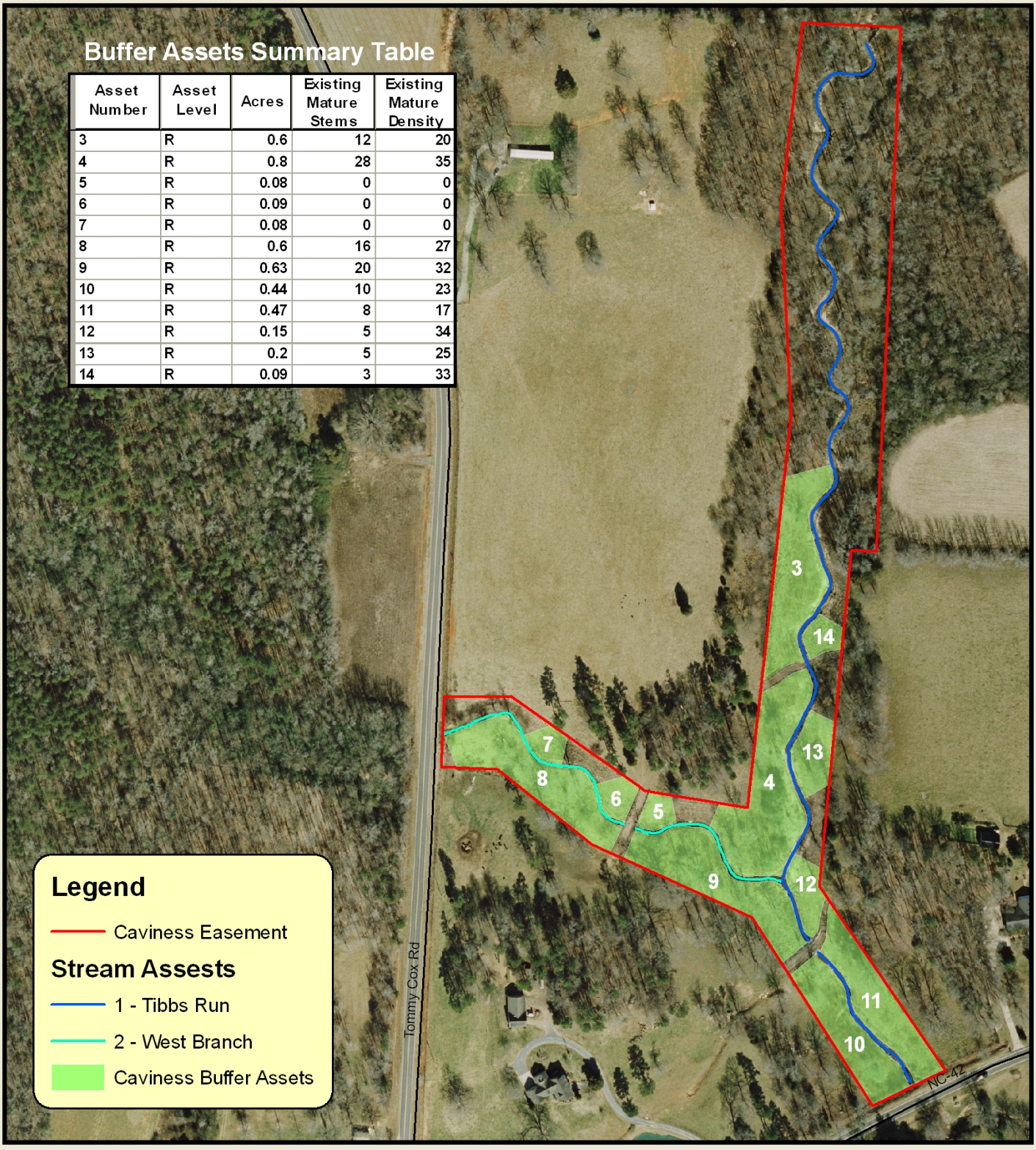
Table 1. Project Restoration Components and Mitigation Assets

Stream			Asset Data							
	Drainage/Hydrology Component	Stationing	Asset Map #	Approach	Level	Ratio Multip	Feet	SMU	Acres	Buffer
	Tibbs Run	(10+00 to 32+55)	1	P1/P2	R	1.00	2211	2211		
	West Branch	(50+00 to 58+10)	2	P1/PII	R	1.00	778	778		
							2989	2989		
Buffer	Eligible Buffer		3-12		R	1.00			4.24	4.24

Caviness Site (EEP # 73) - Asset Map

Buffer Assets Summary Table

Asset Number	Asset Level	Acres	Existing Mature Stems	Existing Mature Density
3	R	0.6	12	20
4	R	0.8	28	35
5	R	0.08	0	0
6	R	0.09	0	0
7	R	0.08	0	0
8	R	0.6	16	27
9	R	0.63	20	32
10	R	0.44	10	23
11	R	0.47	8	17
12	R	0.15	5	34
13	R	0.2	5	25
14	R	0.09	3	33



Project Background and Summary

The mitigation project includes approximately 3000 linear feet comprised of Tibbs run, the projects mainstem, and its tributary, West Branch. Priority Level I and II restoration approaches were used to convert degraded and incised E and over widened C channel segments to stable E/C channel types. 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 and bank stability. The adjacent streambanks were re-sloped to reduce erosion. It also included the installation of native vegetation to establish or enhance the riparian buffer, and fence out livestock.

Goals and Objectives

1. Protection of riparian zone vegetation and restored channels by excluding livestock.
2. Enhancement of overall stream stability by establishing the correct width to depth ratio, reducing entrenchment, sloping banks, and installing plantings
3. Stabilize the channel bed and provide habitat diversity through the use and proper placement of stream structures;
4. Planting of native trees, shrubs, and ground cover in the riparian zone that will help to stabilize the stream banks, establish shade, and provide wildlife cover and food.

Success Criteria

The project permits from early 2003 indicated morphological measurement was not required, rather visual assessment/survey, photos, evidence of at least 2 bankfull events, and vegetative survival would constitute project success monitoring.

Morphological Stability. The project channels should demonstrate general morphological stability such that no adverse trends in channel aggradation, degradation or widening are evident. This was to be demonstrated through photos and visual survey. This criterion was met.

Vegetative Success. Vegetation plots should indicate no less than 320 stems in year 3 and no less than 260 stems in year 5. This criterion was met.

Hydrologic Data. The channels should indicate overbank events, 2 at minimum. This criterion was met.

Pre-Construction Site Conditions

Post-Construction Site Conditions- 2008 Photos

Photo Point 1 – facing upstream. Sta. 11+10

Photo Point 4 – facing upstream. Sta. 17+10

Photo Point 6 – facing upstream. Sta. 12+80

Photo Point 12 – facing left bank and downstream. Sta. 29+40

Photo Point 19 – facing downstream. Sta. 56+30

Photo Point 13 – facing upstream. Sta. 29+90

Morphological Stability

Overall the site exhibited stability. Local areas of erosion totaling 4-5% of the projects bank footage occurred primarily early in the projects history and demonstrated little advancement over time. Some structures have lost some of their intended functions, but most are fully functioning. These instances of instability occurred primarily in the upper half of the project mainstem, where the maintenance of mature stands in the near bank regions has been providing stability. In order to accommodate these mature stems some banks in this area are higher and steeper as a result, but there is evidence that the floodplain is still accessed with reasonable frequency in these areas.

In general the site has exhibited overall morphological stability. No systemic trends of degradation or aggradation were evident. The site did however require multiple treatments for beaver. In 2006 beaver created a dam in the upper section of the mainstem on Tibbs run and were removed in early 2007. Little flow was exhibited in the channel for much of 2007 in association with the historic drought and some point between May and early Fall of 2008 beaver re-colonized and built 6 dams on site. These beaver and the associated dams were removed in late fall 2008, with follow up early in 2009.

Vegetative Performance

The site generally exhibits a vigorous buffer that provides a closed canopy in many locations. Mature stems were left and incorporated wherever possible, particularly where the existing stands were most prominent on the upper part of the projects mainstem. The average number of planted stems from the sites 3 vegetation plots is 587 stems per acre.

Table VI: Stem counts for each species arranged by plot.
Caviness Farm (Tibbs Run) Stream Restoration Site/Project No. 73

Species		Plots (50 t x50 ft)			Year 1 Totals (2004)	Year 2 Totals (2005)	Year 3 Totals (2006)	Year 4 Totals (2007)	Year 5 Totals (2008)
Scientific Name	Common Name	VP1	VP2	VP3					
Shrubs									
No Shrubs were planted									
Trees									
Fraxinus pennsylvanica	Green ash	3	11	8	27	39	32	31	22
Platanus occidentalis	Sycamore	9	22	7	39	49	48	43	38
Quercus alba	White oak	14	5	8	31	35	24	29	27
Quercus falcata	Southern red oak	2	1	0	19	5	4	3	3
Quercus phellos	Willow oak	6	0	5	0	13	11	11	11
Planted Stem Survival Summary Data		Stems per Plot			Average # Stems				
Initial Stems Planted		41	55	55	50.3				
Year 1		38	52	45	45.0				
Year 2		35	65	40	46.7				
Year 3		33	58	28	39.7				
Year 4		34	51	32	39.0				
Year 5		34	39	28	33.7				
		Percent Survival			Average				
Year 1		93%	95%	82%	90%				
Year 2		85%	118%	73%	92%				
Year 3		80%	105%	51%	79%				
Year 4		83%	93%	58%	78%				
Year 5		83%	71%	51%	67%				
		Stems per Acre			Average				
Initial Planting Density		714	958	958	877				
Year 1		662	906	784	784				
Year 2		610	1133	697	813				
Year 3		575	1011	488	691				
Year 4		592	889	558	680				
Year 5		592	680	488	587				

*Plot size is 2500 square feet (0.574 ac) *Survival based on initial planted stem count*

Hydrology

The data record from the monitoring reports of a neighboring site (The Deaton Site) indicate that the surrogate gauge used likely produced 2 events in 2003, 2 in 2005 and 2 between 2006 and 2007 for a total of six possible overbank events. The monitoring firm in 2008 indicated evidence of 2 bankfull events on site in 2008. EEP personnel observed what appear to be fresh alluvium on the upper part of the mainstem early in 2009 and evidence of wrack above the floodplain elevation in the last month. See photos below.

Alluvium—March 2009

Wrack—September 2009