Monitoring Data Record

Project Title: R-2231CB (US 220 Bypass) COE Action ID: 199400590
Stream Name: UT to Big Mountain Creek (Site 3) DWQ Number: 000874
City, County and other Location Information: Montgomery County, US 220 Bypass (Station 255+00 RT.)
Date Construction Completed: Water was turned on 5/3/05
Monitoring Year: (2) of 5
Ecoregion:_____ 8 digit HUC unit 03040203
USGS Quad Name and Coordinates: _____
Rosgen Classification: _____
Length of Project: 423' Urban or Rural: Rural Watershed Size: _____
Monitoring DATA collected by: M. Green, J. Young and B. Clements Date: 7/17/08
Applicant Information:
Name: NCDOT Roadside Environmental Unit
Address: 1425 Rock Quarry Road Raleigh, NC 27610
Telephone Number: (919) 861-3772 Email address: mlgreen@dot.state.nc.us
Consultant Information:
Name: _____
Address: _____
Telephone Number: _____ Email address:_____
Project Status: Complete

Monitoring Level required by COE and DWQ (404 permit/ 401 Cert.): Level **1** ~~2~~ ~~3~~
Monitoring Level 1 requires completion of *Section 1, Section 2 and Section 3*

Permit States: The permittee shall monitor the stream relocation mitigation site for a period of five years starting the year following construction. Monitoring data at the site should include the following: reference photos, plant survival and channel stability. Data shall be collected each year for 5 years at the same time of year. No less than two (2) bankfull flow events must be documented through the required 5-year monitoring period. If less than 2 bankfull events occur during the first 5 years, monitoring will continue until the second bankfull event is documented. The bankfull event must occur during separate monitoring years. Vegetation used to stabilize banks shall be limited to native woody species, and should include establishment of 50 foot wide vegetated buffer on the relocated channel. Stream banks will be planted with native vegetation that represents both woody (trees and shrubs) and herbaceous species. Species selection will be based on a survey of the vegetation from the approved reference reach. Survival of woody species planted at the stream mitigation sites should be at least 320 through year three. A ten percent mortality rate will be accepted in year four (288 tree/acre) and another ten percent in year five resulting in a required survival rate of 260 trees/acre through year five. If within any monitoring year, bank or stream stability is not acceptable as determined by the Corps of Engineers, and remedial action required by the Corps of Engineers is performed, the five-year monitoring period of the affected portions of the stream will start again at monitoring year one. The permittee will coordinate all stream mitigation remedial activities with the Corps of Engineers, Wilmington District, prior to taking any remedial action. The permittee will submit a brief written report with representative photographs within 90 days after the monitoring year is completed.

Section 1. PHOTO REFERENCE SITES
(Monitoring at all levels must complete this section)

Total number of reference photo locations at this site:
A total of 7 photos were taken from 4 photo point locations. The last photo is an overview of the site.
Dates reference photos have been taken at this site: 7/24/07, 7/17/08

Individual from whom additional photos can be obtained (name, address, phone):

Other Information relative to site photo reference:

If required to complete Level 3 monitoring only stop here; otherwise, complete section 2.

Section 2. PLANT SURVIVAL
Attach plan sheet indicating reference photos.

Identify specific problem areas (missing, stressed, damaged or dead plantings):

Estimated causes, and proposed/required remedial action:

ADDITIONAL COMMENTS: Planting was completed at this stream relocation by December 2006. The planting plan list the following species to be planted on the streambank: black willow, silky dogwood, and tag alder bareroot seedlings and in the buffer area: yellow poplar, sycamore, water oak, and green ash bareroot seedlings. One 100 x 25 foot vegetation plot was set in the buffer area. An at-planting stem count was completed in January 2007. This gave an at-planting count of 26 planted stems in the vegetation plot. Plant survival counts were conducted during July 2008 monitoring evaluation with the results showing an average density of 680 trees per acre, which is well above the minimum success criteria of 320 trees per acre. Other species noted on site included lespedeza, fennel, *Juncus* sp., sweetgum, sedge, cut grass, briars, smartweed, red maple, and various grasses. NCDOT will continue to monitor plant survival at this stream relocation.

If required to complete Level 1 and Level 2 monitoring only stop here; otherwise, complete section 3.

Plot #	Yellow Poplar	Sycamore	Water Oak	Green Ash	Total (2 year)	Total (at planting)	Density (Trees/Acre)
1	12	6	4	4	26	26	680
Average Density (Trees/Acre)							680

Section 3. CHANNEL STABILITY

Visual Inspection: The entire stream project as well as each in-stream structure and bank stabilization/revetment structure must be evaluated and problems addressed.

Report on the visual inspection of channel stability. Physical measurements of channel stability/morphology will not be required. Include a discussion of any deviations from as-built and an evaluation of the significance of these deviations and whether they are indicative of a stabilizing or destabilizing situation.

This stream relocation is highly stabilized with herbaceous vegetation for the 2008 evaluation. NCDOT will continue to monitor this stream relocation.

Date	Station Number	Station Number	Station Number	Station Number	Station Number
Structure Type					
Is water piping through or around structure?					
Head cut or down cut present?					
Bank or scour erosion present?					
Other problems noted?					

NOTE: Attach separate narrative sheets to each monitoring report describing/discussing the overall monitoring results. Include the identification of specific problem areas/channel failures, estimated cause and proposed/required remedial action. This should include a brief discussion of any parameter that has changed significantly from as-built.

UT Big Mountain Creek (Site 3)

Photo Point #1 (Upstream)

Photo Point #1 (Downstream)

Photo Point #2 (Upstream)

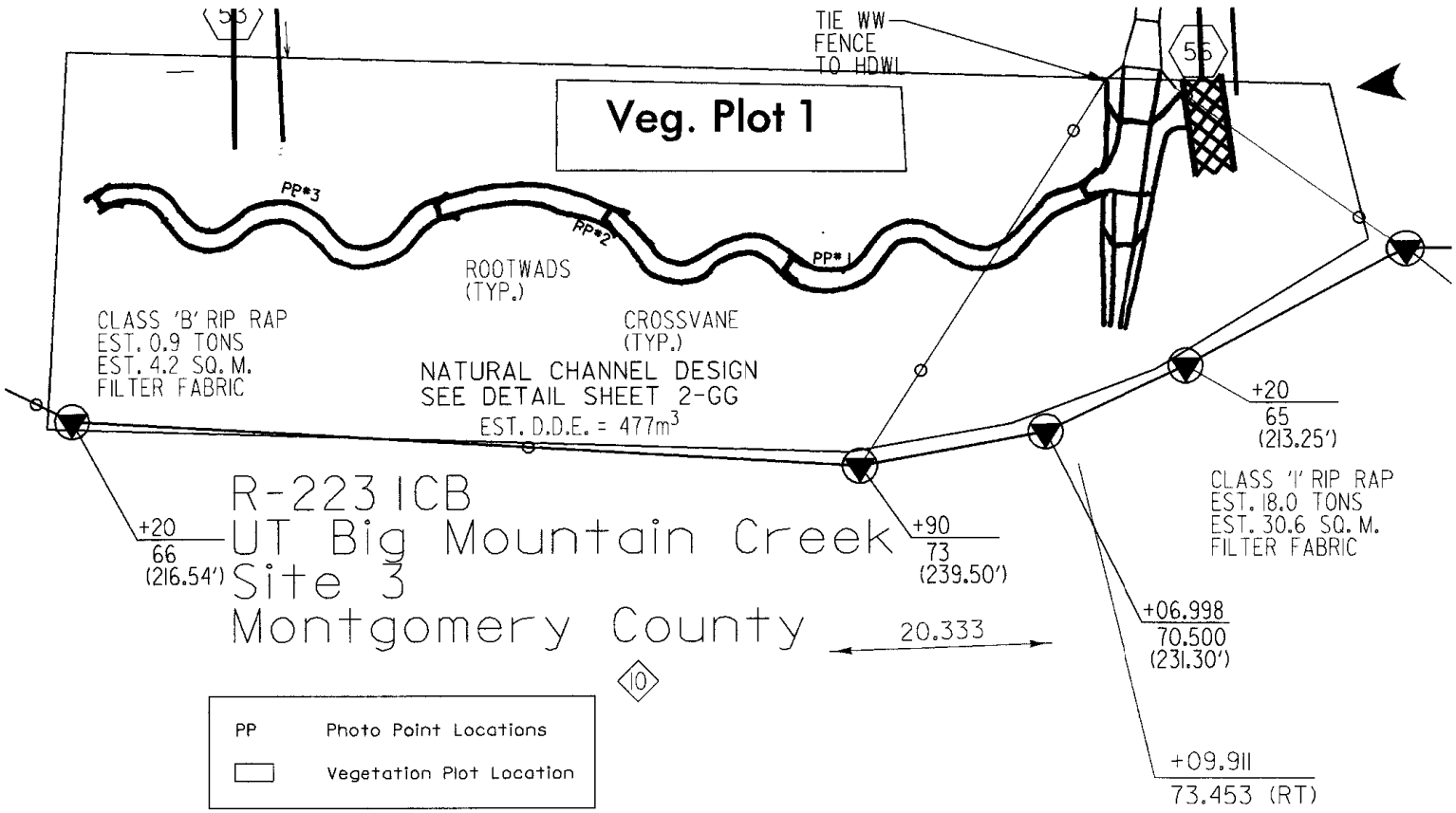
Photo Point #2 (Downstream)

Photo Point #3 (Upstream)

Photo Point #3 (Downstream)

UT Big Mountain Creek (Site 3)

Overview of Site Looking Downstream


TIE WW
FENCE
TO HDWL
56
Veg. Plot 1
PP#3
PP#2
PP#1
ROOTWADS
(TYP.)
CROSSVANE
(TYP.)
CLASS 'B' RIP RAP
EST. 0.9 TONS
EST. 4.2 SQ. M.
FILTER FABRIC
NATURAL CHANNEL DESIGN
SEE DETAIL SHEET 2-GG
EST. D.D.E. = 477m3
+20
65
(213.25')
CLASS 'I' RIP RAP
EST. 18.0 TONS
EST. 30.6 SQ. M.
FILTER FABRIC
+20
66
(216.54')
+90
73
(239.50')
R-2231CB
UT Big Mountain Creek
Site 3
Montgomery County
20.333
10
+06.998
70.500
(231.30')
+09.911
73.453 (RT)
PP Photo Point Locations
Vegetation Plot Location