# Monitoring Data Record

Project Title: R-2610A US 421 South of Siler City COE Action ID: 199700360
Stream Name: UT Deep River (Site 1) and UT Cedar Creek (Site 5)
DWQ Number: 040158
City, County and other Location Information: Chatham County, US 421 Widening
(Site 1 @ Sta. 13+20 –L- and Site 5 @ Sta. 68 + 40 –L-)
Date Construction Completed: Water was turned on 6/24/06
Monitoring Year: ( 4 ) of 5
Ecoregion: 8 digit HUC unit 03030003
USGS Quad Name and Coordinates:
**Rosgen Classification:**
Length of Project: UT Deep River (Site 1): 36 ft. & UT Cedar Creek (Site 5): 217 ft.
Urban or Rural: Rural Watershed Size:
Monitoring DATA collected by: M. Green, J. Young, & O. Pilkington Date: 6/8/11
Applicant Information:
Name: NCDOT Roadside Environmental Unit
Address: 1425 Rock Quarry Road Raleigh, NC 27610
Telephone Number: (919) 861-3772 Email address: mlgreen@ncdot.gov
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 permitte 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:**

**One photo was taken from 1 photo point location for Site 1. A total of 7 photos were taken from 4 photo point locations for Site 5 with the last photo being an overview shot.**

**Dates reference photos have been taken at this site: 6/17/08, 6/18/09, 6/17/10, 6/8/11**

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

Other Information relative to site photo reference: A site map is included with this report showing the photo point location.

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: The initial planting for these stream relocations took place on February 2006. The majority of these plants did not survive and the stream relocations were replanted by March 2008. The planting plan list the following species to be planted on the streambank: black willow and silky dogwood live stakes and in the buffer area: tulip poplar, sycamore, river birch, willow oak, and water oak bareroot seedlings. One 50' x 50' foot vegetation plot was set at Site 5. This gave an at-planting count of 42 planted stems in the vegetation plot. Plant survival counts were conducted during June 2011 monitoring evaluation with the results showing an average density of 470 trees per acre, which is well above the minimum success criteria of 288 trees per acre. Other species noted on site included hickory, green ash (multiple volunteers), fescue, ragweed, privet, pokeberry, fennel, sweetgum, sedge, *Juncus* sp., pine, goldenrod, and various grasses. Site 1 did not have a vegetation plot set due to its small planting area. Site 1 was visually inspected with sycamore, willow oak, green ash, and black willow noted onsite. NCDOT will continue to monitor plant survival at these stream relocations.

| Plot # | Tulip Poplar | Sycamore | River Birch | Willow Oak | Water Oak | Total (4 year) | Total (at planting) | Density (Trees/Acre) |
|---|---|---|---|---|---|---|---|---|
| 1 | | 14 | 5 | 9 | 1 | 29 | 42 | 470 |
| Average Density (Trees/Acre) | | | | | | | | 470 |

**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.

Both stream relocations were stable for the 4th Year of monitoring. Debris deposited onto the floodplain since the last monitoring evaluation, suggest that a bankfull event has recently occurred. NCDOT will continue to monitor these stream relocations.

| 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? | | | | | |

**Section 4. DEBIT LEDGER**

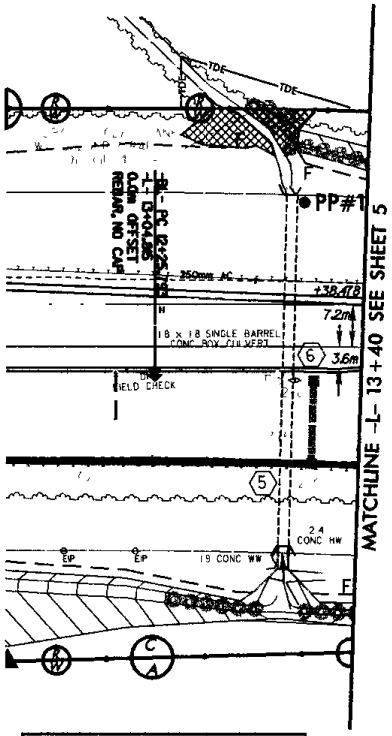
The entire UT Deep River and UT Cedar Creek stream mitigations site were used for the R-2610A project to compensate for unavoidable stream impacts.

# UT Deep River (Site 1)

Photo Point #1 (Looking Downstream)

# 0.01 HECTARE STREAMBANK REFORESTATION

## UT TO DEEP RIVER
## SITE 1
## R 2610A
## CHATHAM CO.




⊕ Photo Point Location

SEE RF-2 AND PROJECT SPECIAL PROVISIONS

# UT Cedar Creek (Site 5)

Photo Point #1 (Upstream)

Photo Point #1 (Downstream)

Photo Point #2 (Upstream)

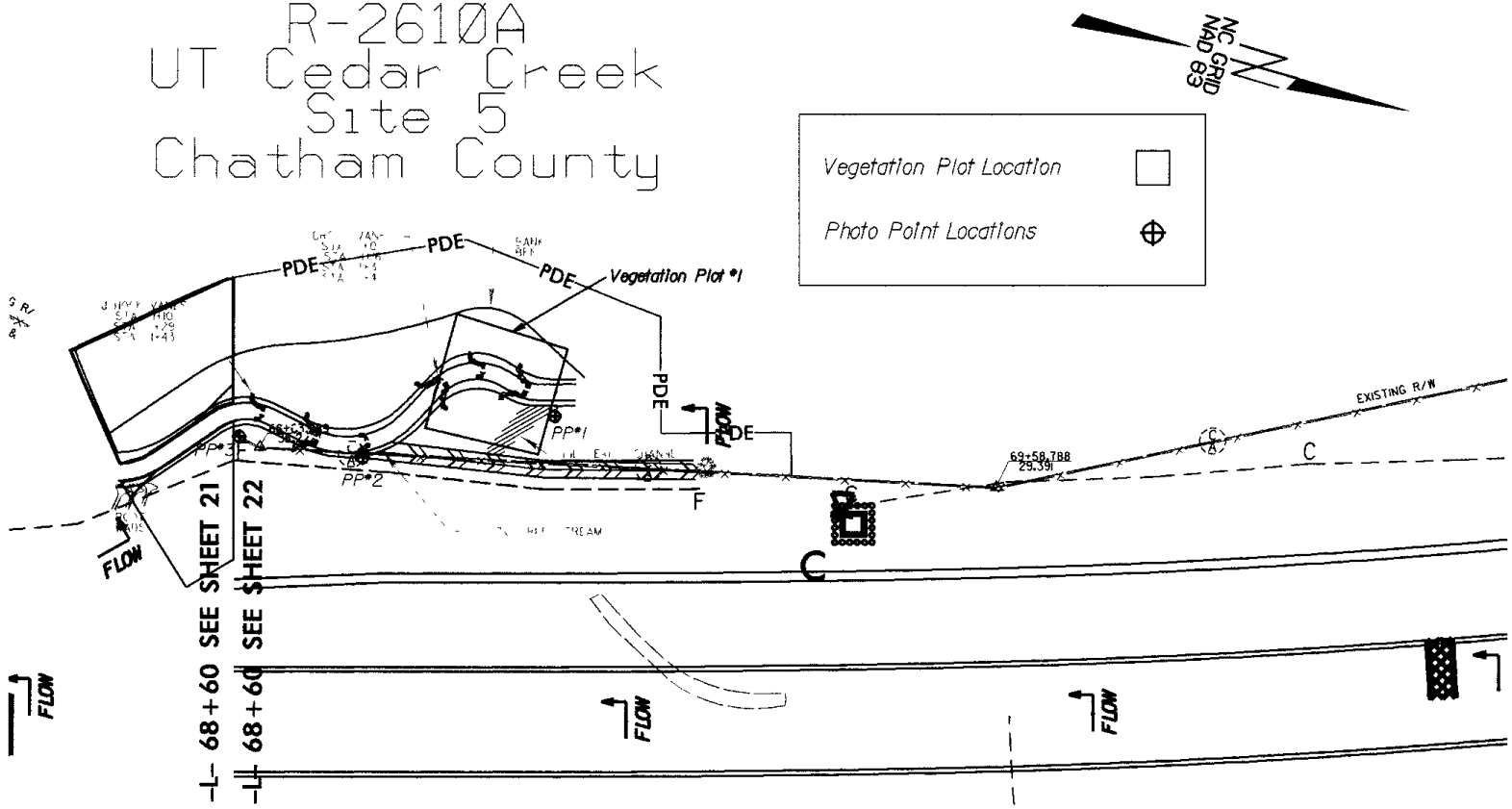
Photo Point #2 (Downstream)

Photo Point #3 (Upstream)

Photo Point #3 (Downstream)

Year 4 – June 2011

# UT Cedar Creek (Site 5)

Overview Photo of Site 5

# R-2610A
# UT Cedar Creek
# Site 5
# Chatham County