

Stream Restoration Lessons Learned in North Carolina



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Stream Restoration

Altering the channel and floodplain to improve stream functions:

- physical
- biological
- recreational



Goals of Restoration Projects?

Enhance functions of natural systems

1. **Physical:** Hydrologic & geologic
2. **Chemical:** Water quality improvement
3. **Biological:** Habitat (optimal & diverse)
4. **Society Value:** Recreation & aesthetics



Stream Restoration Components

1. Stream channel dimension, pattern, and profile
2. Floodplain connection
3. Instream structures
4. Streambank stabilization
5. Riparian corridor vegetation
6. Habitat enhancement



Long Creek

Bessemer City, NC

DA = 0.5 mi²
Length = 1500 ft
Completed 3/96
Const Cost = \$20,000
Funding: EPA 319
Designer: NCSU





1996



1996



2002



2002







Kentucky Creek

Newland, NC

DA = 2 mi²

Length = 600 ft

Completed 4/03

Const Cost = \$20,000

Funding: NC CWMTF

Designer: NCSU













2004 – after Ivan





2004 – after Ivan





2004 – after Ivan





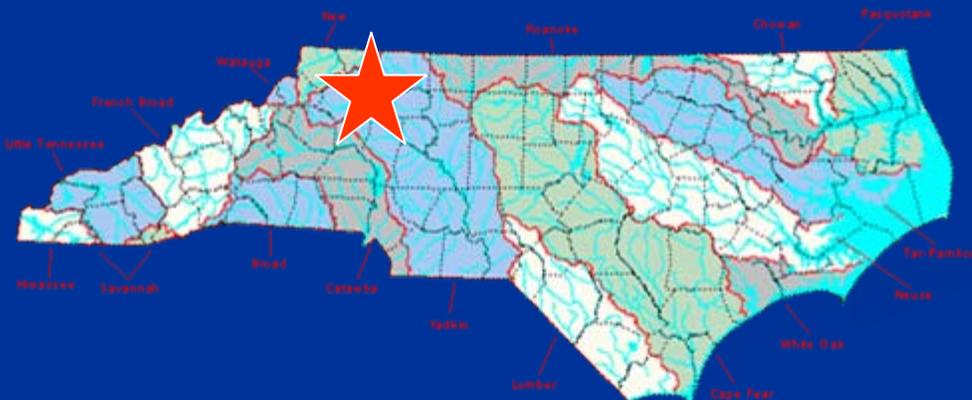
Case Study: East Prong Roaring River *Stone Mountain State Park*

DA = 20 mi²

Length = 10,000 ft

Completed 2000

Const Cost = \$600,000





4 29 01

June 2000



June 2005



September 2000



June 2005



September 2000



June 2005



Little Garvin Creek, Clemson, SC

DA = 3 mi²

Length = 1200 ft

Completed 10/02

Const Cost = \$60,000





October 2002



October 2002



October 2002



November 2002



November 2002



November 2002



December 2002



December 2002



March 2003



March 2003



September 2003



November 2003





Rocky Branch Restoration Project



NC State University
NC Sea Grant
NC Dept of Transportation
NC Clean Water Management
Trust Fund
NC Division Water Quality
USEPA
FEMA







Library Storage Facility

University Graphics

Administrative Services Center

Environmental Health and Safety Center

Campus Police Facility

West Lot

Buller Communication Building

Grinnell's Lab

Doak Field

Lee Field

Visitor Pay Lot

Sullivan

Lee

Fountain Dining Hall

Bragaw

Schaub

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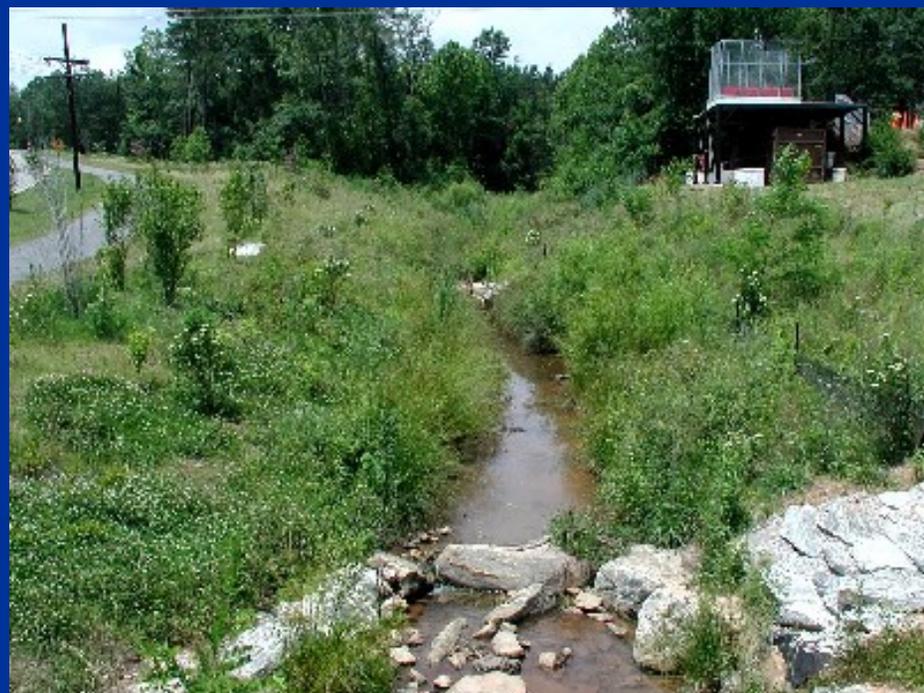
Pointer 35°47'12.75" N 78°40'33.63" W elev 394 ft

Streaming 100%

Eye alt 2951 ft

Reach 1







Reach 2















Reach 4









Summary

- Many projects are working to improve stability & habitat
- Habitat improvements may not be observed for many years
- Urban projects require more attention
- Quality construction will make or break a project
- Projects must be ready to withstand large flows soon after construction
- Vegetation is the weakest element of many projects
- Learn from mistakes!!!

