Chapter Topics

- EEP
- Forestry

CHAPTER 7

OTHER NATURAL RESOURCE PROGRAMS

IN THE ROANOKE RIVER BASIN

NATURAL RESOURCE PROGRAMS

The efforts of several Natural Resource Programs are discussed throughout this basin plan. Many of these programs are mentioned in the Subbasin Chapters as part of a coordinated effort to protect and/or restore water quality and are locally based. Other programs which have similar purposes but have a basinwide, state or national focus are discussed in more detail in this chapter. This chapter is by no means a complete listing of Natural Resource Programs that are active in the Roanoke River basin, but rather a discussion of a few highly active programs and their involvement in restoration and/or protection efforts within the basin.

Several locally based Natural Resource Programs and their efforts during this planning cycle are discussed in the **Voluntary Incentive Programs & Local Initiatives Chapter**.

ECOSYSTEM ENHANCEMENT PROGRAM (EEP)

EEP uses watershed planning at two scales (basinwide and local) to identify the best locations to implement stream, wetland and riparian buffer restoration/enhancement and preservation projects. The planning process considers where mitigation is needed and how mitigation efforts might contribute to the improvement of water quality, habitat and other vital watershed functions in the state. Watershed planning requires GIS data analysis, stakeholder involvement, water quality monitoring, habitat assessment and consideration of local land uses and ordinances. It is a multi-dimensional process that considers science, policy and partnerships.

RIVER BASIN RESTORATION PRIORITIES

Table 7-1: Roanoke River TLWs & LWPs by Subbasin (as of October 2009)

HUC	TLWs (#)	LWPs (# - Names)
03010102	1	None to date
03010103	7	None to date
03010104	3	None to date
03010106	1	None to date
03010107	15	None to date
Total:	**27**	**0**

EEP River Basin Restoration Priorities (RBRPs) are focused on the identification of Targeted Local Watersheds (TLWs) within the 8-digit Cataloging Units (subbasins) that comprise individual river basins. TLWs represent priority areas (14-digit HUCs) for the implementation of stream and wetland mitigation projects. GIS screening factors considered in the selection of TLWs include (among others): documented water quality impairment and habitat degradation, the presence of critical habitat or significant natural heritage areas, the presence of water supply watersheds or other high quality waters, the condition of riparian buffers, estimates of impervious cover, existing or planned transportation projects, and the opportunity for local partnerships. Recommendations from local resource agency professionals and the presence of existing watershed projects are given significant weight in the selection of TLWs. RBRP documents (and TLW selections) for each of the 17 river basins in North Carolina are updated periodically to account for changing watershed conditions, increasing development pressures and local stakeholder priorities.

The most recent updates to the Roanoke River Basin TLWs occurred in 2009. In total, 27 14-digit HUCs have been designated TLWs by EEP in the Roanoke Catalog Units (Table 7-2). This updated RBRP, including a summary table and map of Targeted Local Watersheds, can be found at EEP's website for the 2009 report.

LOCAL WATERSHED PLANNING

EEP Local Watershed Planning (LWP) initiatives are conducted in specific priority areas (typically a cluster of two or three Targeted Local Watersheds) where EEP and the local community have identified a need to address critical watershed issues. The LWP process typically takes place over a two-year period, covers a planning area around 50 to 150 square miles, and includes three distinct phases: I - existing data review and preliminary watershed characterization (largely GIS-based); II – detailed watershed assessment (including water quality & biological monitoring and field assessment of potential mitigation sites); and III – development of a final Project Atlas and Watershed Management Plan. EEP collaborates with local stakeholders and resource professionals throughout the process to identify projects and management strategies to restore, enhance, and protect local watershed resources. Currently, EEP has not undertaken any LWP initiatives in the Roanoke River Basin.

EEP PROJECTS IN THE ROANOKE RIVER BASIN

As of August 2011, EEP had a total of 19 mitigation projects in some stage of being completed in the Roanoke Basin. These stages include identification/acquisition; design; construction; monitoring (construction complete); and long-term stewardship. Table 7-3 provides details on these projects that include stream and wetland restoration/enhancement and preservation projects. In total, EEP is in some stage of restoration or enhancement on over 57,000 feet of stream and 403 acres of wetlands in the Roanoke. In addition, the program is in some stage of preservation on over 89,000 feet of stream and 5,200 acres of wetlands. For additional information about EEP's Project Implementation efforts, go to the EEP Project Implementation webpage. To view the locations of these project sites, go to EEP's Portal Map site.

Table 7-2: EEP Projects in Some Stage of Completion in the Roanoke River Basin By Subbasin

HUC	Projects (#)	Stream Restoration/ Enhancement (ft)	Stream Preservation (ft)	Wetland Restoration/ Enhancement (ac)	Wetland Preservation (ac)
03010102	1	2,539	12,710	0	0
03010103	5	15,666	9,575	0	0
03010104	4	18,033	15,623	89	19
03010106	1	5,062	0	0	0
03010107	8	16,199	51,911	314	5,232
Total:	**19**	**57,499**	**89,819**	**403**	**5,251**

For more information on EEP Planning in the Roanoke, please call Rob Breeding at 919-733-5311 or send email to rob.breeding@ncdenr.gov.

For more on mitigation projects in the Roanoke, please call or email the following project managers:

- Robin Hoffman (03010102) at 919-715-5836 or robin.hoffman@ncdenr.gov
- Perry Sugg (03010103 & 03010104) at 919-715-1359 or perry.sugg@ncdenr.gov
- Kristie Corson (03010104) at 919-715-1954 or kristie.corson@ncdenr.gov
- Heather Smith (03010106 & 03010107) at 919-715-5590 or heather.c.smith@ncdenr.gov
- Tracy Stapleton (03010107) at 919-715-1657 or tracy.stapleton@ncdenr.gov
- Stephanie Horton (High Quality Preservation Projects in 03010103, 03010104, and 03010107) at 919-715-1263 or stephanie.horton@ncdenr.gov

Forestry

Forestland Ownership*

Approximately 85% of the forestland in the basin is privately-owned. The most notable public forested lands in the basin include Hanging Rock State Park, Kerr Lake State Park, and the Roanoke River National Wildlife Refuge. Within North Carolina's portion of this river basin, there are no State Forest or National Forest lands.

* The ownership estimates come from the most recent data published by the USDA-Forest Service ("Forest Statistics for North Carolina, 2002." Brown, Mark J. Southern Research Station Resource Bulletin SRS-88. January 2004).

Forest Water Quality Regulations

Forestry operations in North Carolina are subject to regulation under the Sedimentation Pollution Control Act of 1973 (Article 4-GS113A, referred to as "SPCA"). However, forestry operations may be exempted from specific requirements of the SPCA if the operations meet the compliance performance standards outlined in the *Forest Practices Guidelines Related to Water Quality* (15A NCAC 1I .0100 - .0209, referred to as "FPGs") and General Statutes regarding stream and ditch obstructions (GS 77-13 and GS 77-14).

The FPG performance standard rule-codes and topics include:

- .0201: Streamside Management Zone (SMZ)
- .0202: Prohibition of Debris Entering Streams and Waterbodies
- .0203: Access Road and Skid Trail Stream Crossings
- .0204: Access Road Entrances
- .0205: Prohibition of Waste Entering Streams, Waterbodies, and Groundwater
- .0206: Pesticide Application
- .0207: Fertilizer Application
- .0208: Stream Temperature
- .0209: Rehabilitation of Project Site

The NC Forest Service (NCFS) is delegated the authority to monitor and evaluate forestry operations for compliance with these aforementioned laws and/or rules. In addition, the NCFS works to resolve identified FPG compliance questions brought to its attention through citizen complaints. Violations of the FPG performance standards that cannot be resolved by the NCFS are referred to the appropriate State agency for enforcement action. During the period January 1, 2004 through December 31, 2010 there were 2,782 sites in the basin inspected for FPG compliance; approximately 95% of the sites were in compliance upon the initial site inspection.

OTHER WATER QUALITY REGULATIONS

In addition to the multiple State regulations noted above, NCFS monitors the implementation of the following Federal rules relating to water quality and forestry operations:

- The Section 404 silviculture exemption under the Clean Water Act for activities in wetlands;
- The federally-mandated 15 best management practices (BMPs) related to road construction in wetlands;
- The federally-mandated BMPs for mechanical site preparation activities for the establishment of pine plantations in wetlands of the southeastern U.S.

WATER QUALITY FORESTERS

The entire river basin is included within the coverage area of a Water Quality Forester. Statewide, there is a Water Quality Forester position in 9 of NCFS 13 operating districts. Water Quality Foresters handle FPG inspection and follow-ups, assist with BMP implementation, develop pre-harvest plans, and provide training opportunities for landowners, loggers and the public regarding water quality issues related to forestry. These foresters also assist County Rangers on follow-up site inspections and provide enhanced technical assistance to local agency staff. Water Quality Foresters are the primary point of contact in their districts for responding to water quality or timber harvesting questions or concerns that are suspected to be related to forestry activities.

FORESTRY BEST MANAGEMENT PRACTICES

Implementing forestry Best Management Practices (BMPs) is strongly encouraged to efficiently and effectively protect the water resources of North Carolina. In 2006, the first ever revision to the North Carolina forestry BMP manual was completed. This comprehensive update to the forestry BMP manual is the result of nearly four years of effort by the NCFS and a forestry Technical Advisory Committee consisting of multiple sector stakeholders, supported by two technical peer-reviews. The forestry BMP manual describes measures that may be implemented to help comply with the forestry regulations while protecting water quality. Copies of the forestry BMP manual can be obtained at a County or District office, or online.

In the basin during this period, the NCFS assisted with or observed more than 4,500 forestry activities in which BMPs were either implemented or recommended, encompassing a total area greater than 227,000 acres.

From 2006 to 2008, the NCFS conducted its second cycle of BMP implementation site assessment surveys to evaluate the use of forestry BMPs, and qualitatively assess the strengths and weaknesses of BMPs in regards to protecting water quality. In total, the BMP evaluations were completed on 212 active logging sites, with 23 sites located in this river basin. The statewide average BMP implementation rate observed during this survey was 85%, while the rate of BMP implementation on those sites located in this river basin was 84%. A copy of the survey report (PDF, 5MB) is available from the website. These periodic, recurring BMP surveys serve as a basis for focused efforts in the forestry community to address water quality concerns through better and more effective BMP development, implementation and training.

PROTECTING STREAM CROSSINGS WITH BRIDGEMATS

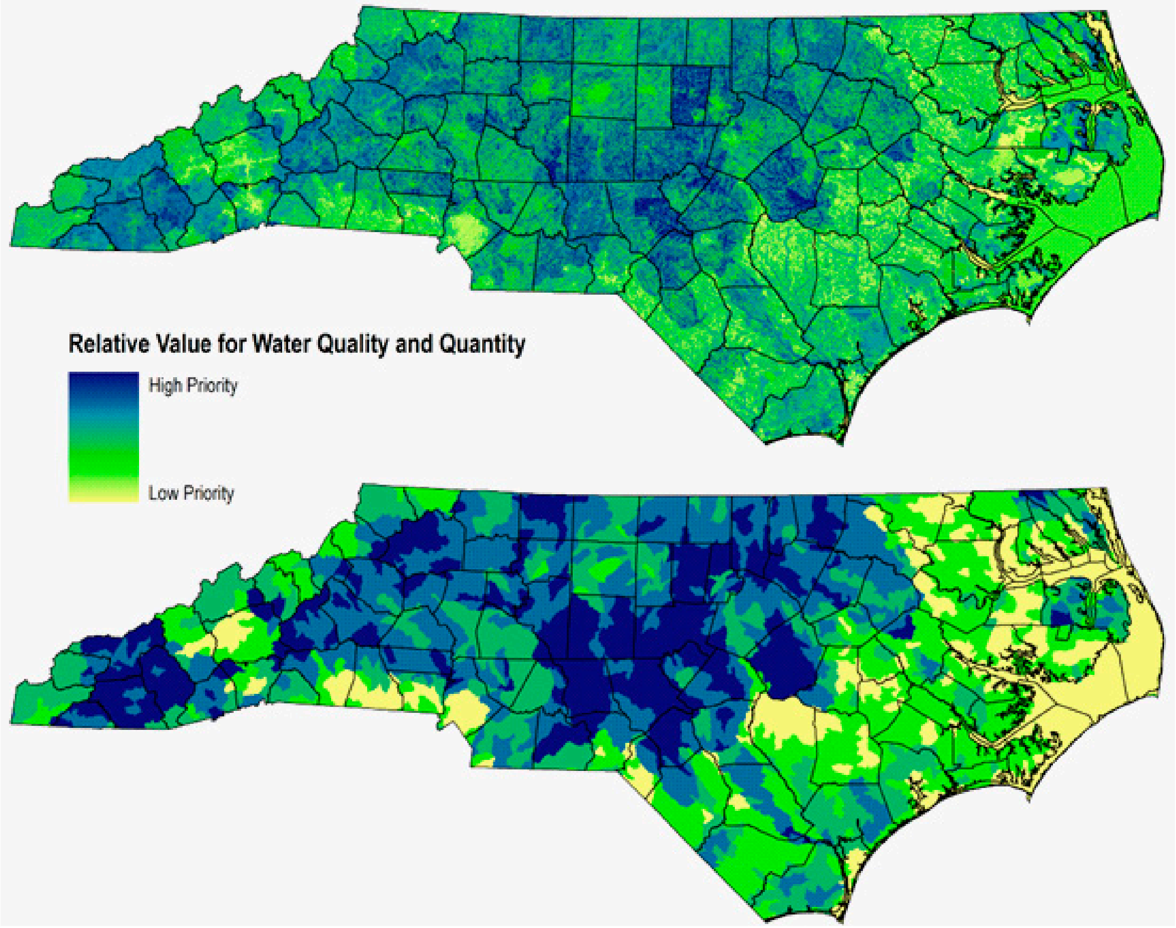
The NCFS provides bridgemats on loan to loggers for establishing temporary stream crossings during harvest activities in an effort to educate loggers about the benefits of installing crossings in this manner. Temporary bridges can be a very effective solution for stream crossings, since the equipment and logs stay completely clear of the water channel. Bridgemats are available for use in this river basin, and have been for several years. Periodic status reports, a list of bridgemat suppliers, and additional information are available on the NCFS Bridgemat webpage.

FOREST REGENERATION & PLANNING

Forest management is a valued and prevalent land-use across much of the river basin. As a testament to this, over 66,000 acres of land were established or regenerated with forest trees across the basin from January 1, 2004 through December 31, 2010. During this same time period, more than 4,300 individual forestry-related plans were produced for landowners, encompassing nearly 242,000 of forestland.

In 2010, a comprehensive long-range forest assessment and strategy report was completed, entitled North Carolina’s Forest Resource Assessment-2010. This report includes an overall assessment of the state’s forestland as well as strategies to promote long-term sustainability of the forests. As part of the assessment, a spatial analysis was conducted to identify forestlands that are critical for sustaining clean and abundant water supplies, and several sections of the Roanoke River basin were indicated as high priority (indicated by Figures 4f-8a and 4f-8b in the assessment report, Figure 7-1), including much of the Dan River system and portions of the central river basin near the existing lakes system. This statewide forest resource assessment is available on the 2010 NC Forest Assessment website.

Figure 7-1: Priority Forests for Water Quality and Quantity, NCFS, D.Jones, 2010



Bottomland Hardwood/Cypress Swamps

Across the lower reach of the Roanoke River basin, (and elsewhere in North Carolina) there are prime examples of high-quality and highly productive bottomland hardwood/cypress swamps. These swamps have provided a sustainable source of wood fiber for well over 200 years, and served as the foundation for the creation of the forest products industry in eastern North Carolina. Since the settlement of North Carolina in colonial times, our forests have been harvested multiple times, including these hard-to-access swamps. Practically-speaking, it is inconceivable that any “old growth” or “virgin” timber remain in this region.

A diversity of forest tree species are adapted to grow in these bottomland swamps, some regenerating by seed and others primarily by sprouting from severed stumps. Nearly all swamp-adapted tree species require full sunlight to adequately regenerate, thus necessitating a removal of the shading overstory. The planting of trees to regenerate a swamp after a timber harvest is not commonly observed as a suitable or viable silviculture practice due to the cyclic nature of the hydrology in a specific swamp, fluctuations in the water table, and the obvious difficulty of site access for tree planting.

Management of a swamp forest is relatively passive when compared with pine or upland hardwood forest areas. Once the new stand of trees has successfully regenerated, there is usually little need to conduct intermediate stand treatments that might otherwise be suitable on pine or upland hardwood forests. Implementing a silviculturally-sound swamp timber harvest in a manner that minimizes soil and water impacts has shown to be the practical and viable prescription for forest management in swamps.

Regardless of the method used to harvest timber, measures should be taken to promote timely regeneration of native forest tree species in the harvested area. In addition, timber harvesting conducted during high water levels (such as flooding or seasonal high water tables) may create turbidity levels that can exceed natural background turbidity levels. Timber harvesting should ideally be conducted during relatively dry periods and should implement appropriate BMPs to minimize impacts to water and soil resources.

NORTH CAROLINA FOREST SERVICE (NC-DFR) CONTACTS FOR THE ROANOKE RIVER BASIN:

Additional contact information, including specific counties, is available online.

TABLE 7-3: NC DIVISION OF FORESTRY RESOURCES CONTACTS IN THE ROANOKE RIVER BASIN

OFFICE LOCATION	CONTACT PERSON	PHONE
Lexington District - D10 (upper Roanoke, Dan R.)	Water Quality Forester	(336) 956-2111
Hillsborough District - D11 (Caswell co. to Vance co.)	Water Quality Forester	(919) 732-8105
Rocky Mount District - D5 (Warren, Halifax, N-hampton co)	Water Quality Forester	(252) 442-1626
Elizabeth City District - D7 (lower Roanoke)	Water Quality Forester	(252) 331-4781
Eastern region - Region I	Asst. Regional Forester for Forest Management	(252) 520-2402
Central region - Region II	Asst. Regional Forester for Forest Management	(919) 542-1515
State Central Office, Raleigh	Nonpoint Source Branch - Forest Hydrologist	(919) 857-4856
Griffiths Forestry Center, Clayton	Water Quality & Wetlands Staff Forester	(919) 553-6178 Ext. 230