1.1 Workshop Summaries

In June 2001, there were four workshops held by DWQ in the Neuse River basin at Durham, Raleigh, Goldsboro and New Bern. There were 134 people in attendance representing a variety of interests. Figure C-1 gives an estimation of groups/interests represented based on information recorded on attendance sheets.

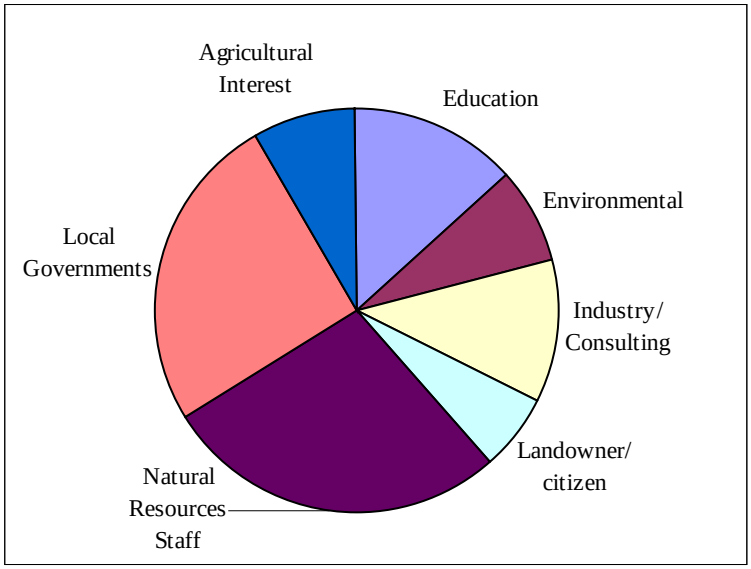


Figure C-1 Percent of Total Attendance by Various Interests at DWQ Water Quality Workshops in the Neuse River Basin (2001)

DWQ staff gave presentations about general water quality in the Neuse River basin, basinwide planning and the Wetlands Restoration Program. Participants at each workshop also gave brief presentations about local water quality initiatives. Workshop attendees were asked to discuss the following questions in small groups:

1. What are the main threats to water quality in the Neuse River basin?
2. Where are the problem areas or waters?
3. What recommendations do you have for addressing these problems/waters?
4. What local agencies or organizations should be involved in addressing the problems?

A detailed outline of each small group's discussion of these questions is available upon request. Good discussion was generated at each workshop, and all of the information was considered and, in some cases, incorporated into this draft plan. The most frequently cited threats to water quality identified by workshop participants are discussed below.

Important Issues Basinwide

The most important issues identified by workshop participants were related to development. Increasing development was a concern specifically identified as a problem for five specific streams in the upper basin. Losses of farm and forestland and increases in impervious surface, home fertilizer use and stormwater runoff were identified as a threat to water quality at all the workshops. Issues related to enforcement of existing rules and monitoring were also of concern at all workshops. Refer to Appendix V for summary tables from the workshops.

1.2 Federal Initiatives

1.2.1 Clean Water Act – Section 319 Program

Section 319 of the Clean Water Act provides grant money for nonpoint source demonstration projects. Approximately $1 million is available annually for demonstration and education projects across the state. Project proposals are reviewed and selected by the North Carolina Nonpoint Source Workgroup, made up of state and federal agencies involved in regulation or research associated with nonpoint source pollution. Information on the North Carolina Section 319 Grant Program, including application deadlines and requests for proposals, are available online at http://h2o.enr.state.nc.us/nps/bigpic.htm.

There are eight projects in the Neuse River basin that have been funded (federal Section 319 money must be matched with nonfederal dollars) through the Section 319 base program between 1994 and 2000.

Many projects sponsored through Section 319 funding have basinwide applications. Many are demonstration projects and educational programs that allow for the dissemination of information to the public through established programs such as through NC State University and the NC Cooperative Extension Service. Such programs include Upper, Middle and Lower Neuse Education Teams, which have been responsible for educating the public about impacts to water quality, as well as developing demonstration sites for water quality BMPs. Information on this program is available at http://www.neuse.ncsu.edu/.

Descriptions of the projects listed below and other Section 319 program information are available at http://h2o.enr.state.nc.us/nps/319.htm.

Table C-1 Projects Funded Through Clean Water Act Section 319

FY	Project Name	Agency	Project Area	Description
1999	Nahunta Swamp Watershed Conservation Tillage	Wayne & Greene SWCD	Nahunta Swamp area	Reduce sediments and nutrients in runoff from cotton farming
1999	Smith & Austin Stream Restoration and Riparian Buffer Project	Wake County SWCD	Smith and Austin Creeks, Wake County	Streambank stab., est. rip. buffers, stream monitoring, education
1999	Crabtree Creek Urban Planning Project	NC Cooperative Extension Service	Cary, NC	WQ monitoring of constructed wetlands, bioretention, BMPs
1997	Riparian Buffers and Controlled Drainage Evaluation	NCSU-Biol. & Ag. Eng.	Wayne County	Installation and monitoring of controlled drainage and riparian buffer BMPs
1996	Goose Creek Urban Stream Rehabilitation Project	Durham SWCD	Ellerbe Creek Watershed, Durham	Stream restoration, education
1995	Wetlands Restoration as Water Quality BMP	NC Cooperative Extension Service	Wetlands Reserve Program site, Craven County	Demonstrate and evaluate wetlands restoration for WQ benefits
1994	Open Ground Farms Demonstration Project	Carteret County SWCD	South Creek headwaters	Demonstrate Water Quality BMPs
1994	Farm and Home Assessment System	NC Coop. Ext. Service	Johnston County (ag. pilot area)	Educational program on environmental impacts

1.2.2 USDA – NRCS Environmental Quality Improvement Program (EQIP)

The Environmental Quality Incentives Program provides technical, educational and financial assistance to eligible farmers and ranchers to address soil, water and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program provides assistance to farmers and ranchers in complying with federal and state environmental laws and encourages environmental enhancement. The purposes of the program are achieved through the implementation of a conservation plan that includes structural, vegetative and land management practices on eligible land. Five to ten-year contracts are made with eligible producers. Cost share payments may be made to implement one or more eligible structural or vegetative practices, such as animal waste management facilities, terraces, filter strips, tree planting and permanent wildlife habitat. Incentive payments can be made to implement one or more land management practices, such as nutrient management, pest management and grazing land management.

Fifty percent of the funding available for this program will be targeted at natural resource concerns relating to livestock production. The program is carried out primarily in priority areas that may be watersheds, regions or multistate areas and for significant statewide natural resource concerns that are outside of geographic priority areas. EQIP's authorized budget of $1.3 billion is prorated at $200 million per year through the year 2002.

NRCS district contacts for the Neuse River basin are included on the nonpoint source contact sheet found in Appendix VI or visit the website at http://www.nc.nrcs.usda.gov/Programs/eqip.htm for more information.

1.3 State Initiatives

1.3.1 Albemarle-Pamlico National Estuary Program

The Albemarle-Pamlico National Estuary Program (APNEP), formerly known as the Albemarle-Pamlico Estuarine Study (APES), was among the first National Estuary Programs established by the EPA in 1987. The mission of the APNEP is to identify, restore and protect the significant resources of the Albemarle-Pamlico estuarine system. Unlike traditional regulatory approaches to environmental protection, the APNEP is a cooperative effort jointly sponsored by NCDENR and the EPA that targets a broad range of issues and engages local communities in the process.

The program focuses not just on improving water quality in the region's estuaries, but on maintaining the integrity of the whole system -- its chemical, physical and biological properties, as well as its economic, recreational and aesthetic values. Important components of the APNEP are the consideration of water quality, fisheries resources, land and water habitats, and the interaction of humans with the natural resources of the estuarine system. The APNEP is designed to encourage local communities to take responsibility for managing the resources in their respective jurisdictions.

Comprehensive Conservation and Management Plan

Since 1987, research generated by the APNEP has been instrumental to the development of a Comprehensive Conservation and Management Plan (CCMP). This plan is composed of recommendations for management strategies that address concerns in the Albemarle-Pamlico Sounds region and to protect the system's estuarine resources.

During the development of the CCMP, the APNEP was guided by a 95-member Management Conference that represented diverse interests. Four committees were responsible for identifying problems in the estuarine system, generating research where gaps in knowledge existed, increasing public awareness of environmental issues, and finding solutions to address those issues. As a result of these efforts, more is known about the Albemarle-Pamlico estuarine system than ever before.

One of the recommendations of the CCMP was to develop regional councils in each of the five major river basins of the Albemarle-Pamlico watershed for the purpose of fostering public input into the APNEP program. In 1995, an Executive Order was issued by the Governor of North Carolina calling for the creation of these regional councils. The Neuse River Basin Regional Council is highlighted below.

CCMP Development Involved Diverse Interests Including:

- Federal and state government
- University researchers
- Environmental groups
- Agriculture representatives
- Forestry interests
- Industry representatives
- Developers
- Fishermen
- Local elected officials

Currently, the APNEP is administered and staffed by DWQ; however, staff works closely with the EPA's Office of Water to implement the many objectives and key management actions contained in the APNEP's CCMP.

Neuse River Basin Regional Council

Each regional council is comprised of elected and appointed county and municipal officials, representatives from agriculture, silviculture, commercial and recreational fishing, conservation, environmental science, business/industry and tourism groups. Each council is charged with identifying and implementing a project that utilizes innovative or unique management strategies to address a priority watershed problem. Regional councils provide a forum for public, special interest and local government involvement in the APNEP.

For more information regarding the Albemarle-Pamlico National Estuary Program, visit the website at http://h2o.enr.state.nc.us/nep/.

1.3.2 NC Agriculture Cost Share Program

The North Carolina Agriculture Cost Share Program was established in 1984 to help reduce the sources of agricultural nonpoint source pollution to the state's waters. The program helps owners and renters of established agricultural operations improve their on-farm management by using Best Management Practices (BMPs). These BMPs include vegetative, structural or management systems that can improve the efficiency of farming operations while reducing the potential for surface and groundwater pollution. The Agriculture Cost Share Program is a voluntary program that reimburses farmers up to 75 percent of the cost of installing an approved BMP. The program is implemented by the Division of Soil and Water Conservation (DSWC). The cost share funds are paid to the farmer once the planned control measures and technical specifications are completed. The annual statewide budget for BMP cost sharing is approximately 6.9 million.

From 1993 to 2001, $6,345,236 was provided for projects in counties wholly or partially in the Neuse River basin. The projects affected over 162,000 acres and saved almost 510,000 tons of soil from erosion. Also, 1,729,107 pounds of nitrogen and 441,914 pounds of phosphorus were saved (NCDENR-DSWC, 2001, personal communication).

Soil and Water Conservation District contacts for the Neuse River basin are included in Appendix VI or visit the website at http://www.enr.state.nc.us/DSWC/files/acs.htm for more information.

1.3.3 Coastal Habitat Protection Plans

The North Carolina Fisheries Reform Act of 1997 requires the North Carolina Department of Environment and Natural Resources to prepare Coastal Habitat Protection Plans (CHPPs) for the "long-term enhancement of coastal fisheries associated with each coastal habitat…." The plans describe the fisheries, fishery habitats and water quality affecting coastal fisheries stocks in the eight river basins that drain to the coast of North Carolina. Although staff of the Division of Marine Fisheries (DMF) is responsible for actually writing the plans, DWQ and the Wildlife Resources Commission, as well as the Divisions of Coastal Management (DCM) and

Environmental Health (DEH), are heavily involved in the program. The Environmental Management, Coastal Resources and Marine Fisheries Commissions review and approve the plans, and those commissions are responsible for any new rules necessary for implementation of the plans.

The plans are organized by geographic area with 11 management units, including the Neuse River basin, that generally correspond with the DWQ Basinwide Planning Program units. A general source document includes regional and summary information. The management unit plans are specific to their areas, including detailed information and specific recommendations addressing conservation, habitat protection and enhancement, water quality improvement, research and monitoring, and administrative actions. A complete plan includes both the source document and the management unit plan. The first two area plans are underway in 2001: Chowan and Coastal Ocean.

For additional information about CHPPs, contact Mike Street by calling 1-800-682-2632 (in NC) or by e-mail at mike.street@ncmail.net. You may also visit the DMF website at http://www.ncfisheries.net/habitat/chpp1.htm.

1.3.4 North Carolina Wetlands Restoration Program

The North Carolina Wetlands Restoration Program (NCWRP) is a nonregulatory program responsible for implementing wetland and stream restoration projects throughout the state. The focus of the program is to improve watershed functions in the 17 river basins across the state by restoring wetlands, streams and riparian buffers within selected local watersheds. These vital watershed functions include water quality protection, floodwater retention, fisheries and wildlife habitat, and recreational opportunities. The NCWRP is not a grant program. Instead, the program funds local restoration projects directly through the Wetlands Restoration Fund.

Restoration sites are targeted through the development and use of Watershed Restoration Plans (formerly called "Basinwide Wetland and Riparian Restoration Plans"). The restoration plans are developed, in part, using information compiled in DWQ's Basinwide Water Quality Plans and Basinwide Assessment Reports. The NCWRP Plans evaluate resource data and existing water quality initiatives within local watersheds in order to select "Targeted Local Watersheds". Targeted Local Watersheds are areas with the greatest need and opportunity for stream and wetlands restoration efforts, and where NCWRP resources can be most efficiently focused for maximum restoration benefit. The NCWRP Watershed Restoration Plans are updated every five years, generally on the same timeline as DWQ's Basinwide Water Quality Plans.

The selection of Targeted Local Watersheds (at the scale of NRCS 14-digit Hydrologic Units, or HUs) does not necessarily restrict the location of NCWRP restoration project sites. However, these targeted HUs are given higher priority than non-targeted HUs in considering the selection of NCWRP candidate restoration project sites. Targeted Local Watersheds are simply local watersheds where stream, wetland and riparian buffer restoration projects will make the most sense in the context of overall watershed and wetlands protection.

The NCWRP is also working to develop comprehensive Local Watershed Plans within certain Targeted Local Watersheds identified in the Watershed Restoration Plans. These locally-based

plans develop comprehensive watershed assessments to identify causes and sources of nonpoint source impairment. They also identify and prioritize wetland areas, stream reaches, riparian buffer areas and best management practices that will provide significant water quality improvement and other environmental benefits to local watersheds. The NCWRP will coordinate with local community groups, local governments and others to develop and implement these plans.

Selection of a watershed as a Targeted Local Watershed does not mean that a Local Watershed Plan will be initiated in that area. Local Watershed Plans are developed in areas that have extensive future mitigation needs, while Targeted Local Watersheds are selected as part of the NCWRP planning process for the Basinwide Watershed Restoration Plans.

The NCWRP also has two EPA grants focused in the Neuse basin. Through the Upper Neuse River Basin Association grant the NCWRP is developing a Watershed Management Plan for subbasin 03-04-01, as well as Local Watershed Plans for the Ellerbe Creek and Lake Rogers watersheds (also within subbasin 03-04-01). There is also currently a grant to develop a watershed assessment and restoration plan for the Hominy Swamp Creek watershed in Wilson. This grant has already produced a high-resolution land cover analysis for the watershed, as well as an assessment of factors contributing to water quality impairment in the upper portion of the watershed. Also, the NCWRP is currently in year one of the five-year post-construction monitoring of a 2,232-linear foot stream restoration project in a city park in Wilson.

The NCWRP can perform restoration projects cooperatively with other state or federal programs or environmental groups. For example, the NCWRP's efforts can complement projects funded through the Section 319 Program. Integrating wetlands or riparian area restoration components with Section 319-funded or proposed projects will often improve the overall water quality benefits of the project. The NCWRP actively seeks landowners within the Neuse River basin that have restorable wetland, riparian and stream sites.

For more information about the NCWRP and its Watershed Restoration Plans, please contact Hal Bryson at (919) 733-5208 or visit the DWQ website at http://h2o.enr.state.nc.us/ (click on Wetlands Restoration Program).

Table C-2 below lists the NCWRP's Targeted Local Watersheds [stream names and 14-digit HU codes] in the Neuse River basin. This table also indicates the pertinent factors that led to the selection of each Targeted Local Watershed. The Targeted Local Watersheds are selected on the basis of available data indicating the need and opportunity for local stream and wetlands restoration projects. Factors such as water quality problems, degraded aquatic habitat, cleared riparian buffers, significant natural areas or species, and increasing development pressures in the watershed are weighted heavily in determining these priority watersheds. Also, the presence of existing or planned water quality or habitat restoration projects in the same local watershed can be a significant factor in the choice of these watersheds. In some cases, NCWRP has used the water quality information alone (e.g., use impairment, potential increases in nonpoint source pollution) to support the selection of a specific Targeted Local Watershed. Targeted local watersheds are presented in Figure C-2.

Table C-2 Wetlands Restoration Program Targeted Local Watersheds (2002)

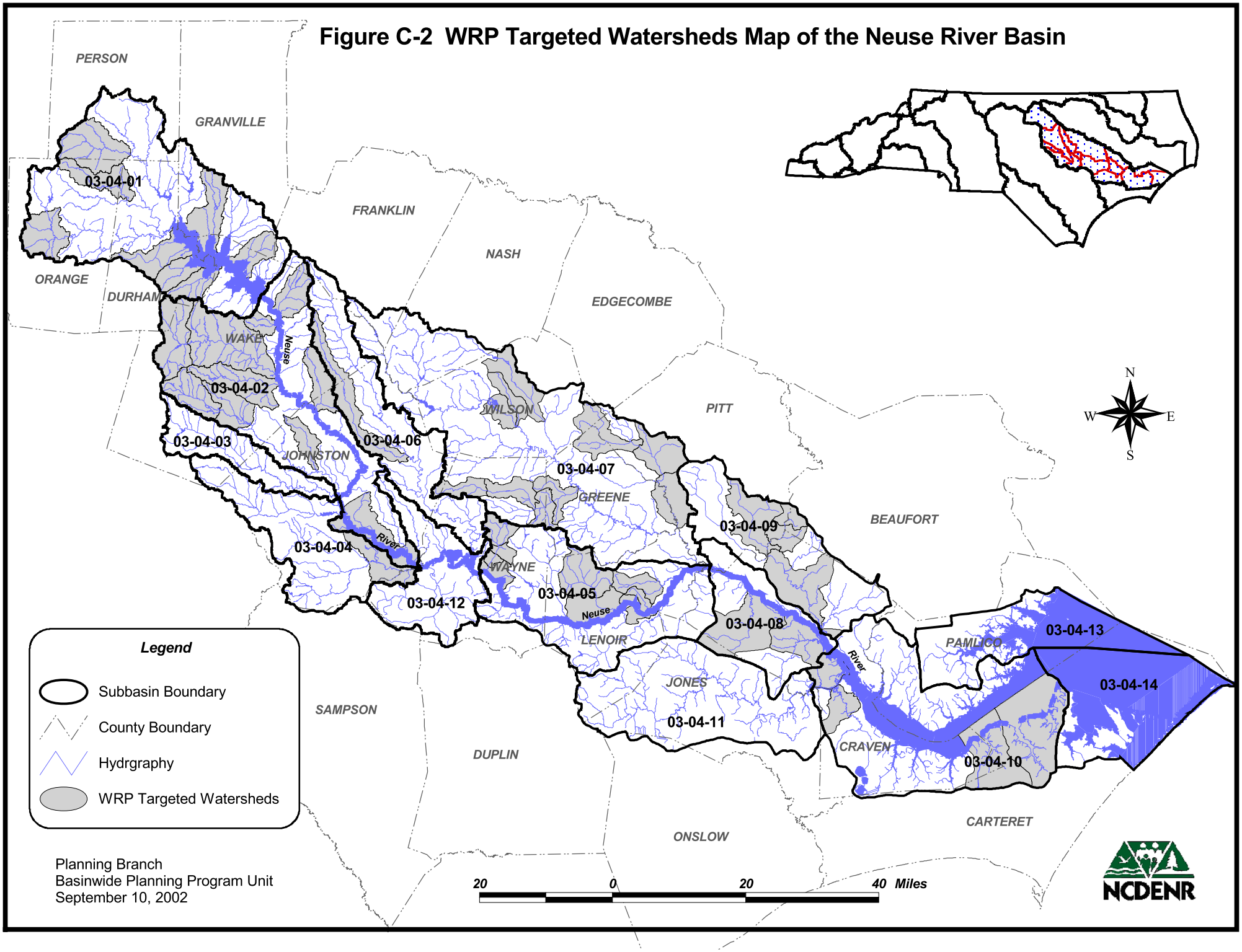
Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in W. Quality	Public Water Supply	SA Waters	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Muncipality (ies); Phase I or II	Local Resource Professional Recommendation
03-04-01	South Flat River 03020201010020			Y						
	North Fork Little River 03020201020010		Y	Y						
	West Eno 03020201030020			Y			Y	Y (NCWRP)		
	Ellerbe Creek 03020201050010	Y		Y					Y Durham	Y
	Little Lick Creek 03020201050020	Y		Y					Y Durham	Y
	Lick Creek 03020201050030	Y		Y					Y Durham	Y
	Lake Rogers 03020201060010			Y						Y
	New Light Creek 03020201065010			Y						
	Horse Creek 03020201065020			Y				Y (NCWRP)		Y
	Richland Creek (below Falls dam) 03020201070060									Y
03-04-02	Tom's Creek 03020201070070	Y	Y					Y (NCWRP)		
	Perry Creek 03020201070100	Y							Y Raleigh	
	Crabtree Creek 03020201080010	Y	Y					Y (NCWRP)	Y Raleigh, Cary	Y
	Crabtree Creek 03020201080020	Y					Y		Y Raleigh	Y
	Walnut Creek 03020201090010						Y	Y (NCWRP)	Y Raleigh	Y

Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in W. Quality	Public Water Supply	SA Waters	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Muncipality (ies); Phase I or II	Local Resource Professional Recommendation
03-04-02 (cont.)	Mark's Creek 03020201100020						Y			Y
	Swift Creek 03020201110010	Y	Y	Y			Y	Y (WARP)	Y Cary	
	Swift Creek 03020201110020			Y			Y		Y Garner	
	Little Creek 03020201110050	Y								
	Neuse Bottomlands 03020201140010			Y						Y
03-04-03	(Upper) Middle Creek 03020201120010						Y	Y (CWMTF)	Y Apex	Y
03-04-04	Mill Creek 03020201150050							Y (NCWRP)		
03-04-05	Stoney Creek 03020202010010	Y						Y (CES)	Y Goldsboro	Y
	Stoney Creek 03020202010020	Y						Y (CES)	Y Goldsboro	Y
	Stoney Creek 03020202010021	Y						Y (CES)	Y Goldsboro	Y
	Stoney Creek 03020202010022	Y						Y (CES)	Y Goldsboro	Y
	Falling Creek 03020202040010							Y (NCWRP)		Y
	Neuse River 03020202040020								Y Kinston	Y
	Neuse River 03020202040030								Y Kinston	Y
	Neuse River 03020202050040								Y Kinston	Y
	Briery Run 03020202060020								Y Kinston	Y

Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in W. Quality	Public Water Supply	SA Waters	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Muncipality (ies); Phase I or II	Local Resource Professional Recommendation
03-04-05 (cont.)	Neuse River 03020202060030						Y		Y Kinston	Y
03-04-06	(Upper) Little River 03020201180010			Y			Y			Y
	Little River 03020201180020			Y			Y			Y
	Buffalo Creek 03020201180050	Y								Y
03-04-07	Contentnea Creek 03020203020030			Y					Y Wilson	Y
	Hominy Swamp 03020203020040	Y						Y (NCWRP)	Y Wilson	Y
	Toisnot Swamp 03020203040020			Y					Y Wilson	Y
	Nahunta Swamp 03020203060010	Y	Y					Y (Section 319)		
	Nahunta Swamp 03020203060020	Y	Y				Y	Y (Section 319)		
	Nahunta Swamp 03020203060040	Y	Y					Y (Section 319)		
	Nahunta Swamp 03020203060050	Y	Y					Y (Section 319)		
	Little Contentnea 03020203070010	Y						Y (NCWRP)		Y
	Little Contentnea 03020203070030	Y						Y (NCWRP)		Y
	Little Contentnea 03020203070050	Y						Y (NCWRP)		Y
	Little Contentnea 03020203070040							Y (NCWRP)		Y

Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in W. Quality	Public Water Supply	SA Waters	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Muncipality (ies); Phase I or II	Local Resource Professional Recommendation
03-04-08	Core Creek 3020202080010	Y					Y			Y
	Neuse River 3020202100020								Y New Bern	Y
03-04-09	Clayroot Swamp 3020202090030	Y	Y							
	Creeping Swamp 3020202090040									
	Creeping Swamp 3020202090050									
	Swift Creek 3020202090060	Y								Y
03-04-10	Lower Trent River 3020204020010								Y New Bern	Y
	Brice Creek 3020204020040								Y New Bern	Y
	Adams Creek 3020204050050	Y			Y		Y			
	South River 3020204070010	Y			Y		Y	Y (CWMTF)		Y

Figure C-2 WRP Targeted Watersheds Map of the Neuse River Basin



Planning Branch
Basinwide Planning Program Unit
September 10, 2002

1.3.5 Clean Water Management Trust Fund

The Clean Water Management Trust Fund offers approximately $40 million annually in grants for projects within the broadly focused areas of restoring and protecting state surface waters and establishing a network of riparian buffers and greenways. In the Neuse River basin, 33 projects have been funded for a total of $35,274,400 (Table C-3). For more information on the CWMTF or these grants, call (252) 830-3222 or visit the website at www.cwmtf.net.

Table C-3 Projects in the Neuse River Basin Funded by the Clean Water Management Trust Fund (as of 1/02)

Stream or Watershed	Project Lead	Project Type	Amount	Page
West Fork Eno River	Hillsborough	Acquisition-Buffers	$625,000	212
Subbasin 03-04-01	Triangle J COG	Planning	$59,000	212
Lake Rogers	City of Creedmoor	Acquisition-Buffers	$290,000	212
Eno River	Orange County	Acquisition-Buffers	$143,000	212
Goose Creek	Durham SWCD	Restoration	$30,000	212
North Fork Little River.	Durham Co.	Acquisition-Greenway	$377,000	212
	Raleigh	Acquisition-Greenway	$2,850,000	
	Johnston County	Wastewater	$3,800,000	
Swift Creek	Wake Co. Parks & Rec.	Restoration	$635,000	
Walnut Creek	NC State University	Restoration	$1,314,000	213
Toms & Smith Creeks	Wake Forest	Acquisition- Buffers	$1,128,000	214
Middle Creek	Apex	Wastewater	$478,000	
Neuse River	Smithfield	Construct a stormwater wetlands	$90,000	
	Holly Springs	Restoration	$1,040,000	
Stoney Creek	Goldsboro	Wastewater	$789,360	
	Goldsboro	Wastewater	$1,640,000	
	Kinston	Wastewater	$920,000	
Neuse River	Kinston	Wastewater	$2,429,000	
Big Ditch	Goldsboro	Construct stormwater wetlands	$1,800,000	
Little River	Wake Co. Parks & Rec.	Acquisition-Greenway	$350,000	
Hominy Swamp Creek	City of Wilson	Wastewater	$803,350	215
Contentnea Creek	Hookerton	Wastewater	$790,000	215
Moccasin	Contentnea	Cape Fear RC&D-Nash	$20,000	
Core Creek	Coastal Land Trust	Acquisition-Buffers	$378,200	215
	NC Coastal Land Trust	Easements	$263,000	
Core Creek	Craven County	Restoration	$1,300,000	215
Core Creek	Neuse R.	NC Coastal L Trust	$59,300	215
	Contentnea Metr.Sew. Distr.	Wastewater	$720,000	
South River	Open Grounds Farm/UNC Inst. of Marine Sci.	Restoration	$1,064,190	215
New Bern	Wastewater		$5,339,000	
Tryon Palace	Stormwater		$1,000,000	
Duck Creek (New Bern)	NCWRC	Acquisition - Buffers	$1,100,000	
	Pamlico County	Wastewater	$1,650,000	
Total			$35,274,400	

1.3.6 North Carolina Stream Watch

The realization that local residents are best suited to keep an eye on their nearby waterways is what prompted North Carolina to begin project Stream Watch. With Stream Watch, citizens groups "adopt" a waterway, or a portion of one, and act on its behalf. Stream Watchers become the adoptive parents of a stream and, as such, become its primary caretakers.

With the help of the Department of Environment and Natural Resources' Division of Water Resources, Stream Watchers become informed stewards, learning how to react to the changing stream conditions. Local efforts combined with state support allow North Carolina's 37,000 miles of waterways to be monitored by those with the best view--local residents. In the Neuse River basin, there are 56 different individuals or groups monitoring 61 different stream segments. For more information on Stream Watch, call (919) 715-5433 or visit http://www.ncwater.org/Education_and_Technical_Assistance/Stream_Watch/.

1.3.7 North Carolina Coastal Nonpoint Source Program

Section 6217 of the Federal 1990 Coastal Zone Act Reauthorization Amendments (CZARA) requires every state participating in the Coastal Zone Management Act program to develop a Coastal Nonpoint Pollution Control Program CNPCP). The purpose of this requirement, as stated in the Act, is to "strengthen the links between Federal and State coastal zone management and water quality management programs and to enhance State and local efforts to manage land use activities that degrade coastal waters and coastal habitats." To accomplish these goals, the federal agencies established 56 Management Measures that are to be used by each state to address the following nonpoint source pollution categories:

- *Agricultural Sources*
- *Forestry*
- *Urban Areas* (urban runoff; construction activities; existing development; on-site disposal systems; pollution prevention; and roads, highways and bridges)
- *Marinas and Recreational Boating* (siting and design; and marina and boat operation/maintenance)
- *Hydrologic Modification* (channelization and channel modification; dams; and streambank and shoreline erosion)
- *Wetlands, Riparian Areas and Vegetated Treatment Systems*

At the federal level, the CNPCP is administered jointly by the National Oceanic and Atmospheric Administration (NOAA) and the Environmental Protection Agency (EPA). Within North Carolina, the state program, referred to as the Coastal Nonpoint Source Program (CNPSP), is administered by DWQ and the DCM. The state program currently has one full-time staff person located in the Nonpoint Source Planning Unit of DWQ.

The core of the state's CNPSP will be increased through communication and coordination between DWQ and key state agencies that have regulatory responsibilities for controlling nonpoint sources of pollution. This increased dialogue will be facilitated in part by the state's CNPSP Coordinator and will allow for identification of gaps, duplications, inadequacies or inefficiency of existing programs and policies. Responsibilities of the state program coordinator

will include participation in the NPS Workgroup to represent coastal water quality interests. The workgroup is involved with the continual refinement of the Section 319 Grant Program and development of North Carolina's 2001 NPS Management Program Update. The CNPSP Coordinator will also participate in the development and implementation of the basinwide management plans for the coastal draining rivers; serve as a liaison between DWQ and DCM; and participate in the development of nonpoint source educational materials. For more information about this program, contact the Coastal Nonpoint Source Program Coordinator at (919) 733-5083 or visit http://h2o.enr.state.nc.us/nps/czara.htm.

1.4 Project Descriptions

1.4.1 West Fork Eno River (Subbasin 03-04-01)

The Town of Hillsborough received a CWMTF grant of $62,5000 to protect stream buffers and a 1999 grant of $196,000 to protect 62 acres bordering Corporation Lake.

1.4.2 Entire Subbasin (Subbasin 03-04-01)

Triangle J COG (page 219) received a CWMTF grant of $59,000 for watershed planning. The money has been used to support development of the Upper Neuse River Basin Watershed Management Plan (page 217).

1.4.3 Lake Rogers, (Subbasin 03-04-01)

City of Creedmoor received a CWMTF grant of $290,000 for acquisition of buffers. NCWRP has initiated a Local Watershed Plan in the Lake Rogers watershed, which will identify sources of nonpoint pollution and identify projects to improve water quality and degraded habitat.

1.4.4 Eno River (Subbasin 03-04-01)

Orange County received a CWMTF grant of $143,000 for acquisition of buffers.

1.4.5 Goose Creek (Subbasin 03-04-01)

Durham SWCD received a CWMTF grant of $30,000 and Section 319 monies for a restoration project on Goose Creek. The project has restored natural features into an existing channelized urban stream.

1.4.6 North Fork Little River (Subbasin 03-04-01)

Durham County received a CWMTF grant of $377,000 for acquisition of greenways in the North Fork Little River watershed.

1.4.7 Ellerbe Creek (Subbasin 03-04-01)

NCWRP has initiated a Local Watershed Plan in the Ellerbe Creek watershed, which will identify sources of nonpoint pollution and identify projects to improve water quality and degraded habitat.

Durham Central Park is a nonprofit organization that is constructing a park in central Durham. The plan includes restoration of a portion of a tributary to Ellerbe Creek and potential installation of stormwater BMPs.

1.4.8 Stillhouse Branch (Subbasin 03-04-01)

NCWRP has a 1,500-linear foot stream restoration project on Stillhouse Creek in Hillsborough scheduled for construction in the fall of 2002. This project is designed to incorporate 1.7 acres of riparian buffer restoration.

1.4.9 Walnut Creek Watershed (Subbasin 03-04-02)

The NCWRP has a 3,000-linear foot stream restoration project in design for Kentwood Park in Wake County. Construction is scheduled for fall of 2002. This project is designed to incorporate 5.5 acres of riparian buffer restoration.

A 2,500-linear foot stream restoration project in design for Chavis Park in Wake County is scheduled for construction in the fall of 2002. This project is designed to incorporate 4.6 acres of riparian buffer restoration.

A 1,200-linear foot stream restoration project being designed for Bertie Creek in Wake County is scheduled for construction in the fall of 2002. This project is intended to incorporate 2.2 acres of riparian buffer restoration.

These projects are on tributary streams to Walnut Creek and will reduce sediment and nutrient loads to receiving waters.

1.4.10 Rocky Branch (Subbasin 03-04-02)

NC State University is currently implementing a three-phase stream restoration project for Rocky Branch. Rocky Branch is a tributary that runs through the NC State Campus. The project is funded by CWMTF ($1,123,000), CWA Section 319 ($55,200), NCSU ($500,000), FEMA ($120,000) and NCDOT ($1,688,500). The project includes expansion of two roadway crossings and a greenway. Additional funding will be needed to complete the entire project. When finished, Rocky Branch will be an important research and recreational resource for NC State and Raleigh.

1.4.11 Toms Creek (Subbasin 03-04-02)

The Division of Water Quality, with financing from the CWMTF, conducted a detailed assessment of Toms Creek including review of existing data and a detailed study of the

watershed. The study found that the creek is vulnerable to sediment inputs that impact aquatic habitat. The assessment also indicated toxic conditions below the Deerchase WWTP, most likely from excessive chlorine in the discharge. The assessment makes several recommendations designed to help prevent further degradation and restore water quality and aquatic habitat to the Toms Creek watershed.

The Town of Wake Forest has purchased buffers in portions of the Toms Creek watershed with a CWMTF grant.

1.4.12 Smith Creeks (Subbasin 03-04-02)

Wake Forest received a CWMTF grant of $1,128,000 for acquisition of buffers in the Smith Creek watershed.

The NCWRP has a 9,500-linear foot stream restoration project on Smith and Austin Creeks in Wake County in design and scheduled for construction in the fall of 2002. This project is designed to incorporate 32 acres of riparian buffer restoration. This project will decrease sediment and nutrient loading to the receiving waters, as well as provide a good example of restoration opportunities. Section 319 was also involved in this project.

1.4.13 Crabtree Creek (Subbasin 03-04-02)

Capital Area Greenway
The Capital Area Greenway is a system of public recreation trails located along rivers, creeks and streams, which provide for activities such as walking, jogging, hiking, fishing, picnicking and outdoor fun. The trails connect many of Raleigh's parks and, in many cases, complement the recreational activities at the parks. The Neuse River, Walnut and Crabtree Creeks and their tributaries are the framework of the Capital Area Greenway System. Many of the city's major ecological features can be experienced in their natural state along these water courses. A major goal of the Greenway Program is to establish a network of interconnected trails. For more information and a map of greenway trails, visit http://www.raleigh-nc.org/parks&rec/greenway/greenway.htm.

Pollutant Monitoring by NRF
This project is a joint effort between the Neuse River Basin Regional Council (page 201), the Neuse River Foundation (page 219) and the Albemarle-Pamlico National Estuary Program. The fieldwork was conducted by trained volunteers from the Neuse River Foundation, Inc. Volunteers took water samples once a week on the same day of the week, and at roughly the same time of day, as much as possible, at Crabtree Creek downstream of Raleigh. This project has been completed.

1.4.14 Marks Creek (Subbasin 03-04-02)

The Triangle Land Conservancy (page 219) has prepared a conservation assessment for the Conservation Trust for North Carolina (page 218) that identifies preservation and restoration opportunities in Marks Creek and the adjacent Neuse River watershed. The assessment recommends a regional approach to a greenway design along the Neuse River corridor with the

primary goal of protecting water quality. Also recommended are protective measures for the tributary streams in the study area and voluntary protection of 400-foot buffers through easements and fee simple acquisition.

1.4.15 Hannah Creek (Subbasin 03-04-04)

The NCWRP has a restoration project on Hannah Creek at Howell Woods in Johnston County scheduled for construction during the summer of 2002. Twenty acres of wetlands are to be restored and 80 acres enhanced. The project will reduce nutrient loading to receiving waters.

1.4.16 Whitelace Creek (Subbasin 03-04-05)

The NCWRP has a restoration project on Whitelace Creek near Kinston that will be designed to provide 20 acres of riparian wetlands restoration, 10 acres of wetlands enhancement, 8,000 linear feet of stream restoration, and 10 acres of riparian buffer restoration. Construction is scheduled for the winter of 2003.

1.4.17 Hominy Swamp Creek (Subbasin 03-04-07)

The NCWRP has a 2,232-linear foot stream restoration project on Hominy Swamp Creek in a city park in Wilson. There was five acres of riparian buffer restored and protected to reduce sediment and nutrient loads from the Town of Wilson. The project is in year one of the five-year post-construction monitoring.

1.4.18 Contentnea Creek (Subbasin 03-04-07)

The NCWRP has a 16.5-acre buffer enhancement project on Beamon's Run (a tributary to Contentnea Creek) in Greene County. This is the only NCWRP project to date focused solely on riparian buffers. The project will be entering post-construction monitoring during 2002.

1.4.19 South River (Subbasin 03-04-10)

Open Grounds Farm has made extensive efforts to improve water quality in the South River watershed, including removal of cattle operations and installation of BMPs on the farm. Both of these efforts help to reduce the potential for bacterial contamination of the South River.

1.5 Local Initiatives

1.5.1 Ellerbe Creek Watershed Association

Dedicated to restoring Ellerbe Creek and making it an asset for the citizens of Durham, the Ellerbe Creek Watershed Association gained official 501(c)(3) nonprofit status in April of 1999. In July 1999, it was awarded a matching grant by Durham County to purchase six wooded acres along Ellerbe Creek for an urban nature reserve and public trail. ECWA is working with NC State and NC Wetland Restoration Program (page 203) watershed specialists to restore sections of Ellerbe Creek and demonstrate ways to utilize stormwater in wetland gardens. ECWA is

promoting the creation of a unique wildlife/recreation area on waste ground behind Durham's closed landfill and working with developers, homeowners and city government to reduce stormwater impacts on the creek and preserve greenspace. ECWA is also involving volunteers in periodic monitoring of Ellerbe Creek's water quality through the Stream Watch Program (page 211). Long-term goals for the organization include the establishment of a volunteer network throughout the watershed, completion of an urban trail system throughout the watershed, preservation of Ellerbe Creek's headwaters and other special features, and restoration of the creek's lower floodplain. Visit the association's website at http://www.ellerbecreek.org/.

1.5.2 Friends of South Ellerbe Creek

The Friends of South Ellerbe Creek is an informal group of citizens dedicated to conserving and enhancing the scenic, recreational, natural and historic qualities of South Ellerbe Creek and its landscape. From its headwaters near Greystone Baptist on Hillsborough Road, South Ellerbe Creek flows for three miles through some of Durham's oldest and most densely developed neighborhoods: Old West Durham, Walltown, Northgate Park, Trinity Park. Another branch of South Ellerbe flows north out of downtown Durham, through Durham Central Park and Trinity Park. South Ellerbe then joins Ellerbe Creek in a small forest just northwest of the I-85/Roxboro Road interchange. Along some wooded stretches, the creek quietly flows through areas as scenic as any in North Carolina. Elsewhere, South Ellerbe is a troubled creek.

Efforts to clean up urban streams throughout the city of Durham are paying off. But nowhere is that progress more evident than in the Ellerbe Creek watershed. The Friends of South Ellerbe Creek and other neighborhood volunteer groups are helping to focus community awareness on the need to protect and restore streams in Durham. For more information or to get involved, visit http://www.owdna.org/fosec.htm.

1.5.3 Eno River Association

The Eno River Association is a nonprofit, tax-exempt organization founded in 1965 and incorporated in 1975 to protect the magnificent Eno River from the threats of development and pollution. The Eno River has been threatened by a succession of urban plans for a municipal reservoir, a belt-thoroughfare, a city landfill, and a major sewer system. Through the years, the Eno River Association has battled with some success to protect the Eno and preserve it as a natural river for future generations to enjoy.

The Conservation Trust for North Carolina (page 218) awarded the Eno River Association a grant to prepare a riparian corridor conservation design for the Eno River. The goal of the design project is to identify and prioritize areas where preservation and restoration projects would have the greatest positive effect on water quality. Twenty-one parcels have high priority ratings for protection in the upper Eno River watershed and made recommendations for assisting the City of Durham in preservation and restoration of areas in the lower Eno River watershed. For more information, call (919) 620-9099 or visit http://www.enoriver.org/.

1.5.4 Upper Neuse River Basin Association

In 1996, fourteen local governments formed the Upper Neuse River Basin Association (UNRBA) to provide an ongoing forum to address watershed management issues of mutual concern in the 770-square mile watershed above the Falls Lake Dam. The upper Neuse basin includes nine man-made water supply reservoirs that serve about one-half million people. It also includes water resources that are essential for a variety of wildlife and a variety of recreational opportunities. The UNRBA is currently developing a Watershed Management Plan and is involved in several related public education and awareness initiatives.

Although it is has not yet been approved by the UNRBA Board of Directors, the preliminary draft Watershed Management Plan (dated September, 2001) documents projected general water quality conditions under a year 2025 development scenario and two build-out scenarios for the watershed. The preliminary plan indicates that to meet identified water quality goals and objectives, additional watershed management measures will be needed throughout much of the study area.

Alternative management strategies now under consideration by the UNRBA for potential recommendation to UNRBA member governments include: enhanced public education and awareness; careful monitoring, inspection and enforcement activities relating to stormwater and sanitary sewer facilities, and sediment and erosion control measures; more protective zoning within targeted areas in the watershed; performance standards for new development (peak flow control, impervious surface limits, and nutrient loading limits); resource monitoring to assess conditions and trends and to measure the effectiveness of management strategies; and protection and restoration of wetlands and riparian corridors. The specific management strategies that will be included in the final management plan will be determined following review and comment from the UNRBA's member governments, watershed stakeholders, applicable state agencies, and the general public.

The UNRBA is also assisting the North Carolina Wetlands Restoration Program in undertaking detailed assessments and restoration/protection plans for two sub-watersheds within the upper Neuse basin - the Lake Rogers Watershed and the Ellerbe Creek Watershed.

The UNRBA is one of the 18 founding partners participating in the newly-established Clean Water Education Partnership (CWEP) program. The CWEP program involves a collaborative mass media nonpoint source pollution education and awareness campaign primarily throughout much of the Neuse River Basin and a portion of the Cape Fear River basin. The association is also sponsoring a series of workshops relating to conservation easements, watershed training for teachers, and low impact design tools and techniques.

Wake County has experienced significant changes in terms of economic development and population growth since 1990. This growth and development is expected to continue in the foreseeable future, and the population is expected to increase by 500,000 within the next twenty years. Though numerous benefits are associated with the gains in economic development and population growth, there are also accompanying pressures on the county's watersheds. The Wake County Commissioners recognized these pressures on the county's watersheds and

unanimously approved to develop a comprehensive watershed management plan in November 2000. The plan is expected to be complete in summer 2002.

A three-step stakeholder process is being used to develop the watershed management plan. The three steps are: assess current conditions, evaluate options and strategies, and prepare plan and adopt strategies.

1.5.5 Wake County Watershed Task Force

The Wake County Commissioners established a task force to provide input to the watershed management plan. The task force included an elected official from each of the other local governments within the county. A member of the Soil and Water Conservation District Board, the Open Space Advisory Committee, and the Human Services Board was also appointed. There were eight at-large appointments that included members of the development community, local landowners, agriculture and citizens groups. The task force met monthly throughout the project. Other stakeholders were invited to each meeting and were given opportunity to participate in the discussion.

The assessment of current conditions included reviewing available biological and chemical data. Benthic data were collected at an additional 24 sites within the county, and habitat/ geomorphology data were collected at 86 sites within the county. These data along with land use information such as the percentage of impervious cover and amount of forested land within riparian buffers were used to classify each of the watersheds into one of the following categories: healthy, impacted, impacted/restorable, degraded, degraded/restorable. Thirty watersheds were classified as healthy, 33 as impacted/restorable, four as impacted, eight as degraded/restorable, and five as degraded.

The eight tools of watershed protection as described by the Center for Watershed Protection are currently being evaluated by the task force to determine how they should be integrated into the watershed plan. The recommendations that will be made in the watershed plan are being coordinated with recommendations that are coming out of other plans currently being developed by the county such as the open space and growth management plans.

The final step will be to prepare the plan based on input from the task force. The plan will then be presented to the county commissioners and other local governments for adoption and implementation. Specific implementation items, time frames, and funding needs and mechanisms will be identified in the plan.

1.6 Regional Initiatives

1.6.1 Conservation Trust for North Carolina

The Conservation Trust for North Carolina and CWMTF have funded three riparian corridor conservation plans in the Neuse River basin. Plans were prepared for the Eno River, upper Neuse subbasin and Lower Swift Creek.

1.6.2 Triangle Greenways Council

The Triangle Greenways Council is an advocacy group for the promotion of greenways in the RTP area. The Conservation Trust for North Carolina (page 218) awarded the Triangle Greenways Council a grant to prepare a riparian corridor conservation design for the upper Neuse River basin. The goal of the design project is to identify and prioritize areas where preservation and restoration projects would have the greatest positive effect on water quality. Potential parcels have been identified on Walnut Creek, Crabtree Creek, Reedy Creek and the Flat River. For more information, visit http://www.trianglegreenways.com/.

1.6.3 Triangle Land Conservancy

Triangle Land Conservancy is a nonprofit corporation organized in 1983 with the mission to create a regional network of open space and natural areas in the six county Triangle J Region of North Carolina, which includes Chatham, Durham, Johnston, Lee, Orange and Wake counties.

The Conservation Trust for North Carolina (page 218) awarded the Triangle Land Conservancy a grant to prepare a conservation assessment for the Lower Swift Creek. The assessment recommends conservation strategies designed to protect water quality in Swift Creek in Wake and Johnston counties. For more information, call (919)-833-3662 or visit http://www.tlc-nc.org/index.html.

The Triangle Land Conservancy has also developed the Triangle GreenPrint which maps existing forested and protected areas in the upper Neuse River basin. This tool would be useful for local development and transportation planning. The Triangle GreenPrint can veiwed at http://www.trianglegreenprint.org/.

1.6.4 Triangle J Council of Governments

The Triangle J Council of Governments is recognized as a leader in water supply protection efforts. TJCOG assisted local governments in the development of their watershed management regulations and has strongly encouraged the development of the state's minimum standards for protection of public water supplies. It has also played an important role in the ongoing effort to develop an initial watershed protection plan for Falls of the Neuse Reservoir.

TJCOG has worked closely with local, state and federal agencies to develop the Triangle Area Water Supply Monitoring Project. Under way since 1988, the program involves systematic sampling and analysis of water quality at several major water supplies in the region. Through this effort local communities now have important information about the existing and potential quality of the public's water supply. For more information on The Triangle Council of Governments water quality initiatives, visit http://www.tjcog.dst.nc.us/.

1.6.5 Neuse River Foundation

The Neuse River Foundation, Inc. is a membership-based, 501(c)(3) nonprofit organization with more than 2,400 members. Since its inception in 1980, NRF has been educating the public, advocating for clean water and fighting to stop water pollution. In 1993, NRF hired North

Carolina's first Riverkeeper. In late 2001, NRF hired a second Riverkeeper to provide coverage throughout the river basin. The upper Neuse Riverkeeper is based in Raleigh and looks after the Neuse from its headwaters down to Goldsboro. The lower Neuse Riverkeeper is based in New Bern and is responsible for the river from Goldsboro to the Pamlico Sound. For more information on the NRF or to contact the Neuse Riverkeeper®, visit http://www.neuseriver.org/.

1.6.6 Lower Neuse Basin Association

The Lower Neuse Basin Association (LNBA) is an association of 25 municipalities and industries with wastewater treatment facilities permitted to discharge treated wastewater into the Neuse River below Falls of the Neuse Dam. The association was formed for information exchange and undertakes activities best accomplished by a group effort. The LNBA currently collects water quality data from 50 sites covering 6,200 square miles of the basin in 19 counties.

Over $16 million was spent on projects to reduce nitrogen at member facilities in order to meet the requirements of the Neuse NSW strategy (page 64). Members expected to spend an additional $31 million on nitrogen reduction projects before 2003. For more information on the LNBA, visit their website at http://www.uncwil.edu/neuseriver/lnba.htm.

1.6.7 Neuse River Watershed Atlas

The Neuse River Watershed Atlas is a CD-ROM that provides planners and decision makers with user friendly tools to support water quality and conservation planning in the Neuse River Watershed. The Atlas contains GIS data layers, a resource guide, reports and a list of watershed oganizations that can be used to enhance environmental decision-making in the watershed. The atlas was created by The Conservation Fund and Duke University Nicholas School of the Environment with support from the Neuse River Foundation and the North Carolina Coastal Land Trust. For more information, please contact Will Allen at The Conservation Fund (919) 967-2223.