



French Broad River Basin Watershed Restoration Plan



April 2005

Purpose and Background of the N.C. Ecosystem Enhancement Program

In July 2003, North Carolina committed its resources to an innovative program to restore, enhance and protect its wetlands and waterways. The N.C. Ecosystem Enhancement Program (EEP) combines existing wetlands-restoration initiatives (formerly the Wetlands Restoration Program or NCWRP) of the N.C. Department of Environment and Natural Resources with ongoing efforts by the N.C. Department of Transportation (NCDOT) to offset unavoidable environmental impacts from transportation-infrastructure improvements. The U.S. Army Corps of Engineers (USACE) joined as a sponsor in the historic agreement.

A Memorandum of Agreement between NCDENR, NCDOT and USACE stipulates that EEP mitigation projects will be:

- Provided in advance of the permitted NCDOT impacts,
- Designed to address functional replacement of stream, buffer and wetlands impacts and
- Identified and implemented within the context of a watershed approach based on multiple scales of planning.

Purpose of Watershed Restoration Plans

The EEP develops *Watershed Restoration Plans* to guide its restoration activities within each of the state's 17 major river basins. The Watershed Restoration Plans delineate specific watersheds that exhibit both the need and opportunity for wetland, stream and riparian buffer restoration. These watersheds are called Targeted Local Watersheds and receive priority for EEP planning and restoration project funds. In addition, the EEP encourages other groups and organizations to consider implementing restoration projects in Targeted Local Watersheds, because multiple restoration projects concentrated within a local watershed will result in greater benefits to water quality, aquatic habitat and other vital watershed functions.



Unstable bank, Dunn Creek, Henderson County

This Watershed Restoration Plan complements two other documents: The *French Broad River Basinwide Water Quality Plan* [Division of Water Quality (DWQ) 2005], which is on-line at <http://h2o.enr.state.nc.us/basinwide/>, and the *Guide to the NCWRP's Watershed Restoration Planning Strategy (version 1)*, on-line at <http://www.nceep.net/services/restplans/Planning%20Guide.pdf>.

A new planning guide is being prepared to describe EEP's updated approach to watershed restoration planning at the basin-wide scale, GIS-based screening analyses of eight-digit cataloguing units (CUs) and local watershed planning initiatives applied to the scale of 14-digit hydrologic units (HUs) and component sub-watersheds.

Integrated French Broad River Basinwide Water Quality Plan

Prior to July 2002, the NCWRP developed Watershed Restoration Plans (formerly called *Basinwide Wetlands and Riparian Restoration Plans*) as stand alone documents for each river basin in the state. Beginning with the Neuse River Basin in 2002, the NCWRP began incorporating its Targeted Local Watershed selections and restoration project information directly into the DWQ Basinwide Plans, which are available on-line at: <http://h2o.enr.state.nc.us/basinwide/>.

An abbreviated version of the NCWRP Watershed Restoration Plan is provided herein. The main goals of this plan are to protect and enhance water quality, flood prevention, wildlife habitat and recreational opportunities. The objectives of the plan are to identify *Targeted Local Watersheds* within the basin which have the need and opportunity for restoration, enhancement, and preservation of water and riparian resources. Watersheds are identified through analysis of water quality and habitat data and geographic information (GIS), and a review process designed to integrate the advice and input from those resource professionals and citizens who live within the river basin.

Targeted Local Watersheds in the French Broad River Basin can be viewed at <http://www.nceep.net/pages/frbroad.htm>. A description of the factors that were considered in selecting these watersheds follow.

Targeted Local Watersheds

The EEP evaluates a variety of data and information on water quality and habitat conditions in each river basin to select *Targeted Local Watersheds*. However, public comment and the professional judgment of local resource agency staff play a critical role in targeting local watersheds. A summary of the Targeted Local Watersheds selected for the French Broad River Basin, including a checklist of the pertinent factors for selecting those watersheds, is presented in the table on pages 8 to 10. A description of the process for Local Watershed targeting is provided in the *Guide to NCWRP Watershed Restoration Strategy* available on-line at: <http://www.nceep.net/services/restplans/Planning%20Guide.pdf>. A brief description of the factors EEP considers in watershed selection follows:



Banner Farm, Henderson County

Water Quality Problems: EEP targets watersheds with existing and potential water quality problems resulting from nonpoint source pollution. To make this determination, EEP evaluates DWQ use support ratings, the 303(d) List and DWQ Basinwide Assessment reports: <http://h2o.enr.state.nc.us/esb/bar.html>. EEP also uses land cover data to evaluate riparian buffer condition. The EEP believes that riparian buffers provide many water quality benefits, and streams that lack a well-vegetated riparian buffer are at greater risk for water quality degradation.

Cumulative wetland and stream impacts: The cumulative effects of many small scale wetland and stream impacts due to farming, development and road building can have a detrimental effect on water quality. EEP is responsible for addressing these cumulative impacts and uses data from the 401 Wetlands Program database to

locate those watersheds facing the greatest water quality threats due to unmitigated wetland and stream impacts.

Resource Values: EEP recognizes that resource values beyond water quality should be considered in evaluating the restoration need and opportunity of a watershed. The resource values that EEP considers in targeting local watersheds include public water supply, shellfish areas, outstanding or high quality resource waters, aquatic natural heritage elements and regulated trout waters.

Watershed Approach: EEP watershed approach advocates concentrating multiple water quality projects in one relatively small watershed to yield a greater cumulative benefit to water quality. EEP wants to tie wetland and stream restoration projects with other efforts such as agricultural best management practices (BMPs), stormwater controls, and riparian buffer preservation to restore or improve entire watershed functions, not just streams and wetlands. For this reason, EEP targets areas with existing watershed planning or protection initiatives already underway.



**Greer Creek,
Henderson County**

Partnership Opportunities: To assess the potential for partnership opportunities at the local watershed scale, EEP reviews existing or planned Clean Water Management Trust Fund and Section 319 projects, and also considers if a municipality is located in the watershed. Municipal governments often own good sites for water quality improvement projects, but may lack the technical expertise and the resources to implement the projects. For these reasons, the EEP views municipalities as good potential partners for restoration projects. In addition, many cities are subject to Phase I or Phase II Stormwater Regulations and gather monitoring information that is useful in designing and measuring the long term benefits of restoration efforts.

Land Cover: Water quality studies suggest that heavily forested watersheds regulate stormwater runoff, thereby reducing the likelihood for severe streambank erosion, nutrient runoff and sediment pollution. For this reason, the EEP uses the percentage of cleared land in a watershed as an indicator of restoration need and opportunity.

Local Resource Professional (RP) Comments/Recommendations: The comments and recommendations of local resource agency professionals — including staff with Soil & Water Conservation districts, the Natural Resources Conservation Service (NRCS), municipal planning and stormwater departments, NCDENR regional staff (e.g., Wildlife Resources Commission), and local/regional Land Trusts — are considered heavily in the selection of Targeted Local Watersheds. Local resource professionals often have specific and up-to-date information regarding the condition of local streams, wetlands and riparian buffers. Furthermore, local RPs may be involved in local water resource protection initiatives (and the acquisition of funding for such projects) that provide good partnership opportunities for EEP restoration projects and/or Local Watershed Planning initiatives.

South Hominy Creek Local Watershed Plan

South Hominy Creek was selected as a focus area based on impairment of aquatic habitat, 303(d) listing and recommendations of local resource professionals. South Hominy Creek is a 40 square mile watershed that descends from Mount Pisgah on the Blue Ridge Parkway. The varied topography is characteristic of the Blue Ridge Mountains. Land Use is dominated by forests and agriculture.

Sediment loading appears to be the primary stressor. High rainfall associated with Hurricane Ivan in 2004 compounded this problem. The watershed may be characterized as rural, but with increasing residential development pressure. The areas at the north end of the watershed closer to Asheville and Interstate 40 are flatter. These subwatersheds have the most residential development and poorest water quality functions.

The *Technical Memorandum 1: Preliminary Findings and Recommendations Report* is on-line at www.nceep.net/services/lwps/South_Hominy_Creek/SouthHominyCreek.htm.

The final Local Watershed Plan will be completed in the summer of 2005.

Bald Creek Local Watershed Plan

The Bald Creek watershed is a small (18 square miles) rural watershed of steep ridges and valleys. Most stream valleys are cleared for homes, gardens and small farms. Streams in the watershed often have very little woody riparian vegetation, coursing through fields or yards. In 1999, the N.C. Division of Environmental Health's Wastewater Discharge Elimination Program surveyed household waste systems in the Bald Creek watershed and found that 32 percent of households had waste systems that were not adequate. Preliminary data from the watershed assessment document fecal coliform bacteria counts that exceed the state standard in every stream sampled.

Although DWQ classifies all streams in the watershed as trout streams, fish monitoring through the watershed assessment has revealed very limited trout populations in the watershed; in-stream habitat has been degraded by channelization, removal of riparian vegetation and sedimentation.

The purpose of this planning study is to characterize existing watershed conditions including land use and potential point and non point sources of pollution and to recommend specific restoration strategies to address these problems. Continued watershed monitoring will evaluate impacts to stream integrity from nutrients and fecal contamination and poor habitat due to removal of woody bank/riparian buffer vegetation and stream straightening.

A preliminary watershed characterization was completed in winter 2004 and is available at www.nceep.net/services/lwps/Bald_Creek/bald_creek_phase_I_doc_final.pdf.

The watershed team is currently performing a detailed assessment and the plan is scheduled for completion in August 2005.

Mud Creek Local Watershed Plan

The Mud Creek watershed totals 113 square miles comprising approximately one-third of Henderson County's land area. There are three municipalities in the watershed: Hendersonville, Flat Rock and Laurel Park. Forty-five percent of the Mud Creek watershed is forested; 25 percent is residential, commercial or industrial; and 23 percent is agricultural. The Mud Creek watershed has roughly 10 percent impervious cover; however, the percent of imperviousness varies greatly throughout the watershed with some areas far exceeding the 10 percent threshold where declines in water quality and aquatic communities are noted.



**Mud Creek at 7th Avenue,
Henderson County**

Without appropriate water quality protection measures, increasing urbanization in the watershed will further exacerbate existing water quality problems. This LWP has enabled EEP to build one stream restoration project totaling 1300 linear feet. Another 16 acre riparian wetland restoration project is currently in design.

This Local Watershed Plan was completed in April of 2003. The completed plan can be found at: www.nceep.net/services/lwps/Mud_Creek/mudcreek.htm.

Streams, Wetland and Riparian Buffer Restoration Project

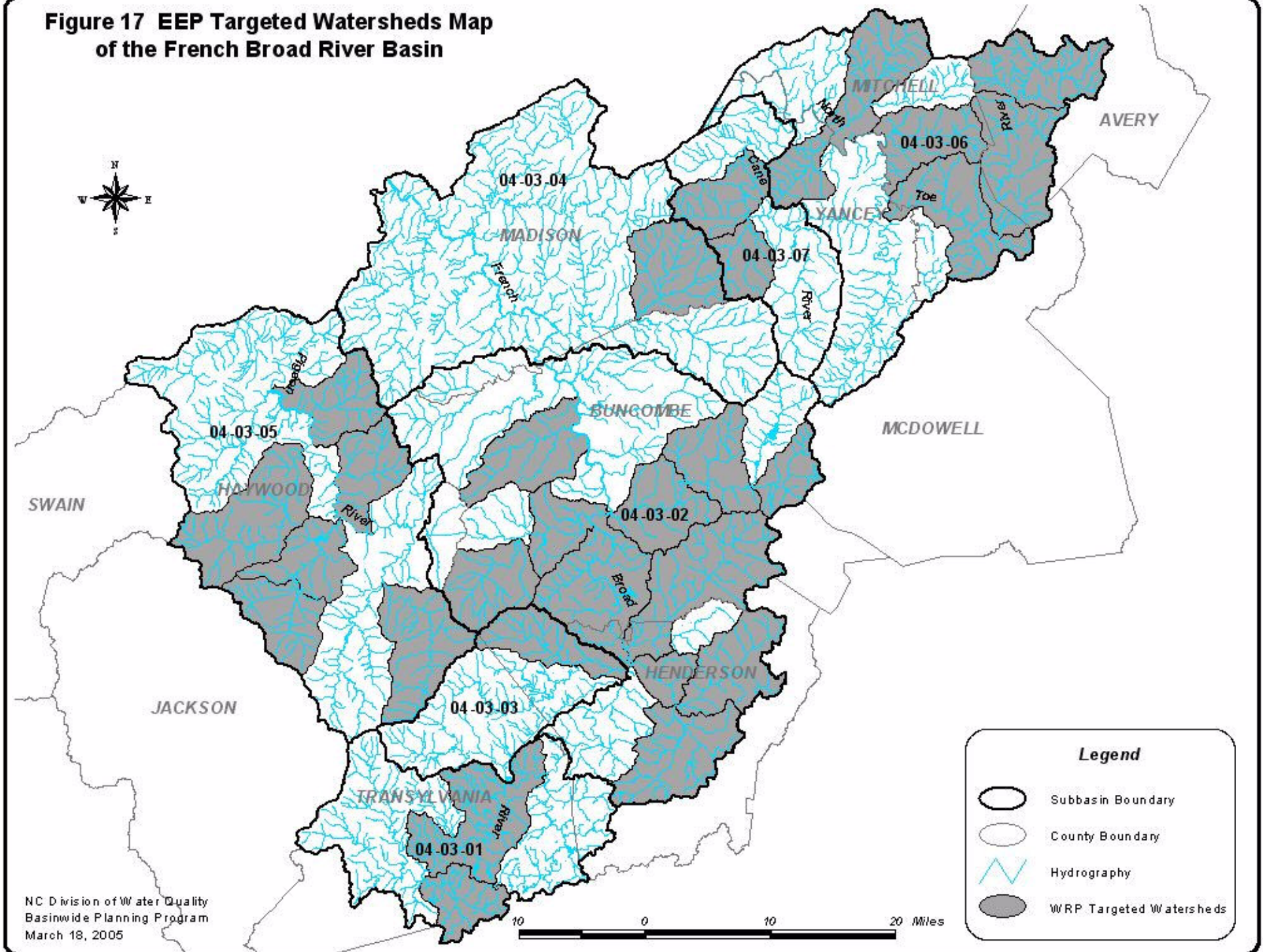
EEP initiated three stream restoration projects in the French Broad River basin that restored 6,700 linear feet of stream and one preservation project that acquired a 2,666 acre tract with the potential for 50,000 linear feet of stream restoration.



**Stream restoration project on
County Line Creek, Buncombe County**

Two additional projects are in the design phase and will generate another 4,000 linear feet of stream restoration and 16 acres of riparian wetland restoration.

**Figure 17 EEP Targeted Watersheds Map
of the French Broad River Basin**



Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in Water Quality	Public Water Supply	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Municipality(ies); Phase I or II	Resource Professional Comments
1	French Broad, Kings Creek 06010105010050	Yes	No	No	No	Yes	EEP DWQ WARP	Brevard	<i>DWQ Biological Assessment</i> Narrow riparian zones
1	East Fork French Broad River 6010105010080	No	No	No	Yes	Yes	SWCD	No	<i>DWQ Biological Assessment</i> Increasing development along Highway 276 corridor; poor quality riparian zone
2	Lower Mud Creek	Yes	No	No	No	No	EEP LWP	Hendersonville Phase II	
2	Clear Creek 6010105030040	Yes	Yes	No	No	No	EEP LWP	Hendersonville Phase II	
2	Upper Mud Creek 6010105030020	Yes	No	No	No	Yes	EEP LWP	Hendersonville Phase II	<i>DWQ Biological Assessment</i> Bat Fork (Mud Creek tributary) has 45% of streams channelized and only 15% have adequate buffer on both sides of the stream
2	Avery Creek County Line	No	No	No	No	Yes	EEP	Biltmore Forest Phase II	
2	South Hominy, Beaverdam 6010105060020	No	No	No	No	No	EEP LWP	No	
2	Hominy Creek 6010105060030	Yes	No	No	No	No	DWQ TMDL	Asheville Phase II	<i>DWQ Biological Assessment</i> Narrow riparian zone

Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in Water Quality	Public Water Supply	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Municipality(ies); Phase I or II	Resource Professional Comments
2	Newfound Creek 6010105090020	Yes	Yes	No	No	No	SWCD TVA-IPSI	No	<i>DWQ Biological Assessment</i> Severe bank erosion; poor riparian buffer
2	Ross Creek 6010105070040	Yes	No	No	No	No	Pigeon River Grant Funds TVA-IPSI	Asheville Phase II	
2	Cane Creek 6010105040010	Yes	Yes	No	No	Yes		No	
2	Upper Swannanoa 6010105070020	Yes	Yes	No	No	Yes		Black Mountain Phase II	
2	Swannanoa River 6010105070030	Yes	No	Yes	No	No	319 funds CWMTF TVA-IPSI	Asheville Phase II	
3	Mills River 6010105020020	Yes	Yes	Yes	No	Yes	DWQ TMDL 319 funds	Mills River	
4	Little Ivy Creek 6010105110020	Yes	No	Yes	Yes	Yes	DWQ TMDL, TVA-IPSI	Mars Hill	<i>DWQ Biological Assessment</i> Minimal riparian buffers
5	Crabtree Creek 6010106020010	No	No	No	No	No	Pigeon River Trust Fund (AG BMPs)	No	<i>DWQ Biological Assessment</i> Degraded riparian zones
5	Fines Creek 6010106020040	Yes	No	No	No	No	Haywood Waterways Association (AG BMPs)	No	<i>DWQ Biological Assessment</i> Fish community shows evidence of chronic impairment

Subbasin	Local Watershed Name and HU code	Impaired Stream(s)	Downward Trend in Water Quality	Public Water Supply	ORW or HQW	Aquatic NHP Elements	Existing, Planned Projects	Municipality(ies); Phase I or II	Resource Professional Comments
5	Upper Richland Creek 6010105030010	No	No	Yes	Yes	Yes	CWMTF (watershed acquisition)	Waynesville Phase II	
5	Richland Creek 6010106030020	Yes	Yes	No	No	No	CWMTF (restoration)	Waynesville Phase II	<i>DWQ Biological Assessment</i>
5	East Fork Pigeon River 6010107010010	No	No	Yes	No	Yes			Large citizen demand based on hurricane
5	Jonathan Creek 6010106020030	No	No	Yes	No	Yes		Maggie Valley	<i>DWQ Biological Assessment</i> Cattle access; poor riparian buffers
6	Cane Creek 6010108040010	Yes	Yes	No	No	Yes		No	
6	Jacks Creek 6010108050010	Yes	No	No	No	No		No	<i>DWQ Biological Assessment</i> Open
6	Upper North Toe River 6010108010010	No	No	No	No	No		Newland	<i>Equinox Env. Consultants</i> Poor riparian buffers
6	Middle North Toe River 6010108010020	No	No	Yes	No	Yes		No	<i>Equinox Env. Consultants</i> Poor riparian buffers
6	North Toe River 6010108010030	Yes	Yes	Yes	Yes	Yes		Spruce Pine	
6	Big Rock Creek 6010108060010	No	No	No	No	Yes	NCWRC	No	<i>DWQ Biological Assessment</i> Narrow riparian buffers
7	Price Creek 6010108080010	No	No	No	No	Yes		No	
7	Bald Creek 6010108080020	No	No	No	No	Yes	LWP	No	



Additional Information

EEP French Broad River Basin Watershed Restoration Plan

For additional information regarding the EEP French Broad River Basin Watershed Restoration Plan please contact:

- George Norris: (919) 733-5312 or george.norris@ncmail.net

And visit the program website at www.nceep.net

DWQ French River Basinwide Water Quality Plan

For additional information regarding the DWQ French River Basinwide Water Quality Plan please contact:

- Michelle Raquet: (919) 733-5083 ext. 367 or michelle.raquet@ncmail.net

And visit the program website at <http://h2o.enr.state.nc.us/basinwide>