Chapter 1 -
Current Water Quality Initiatives

1.1 Workshop Summaries

A total of seven workshops were held in the Catawba River basin between June 1998 and April 1999. Five of these workshops were held in the upper portion of the basin in cooperation with the Western Piedmont Council of Governments (WPCOG) with 178 people in attendance. Sponsors of the two workshops in the lower portion of the basin were the Gaston County Quality of Natural Resources Commission, Mecklenburg County Department of Environmental Protection, Mecklenburg County Soil and Water Conservation District, and the Gaston County Cooperative Extension Service. Approximately 125 people were in attendance at these two workshops. All workshops represented a wide variety of interests in the river basin.

Each workshop had three to four presentations pertaining to issues important to the region of the basin where the workshop was held. Workshop participants were asked to discuss a series of questions in small groups. The questions varied slightly between workshops, but were generally the following questions:

1) What are the most important issues that should be addressed in the next basinwide plan?
2) What are the main threats to water quality in the Catawba River basin?
3) Where are the problem areas or waters in the basin?
4) What recommendations do you have for addressing these problems?
5) What local agencies or organizations should be involved in addressing the problems?

The discussion on these questions was very productive. Comments and responses were recorded during each workshop. A general summary providing common ideas and viewpoints expressed by many of the participants is presented below. The most important issues to address in the basinwide plan were quite different between the upper and the lower portions of the basin and are therefore presented as separate summaries.

DWQ considered these comments while drafting the revised Catawba River Basinwide Water Quality Plan and will continue to use these comments to guide water quality activities in the Catawba River basin.

Upper Catawba River Basin Workshops

The WPCOG, with funding from the 205(j) grant program, held five public workshops. The workshops were held in Hickory, Lenoir, Newton and Morganton (2). The workshops were summarized by the WPCOG in the *Summary of Catawba River Basinwide Planning Workshops.*

The most frequently cited threats to water quality identified by workshop participants were:

- Sedimentation
- Point source dischargers
- Inadequate enforcement
- Inadequate buffers and loss of natural riparian areas
- Stormwater runoff
- Development

Eighteen different waters were identified as problem waters, with Clark Creek and the South Fork Catawba River mentioned most frequently. Recommendations by participants for addressing water quality problems within the basin varied with most solutions centered on the need for more public education, better enforcement and regulatory approaches. Participants identified city and county governments as the local entities most responsible for addressing water quality problems within the upper Catawba River basin.

For more information on these workshops, contact Mike Struve of WPCOG at (828) 322-9191.

Lower Catawba River Basin Workshops

Participants of the two workshops in the lower portion of the basin identified the following threats to water quality in the Catawba River basin most frequently (there was a wide variety of responses, with these threats the most frequently cited):

- Lack of enforcement of regulations
- Urbanization, population growth and sprawl
- Nutrient loading from point sources to the watershed of Lake Wylie
- Sedimentation from agriculture and construction/development
- Color in Clark Creek and the South Fork Catawba River watershed

In response to the many issues listed as threats to water quality in the basin, participants also listed recommendations for addressing these threats. This list was also very expansive, and many of the suggestions are beyond the authority of DWQ to implement. A few of the most frequently cited recommendations were:

- Need better enforcement of existing regulations and stiffer penalties
- Need more education and public involvement in water quality
- Adopt buffer regulations and implement best management practices for nonpoint sources of pollution
- Set higher point source discharge standards and set color limits in the South Fork Catawba River watershed
- Develop regional planning and cooperation efforts

For a copy of the summary of the two workshops in the lower portion of the basin, call DWQ at (919) 733-5083, ext. 360.

1.2 Recommendations from Other Sources

Several recommendations were presented to DWQ during the development of the revised Catawba River Basinwide Water Quality Plan. These recommendations are more broad-based than the basinwide plan and provide recommendations to address various land use activities that are typically authorized by local government ordinances. In addition, the recommendations are more focused on long-term changes that may need to be made to adequately address water quality degradation at the local level. These recommendations are summarized and generally addressed here.

Clean Water Fund of North Carolina Report

The Clean Water Fund of North Carolina compiled a report titled *The Rainbow River: Stain on the Piedmont* in March 1994. This review of the South Fork River watershed was intended to provide information about the sources of water pollution (with a spotlight on wastewater discharges) and make recommendations for improving existing problems. Several of these recommendations were considered while developing this revised plan for the Catawba River basin. The recommendations are highlighted below in italics, followed by DWQ's response and actions taken.

- *Reopen South Fork NPDES permit limits on certain pollutants* -- DWQ has conducted a South Fork Catawba River watershed toxics review with recommendations for additional monitoring and possible permit limits for specific pollutants (see Section A, Chapter 4, Part 4.1.5).
- *Dechlorination and chlorine limits should be imposed* -- DWQ requires dechlorination or alternatives to chlorination for new and expanding dischargers.
- *Phosphorus limits should be placed on major dischargers* -- The 1995 basinwide plan presented a strategy for reducing nutrient loading from discharges in the watershed (see Section A, Chapter 4, Part 4.1.3).
- *Monitoring requirements and limits on color should be imposed* -- DWQ is developing a color reduction strategy (see Section A, Chapter 4, Part 4.1.4).
- *Allowing more concentrated toxics in wastewater at new discharge points should not be allowed* -- While DWQ often allows dischargers to move the point of discharge to waters with more assimilative capacity, these new discharge points typically provide much better waste treatment than the older facility and often provide nutrient removal. Dischargers are required to conduct an environmental alternatives analysis before permit approval, and toxicity testing is often required in the discharge permit.
- *DWQ should provide a guidance document on enforcement* -- DWQ is implementing a revised enforcement policy. Guidelines on the policy can be found on the DWQ web page at http://h2o.enr.state.nc.us.
- *Local governments should require strict watershed ordinances* -- Local governments have the authority under the water supply watershed rules to develop ordinances that are more stringent than the state's rules. DWQ can provide technical support for creating these ordinances (see Section A, Chapter 4, Part 4.2.5).

Catawba Riverkeeper Platform and Marine Commission Recommendations

The Catawba River Foundation and the Catawba Riverkeeper developed a Catawba River Basinwide Water Quality Management Plan Platform consisting of nine items believed to be critical to achieving an effective basinwide plan to protect the natural resources of the region. Over 43 organizations and individuals co-sponsored the platform. The key recommendations are presented, with a general response from DWQ. In addition to this platform, the Mountain Island Lake Marine Commission and Lake Wylie Marine Commission approved and submitted similar comments for consideration during development of the revised basinwide plan. These recommendations can be found in Appendix V. A detailed response from DWQ was sent to each of the sponsors of the platform.

DWQ believes that the recommendations presented in the platform are well worth the time and effort of exploring the possibilities of implementing. However, the recommendations as presented cannot be accomplished by DWQ alone. These recommendations will require a broad range of strong public voice and support to make them a reality. Several of the recommendations are outside the authority of DWQ and will, therefore, have to be pursued, approved, implemented and enforced at the local level. In addition, a great deal of resources will be needed to make measurable progress on several of the recommendations. Obtaining these resources will require public pursuit of specific legislative actions. Given these constraints, DWQ can continue to work towards achieving some of these recommendations.

Summary of Recommendations Presented and DWQ Response

- *Buffer requirements –*

The General Assembly has expressed interest in protecting water quality in the Catawba River basin through the ratification of the Clean Water Act of 1999 (HB 1160, Part VII). This Act gives authority to the Environmental Management Commission (EMC) to adopt temporary rules to protect water quality in the Cape Fear, Catawba and Tar-Pamlico River basins. The intent of the bill is to allow for development of rules for basinwide buffers or other water quality protection measures as required in these three river basins.

DWQ will continue to maintain the schedule for developing basinwide plans. The basinwide plans are planning tools, rather than regulatory documents. The plans are intended to present current water quality information and recommend management strategies to protect or restore water quality. Temporary rule making for the Catawba River basin could not begin until the Catawba River Basinwide Water Quality Plan was approved by the EMC in December 1999. At the time of approval, DWQ staff alerted the EMC to resolutions and comments made by the public to support rule making for buffers. The EMC has instructed DWQ staff to begin temporary rule making processes. There will be opportunities for stakeholder input into the temporary rules, as set out by HB 1160. The bill also requires public notice and public hearings to be held after the rule-making language is developed. The EMC will then determine if rule making is warranted by current information. For more information, refer to Section A, Chapter 4, Part 4.2.7.

➢ *Best management practices for construction sites, urban areas with >50,000 people and agriculture –*

Best management practices are currently required for all construction activity. An erosion control plan is required of all sites with one or more acres disturbed. The current shortage of staff within the NC Division of Land Resources (the enforcement agency for the Sediment and Pollution Control Act) makes it difficult for every construction activity to be inspected. The DLR has also delegated oversight of the erosion and sedimentation control program to a few local governments in the basin. These local programs provide the opportunity for inspections and enforcement of erosion control at the local level.

The implementation of the Phase II Stormwater Rules, as promulgated by EPA and administered by DWQ, will include smaller municipalities within the Catawba River basin. With the Phase II rules, additional urban stormwater runoff will be managed through the use of best management practices.

Several programs currently provide financial incentives for cropland agriculture for installing best management practices. These programs include the Agriculture Cost Share Program, Conservation Reserve Program, Environmental Quality Incentives Program and the Conservation Easement Program, to name a few.

➢ *Halt on new floodplain development, better protection of wetlands and restoration of damaged wetlands –*

Floodplain development can be controlled through local government ordinances. Wetlands are given protection through state and federal regulation. DWQ is increasing compliance overview and developing a wetland enforcement program.

➢ *Nutrient controls on all NPDES discharges to eutrophic lakes –*

Only Maiden Lake and Lake Wylie are currently considered to be eutrophic lakes in the North Carolina portion of the Catawba River basin. The 1995 Catawba River Basinwide Plan presented a detailed management strategy for Lake Wylie (see Section A, Chapter 4). The water quality problems in Maiden Lake are due to siltation and nonpoint sources. Additional efforts by the Town of Maiden to control nonpoint sources within their jurisdiction would benefit the water quality in this water supply.

It must be noted that both of these lakes, though somewhat eutrophic, are currently meeting their designated uses and are not considered to be impaired. DWQ does recognize that there may be a need to require additional nutrient reductions from all sources in the Lake Wylie watershed in the future. This will require local actions to address nonpoint source pollution to make water quality improvements.
Data from Lake Rhodhiss and Lake Hickory show some eutrophication is occurring. DWQ is in the process of analyzing all available data to determine what management strategies are needed for both of these lakes (see Section A, Chapter 4).

➢ *Moratorium on package treatment plant discharges to eutrophic lakes –*

Legislative authority would be required to place a moratorium on package plants that discharge to watersheds of eutrophic impoundments. DWQ recognizes that nutrient controls may be required for some of these package plants, but there is currently not enough evidence to demonstrate that these facilities are causing water quality impairment. With additional staff or with the aid of private research efforts, modeling to assess the cumulative impacts of small package plants would be useful. The Clean Water Act of 1999 contains several study requirements which may address this issue.

➢ *Color standards for the South Fork Catawba River watershed –*

DWQ has recently taken steps to address color issues for the South Fork Catawba River watershed (see Section A, Chapter 4).

➢ *Enforcement of Buffers and Sedimentation/Erosion Regulations –*

The enforcement of ordinances protecting buffer zones within water supply watersheds is an issue to be addressed by local governments having the authority to implement these rules. DWQ is pursuing an implementation and enforcement initiative to address citizen complaints concerning buffer zones (see Section A, Chapter 4).

Sediment and erosion control, if not implemented locally, is under the jurisdiction of the Division of Land Resources. This agency is severely understaffed and does not have enough resources to fully implement these regulations. The General Assembly's action this session will reduce the severity of the understaffing to manage this program.

The Division of Forest Resources (DFR), as required by the Sedimentation Pollution Control Act, requires Streamside Management Zones (SMZ) of sufficient width to prevent accelerated erosion from reaching the stream when forestry activities disturb land adjacent to an intermittent or perennial stream. The DFR actively inspects forestry operations statewide and has a Water Quality Forester in the Lenoir and Mount Holly districts.

➢ *Moratorium on all clear-cutting until buffer zones are established –*

The DFR reports that timbercutting does not in itself create sediment problems, rather these problems are created by improperly constructed/maintained roads and trails. As previously pointed out, SMZs are required on all forestry site disturbing activities which disturb land adjacent to an intermittent or perennial stream or perennial waterbody.

➢ *Enforcement –*

DWQ has repeatedly heard concerns pertaining to the lack of enforcement of existing regulations. Through education of everyone in the basin and enforcement of existing regulations, much can be achieved. As noted above, lack of staff and resources impedes the effectiveness of the DLR and DFR in enforcing current regulations. Legislative funding has been provided for

additional personnel in both of these agencies, and this should increase the effectiveness of these regulations.

Mecklenburg County Department of Environmental Protection Recommendations

The Mecklenburg County Department of Environmental Protection (MCDEP) offered several comments regarding the development of the revised Catawba River basinwide plan. Several of these comments are summarized below in italics, followed by a DWQ response.

- *The state should consider using SWIM as a possible resolution to the TMDL requirements within Mecklenburg County –*

DWQ is working closely with MCDEP, the City of Charlotte and CMUD to develop the necessary TMDLs for the Mecklenburg County area.

- *Vegetated undisturbed buffers should be used along the Catawba River and its tributaries –*

DWQ supports the idea of undisturbed buffers along perennial streams and applauds Mecklenburg County for their buffer requirements. The General Assembly has expressed interest in protecting water quality in the Catawba River basin through the ratification of the Clean Water Act of 1999 (HB 1160, Part VII). This Act gives authority to the EMC to adopt temporary rules to protect the Cape Fear, Catawba and Tar-Pamlico River basins. The intent of the bill is to allow for development of rules for basinwide buffers or other water quality protection measures as required in these three river basins.

- *Nutrient limits should be imposed on all major NPDES facilities –*

DWQ will consider applying nutrient limits on any major discharges where sound scientific data point to the need for limits.

- *Need stricter enforcement of sanitary collection systems and water supply watershed ordinances –*

DWQ has revised its enforcement policy (refer to Section C, Chapter 2) and is developing a water supply watershed enforcement policy (see Section A, Chapter 4, Part 4.2.5).

- *Stormwater management –*

EPA is currently developing Phase II of the NPDES stormwater rules. These rules, administered by DWQ, will apply to smaller municipalities and urban areas. DWQ will assess the rules promulgated by EPA before making revisions to the state stormwater program.

1.3 Federal Initiatives

1.3.1 Section 319 - National Monitoring Program

Under Section 319 of the Clean Water Act, the USEPA has developed the Section 319 National Monitoring Program (NMP) specifically to address nonpoint source pollution. Its objectives are: 1) to scientifically evaluate the effectiveness of watershed technologies designed to control nonpoint source pollution; and 2) to improve our understanding of nonpoint source pollution. To achieve these objectives, the Section 319 NMP has selected watersheds across the country to be monitored over a 6 to10-year period to evaluate how improved land management reduces water pollution. NMP projects will help communities and citizens protect their local water resources by providing information on the effectiveness techniques for solving nonpoint source problems.

Long Creek Watershed Project

In 1992, the USEPA included the Long Creek Watershed Project in the NMP. The 28,480 acre mixed agricultural and urban watershed is the primary water supply for Bessemer City. The stream channel near the water supply intake in the headwaters area has frequently required dredging due to sediment accumulation. Aquatic habitat downstream of the intake is degraded due to high levels of fecal coliform and excessive sediment and nutrient loading from agricultural and urban nonpoint sources.

Land management upstream of the water intake is reducing erosion from cropland and streambanks. Downstream of the intake, land management activities include fencing to exclude cattle from streams, animal waste management, and implementation of sediment and rainwater runoff controls. A system of dairy BMPs including: 1) livestock exclusion from perennial and ephemeral streams; 2) an alternative watering system; 3) streambank stabilization and riparian buffer establishment; 4) a waste management system; 5) heavy use and feeding area improvements; and 6) improved stream crossings were installed. Water quality monitoring of streams has been performed to quantify the effectiveness of different BMPs on nonpoint source pollution. The initial NMP grant totaled $901,486 for the nine-year project. An additional $200,000 was added to the project in 1996. Monitoring within the watershed will continue through the period of the grant, ending September 2001. Information regarding the Long Creek NMP site is available from the North Carolina Cooperative Extension Service.

1.3.2 Section 319 – Base Program

Section 319 of the Clean Water Act provides grant money for nonpoint source demonstration projects (Table C-1). There are five projects or programs in the Catawba Basin that have been funded through this grant source. Each project is described individually below.

Table C-1 Section 319 Projects in the Catawba River Basin

PROJECT	FEDERAL CONTRIBUTION	NON-FEDERAL MATCH	TOTAL
Long Creek Watershed Restoration	$157,500	$105,000	$262,500
Catawba River Land Acquisition – City of Morganton	$250,000	$126,667	$376,667
Water Quality and Perennial Grasses Demonstration – McDowell County	$58,500	$39,000	$97,500
South Fork Catawba River Urban and Agriculture Demonstration	$88,392	$58,928	$147,320
Area I Water Quality Engineer – annual support for technical assistance to agricultural operators in western North Carolina	$21,418	$14,279	$35,697
Total	**$575,810**	**$343,874**	**$919,684**

Long Creek Watershed Restoration – Additional Funding in NMP Watershed

The Long Creek Watershed is the site of a 9-year EPA National Monitoring Program described in Section C-1.3.1 above. This funding was used to support accelerated design and implementation of additional BMPs including streambank stabilization, livestock exclusion, urban stormwater controls, and establishment of permanent wildlife habitat.

Catawba River Land Acquisition – City of Morganton

The City of Morganton Comprehensive Long-Term Land Management Plan identifies a six-mile greenway corridor along the Catawba River. An aggressive acquisition and development program began in 1992 with identification of riparian parcels. Prioritization of properties was made based upon location, greenway values and water quality benefit. Section 319 grant funds were used to acquire the highest priority parcel.

Additional funds for acquisition were obtained through the North Carolina Clean Water Management Trust Fund grant of $550,000 (Table C-2) to purchase a 204-acre tract of land adjacent to the priority one parcel. The acquisition phase of the project is nearing completion, and Morganton is making plans to stabilize and restore the channel and develop the greenway area.

Water Quality and Perennial Grasses Demonstration – McDowell County

This ongoing demonstration intends to evaluate the species establishment, competitiveness, adaptability and forage quality of seeding perennial warm season grasses for wildlife habitat, forage and water quality protection. This project is performed through the NC Department of Agriculture and compares response of warm season grasses to different soil types.

South Fork Catawba River Urban and Agriculture Demonstration

The Gaston County Quality of Natural Resources Commission (Section C, Part 1.7.2) has supported a monitoring program in local watersheds. Data from the monitoring program will enable identification of problem areas and target specific stream reaches for action. A project based upon the findings of the Commission was submitted by the NC Cooperative Extension Service and is funded in the FY1998 Section 319 workplan. Planned project activities include streambank protection, agricultural and urban BMPs, and urban NPS education for local elected officials, agency officials, developers, students and local leaders.

Area I Water Quality Engineer – annual support for technical assistance to agricultural operators in western North Carolina

This engineering position, housed by the Natural Resources Conservation Service, provides technical support for implementation of agricultural best management practices (BMPs) related to concentrated animal feeding operations and trout farms in western NC. This technical assistance is readily available to farmers, facilitating proper management practices and water quality protection. Activity costs are shared with the Tennessee Valley Authority and local Soil and Water Conservation Districts.

1.4 State Initiatives

1.4.1 NC 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 water quality, flood prevention, fisheries, wildlife habitat and recreational opportunities. The NCWRP is not a grant program. Instead, the NCWRP funds wetland, stream and streamside (riparian) area projects directly through the Wetlands Restoration Fund.

Restoration sites are targeted through the use and development of the Basinwide Wetlands and Riparian Restoration Plans. These plans were developed, in part, using information compiled in DWQ's Basinwide Water Quality Plans. The Basinwide Wetlands and Riparian Restoration Plans are updated every five years on the same schedule as DWQ's Basinwide Water Quality Plans. As new data and information become available about water quality degradation issues in the Catawba River basin, priority subbasins identified in the NCWRP's plans, may be modified.

The NCWRP is also working to develop comprehensive Local Watershed Restoration Plans within the identified Priority Subbasins. These more locally-based plans will identify wetland areas, contiguous reaches of stream, and contiguous strips of buffer that, once restored, will provide significant water quality and other environmental benefits to watersheds. The NCWRP will coordinate with local community groups, local governments and others to develop and implement these plans. The NCWRP has chosen subbasins 03-08-31, 03-08-34 and 03-08-35, and 03-08-37 as priority subbasins.

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 319 funded or proposed projects will often improve the overall water quality benefits of the project.

The NCWRP actively seeks landowners within the Catawba River basin who have restorable wetland, riparian and stream sites. Currently the NCWRP is working to implement a stream restoration project in the Catawba at an Alexander County dairy farm. Through streamside/buffer restoration, the sedimentation and nutrient inputs contributing to water quality degradation at this site will be reduced.

For more information about participating in the NCWRP, please contact Crystal Braswell at (919) 733-5208 or visit the website at http://h2o.enr.state.nc.us/ then click on Wetlands Restoration Program.

1.4.2 Clean Water Management Trust Fund

The Clean Water Management Trust Fund offers about $40,000,000 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 Catawba River basin, sixteen projects have been funded. The total amount of funds that have been allocated to the basin is $12,506,250. These projects are presented in Table C-2.

For more information on the CWMTF or these grants, contact Dave McNaught at (919) 830-3222 or visit the website at www.cwmtf.net.

1.4.3 Nicholas School of the Environment at Duke University

In the fall of 1998, the Nicholas School of the Environment at Duke University, with the financial support of Duke Energy Corporation, conducted a public opinion survey with 872 randomly selected households in counties within the NC portion of the Catawba River basin. A total of 1085 surveys were conducted within the entire Catawba River basin (both SC and NC portions of the basin). The surveys, which consisted primarily of telephone interviews, collected a variety of information from respondents regarding their perceptions and opinions about water quality in the region, their use of the waters in the Catawba River basin and their level of support of water quality management programs.

Survey results indicated a high level of interest among local populations for the protection of water quality in the region. Respondents reported many different reasons for being interested in protection of this resource. Local interest in water quality protection stemmed from several different sets of concerns. These included the use of basin waters for recreation by the respondents and their friends and families, the quality of respondents' drinking water and the knowledge that this resource was being protected regardless of actual use.

For more information on this research, contact Randy Kramer at (919) 613-8072.

Table C-2 Projects in the Catawba River Basin Funded by the Clean Water Management Trust Fund (as of 7/99

Responsible Party	Purpose of Project	Amount Funded
Mecklenburg County Parks and Recreation	Stormwater	$209,000
NC Wildlife Resources Commission	Restoration	$156,000
Catawba Lands Conservancy	Acquisition-Buffers	$310,000
Town of Granite Falls	Wastewater	$1,228,000
Mecklenburg County Department of Environmental Protection	Stormwater	$750,000
Town of Hildebran	Wastewater	$136,000
Western Piedmont Council of Governments	Wastewater	$450,000
McDowell County	Restoration	$294,250
City of Gastonia	Acquisition-Buffers	$347,000
Town of Maiden	Acquisition-Buffers	$360,000
Centralina Council of Governments	Acquisition-Buffers	$6,560,000
Catawba Lands Conservancy	Planning	$50,000
City of Gastonia	Wastewater	$1,000,000
City of Lenoir	Acquisition-Greenways	$50,000
City of Clarement	Acquisition-Greenways	$56,000
City of Morganton	Acquisition-Greenways	$550,000

1.5 Local Initiatives

1.5.1 Western Piedmont Council of Governments (WPCOG)

Lower Creek Watershed Project

The WPCOG was awarded a grant from DENR to develop a watershed management plan for Lower Creek in 1996. During 1997-1998, the WPCOG held six public meetings to identify locally important issues and develop recommendations for improving conditions within the watershed. Fifteen subbasins were ranked for future nonpoint source controls using all available information (WPCOG, 1998). Most of the high priority subbasins are located in the upper portion of the watershed. Water quality impacts in this area are due to urbanization and development pressures. In addition, agricultural activities, land-disturbing activities and erosion are problems for the creek.

The report cited many recommendations that will be useful for local restoration efforts, along with recommendations for education efforts in the watershed and using preventative measures on new development. Refer to Section B, Chapter 2 for further information on water quality in Lower Creek and recommendations for restoration.

1.5.2 Mecklenburg County Department of Environmental Protection (MCDEP)

Surface Water Improvement and Management (SWIM) Program

The City of Charlotte and Mecklenburg County Department of Environmental Protection (MCDEP) have joined in a cooperative effort to restore the quality and usability of surface waters. The Surface Water Improvement and Management (SWIM) Program began in 1995 with enhanced water quality monitoring, regulatory enforcement and educational efforts. A numerical water quality rating system was developed and incorporated into a GIS mapping program. Water quality results and maps are presented in the biennial Mecklenburg County's State of the Environment Report. In the spring of 1996, an educational campaign was launched to increase public awareness on current water quality conditions and to obtain public input and involvement in the SWIM program. MCDEP conducts presentations to the public, provides SWIM Alert newsletters, develops plans for subbasins in the Catawba River drainage, and developed an Adopt-A-Stream program. Citizen activities include cleanup efforts, storm drain stenciling and reporting of pollution problems. SWIM efforts could result in significant changes in development activities, improved greenway acquisition efforts and the development of stream buffers.

MCDEP also adopted a Creek Use Policy in October 1996. The policy is intended to protect the surface waters of Mecklenburg County "for prolonged human contact and recreational opportunities and shall be suitable to support varied species of aquatic vegetation and aquatic life." Under this policy, MCDEP staff are directed to bring to the Mecklenburg County Board of County Commissioners "alternatives and potential costs to restore waterways and lakes to natural beauty and recreational use..." within 90 days of listing a waterway under the SWIM program. In January 1998, the Board voted to proceed with staff recommendations of a proposed SWIM Strategy.

The SWIM panel and staff developed a Phase I Implementation Strategy that was strongly supported at public meetings. SWIM Phase I was fully funded with over $800,000 for fiscal year 1998-1999. Several key components of the Phase I SWIM Strategy include:

- Enhanced enforcement of erosion and sedimentation control ordinances
- Enhanced enforcement of stream buffers required in regulated water supply watersheds
- Establish and maintain vegetative stream buffer
- Address elevated levels of fecal coliform bacteria
- Implement countywide water quality modeling
- Enhance water quality monitoring
- Improve coordination between county and city personnel
- Conduct instream inventory and assessment
- Increase public education and awareness

SWIM Stream Buffer Plan

Through the SWIM strategy, Mecklenburg County has developed a proposed stream buffer network plan to ensure that the stream and adjacent lands will fulfill their natural functions. These functions include filtering pollutants, conveying storm and groundwater, storing

floodwater, and supporting aquatic life and other life. Protection will be provided for stream sections by a variety of options currently being considered by the Storm Water Advisory Committee. Stream buffer requirements will begin at the point on a stream segment where the drainage basin is equal to or greater than 100 acres. The buffer at this point will consist of a 20-foot streamside zone and a 15-foot upland zone on each side of the stream. At 300 acres or greater, a three-zone buffer will be required to a total width of 50 feet on each side of the stream. At 640 acres or greater, the three-zone buffer width will increase to 100 feet plus 50 percent of the area of the flood fringe. A mitigation procedure is also proposed for unavoidable or requested buffer impacts, as well as a grandfathering clause and enforcement actions.

The proposed text for the SWIM Stream Buffer Ordinance has been written for Charlotte and Mecklenburg County. The six towns located in Mecklenburg County are also working on draft ordinances. Following public hearings and final adoption by the City of Charlotte, Mecklenburg County and the six towns, the buffer ordinance should be effective countywide in year 2000.

Additional Water Quality Programs and Efforts of MCDEP

- Storm Drain Stenciling Program – Several hundred storm drains have been stenciled by community groups.
- Adopt-a-Stream – Dozens of groups have adopted stream segments, resulting in thousands of pounds of trash being removed and numerous pollution problems being reported and corrected.
- Issue written notices of violation for water quality problems.
- Monitors active stormwater permits in Mecklenburg County. MCDEP identifies problem facilities and conducts site inspections at a minimum of 24 problem facilities per year. Problems at these facilities are identified and corrected.
- Works with Charlotte Storm Water Services to monitor and inspect private BMPs and to ensure that stormwater maintenance activities are adequate.
- Works with Charlotte Storm Water Services in the design and construction of pilot BMPs including compost filters, storm ceptors and enhanced sediment basins.
- GIS mapping of Surface Water Quality Index by watershed to identify problem areas.
- Quarterly ambient and stormwater monitoring at fixed stations in the major creeks draining Charlotte.

For more information on the SWIM strategy and its various components, contact Rusty Rozelle at (704) 336-5449.

1.5.3 City of Charlotte Storm Water Services

The City of Charlotte has administered a storm water quality management program (SWQMP) since January 1993. Seven years earlier (in 1986), Charlotte began local administration of a soil erosion and sedimentation control program. The SWQMP is coordinated with the countywide Surface Water Improvement and Management (SWIM) initiative (see Part 1.5.2). It is likely that the SWQMP and SWIM program will be merged into one program in the future.

The SWQMP involves measures to comply with USEPA nonpoint source pollution regulations and state water supply watershed protection regulations for Lake Wylie. The types of activities

performed by the city as part of the SWQMP include watershed management and coordination, research of Best Management Practices (BMPs), elimination of illegal water pollution activities, stormwater sampling and testing, and public education and outreach.

The city is in the process of finalizing the development of a Watershed Management System (WMS) which entails an extensive database of water quality, water quantity, land use and land feature information. The WMS will be used to enhance project design, modeling and master planning efforts. Charlotte participates in a number of local and regional water quality initiatives and committees.

Stormwater quality controls are implemented in the City of Charlotte through several different programs/policies. These programs range from state/federally mandated land development requirements for the drinking water supply watersheds and NPDES permit directed BMP Pilot Program to locally driven policies such as a Pond and Dam Restoration Policy, streamside buffers and a stormwater utility fee credit system. Improvements to design standards for new development are continually encouraged. Charlotte's SWQMP also involves evaluation of maintenance and "housekeeping" practices in coordination with the city's industrial operations (i.e., street maintenance, solid waste, etc.) and with Charlotte Storm Water Services' (CSWS) infrastructure repair and maintenance methods including channel stabilization, cleaning, culvert replacement/blow-out repair, and pond/dam management. CSWS has funded research for the development of a "regional curve" that will be used in designing stream restoration or stabilization projects. This research will benefit the Piedmont Region and the state.

Illegal water pollution activities are identified and eliminated through enforcement of the Storm Water Pollution Ordinance by follow-up to reports of illicit connections and improper disposal, industrial inspections, inspection and enforcement per the Soil Erosion and Sedimentation Control Ordinance, and long and short-term monitoring activities. Stream and stormwater monitoring activities performed on behalf of the Charlotte's SWQMP include:

- Quarterly land use monitoring (completed in 1998 and discontinued; report, expected in late 1999, will analyze pollutant loads based on land use and other factors).
- Monthly stream monitoring for chemical and physical parameters during ambient flow conditions at 25 sites.
- Benthic macroinvertebrate sampling at 44 stream sites (annually at some and 3-year rotation at others).
- Fish community analysis on a 5-year rotation at the 44 benthic sites with fish tissue analyses performed at 11 of these sites.
- Quarterly instream stormwater monitoring to measure nonpoint source pollutant loads in major streams draining Charlotte and to identify sources of these pollutants for possible corrective actions.
- Nonroutine monitoring to evaluate effectiveness of maintenance practices, identify/delineate areas of illegal water pollution activities, and monitor industrial practices.

Educational outreach efforts are coordinated through the Water Quality Coalition (WQC). The WQC consists of representatives from Charlotte-Mecklenburg Storm Water Services, Charlotte-Mecklenburg Utilities, NC Division of Forestry - Mecklenburg Office, Mecklenburg County Department of Environmental Protection, Mecklenburg County Solid Waste Management,

University of North Carolina at Charlotte, and NC Soil and Water Conservation District. The WQC organizes joint public outreach efforts aimed at improving surface water quality. Public education and outreach efforts have also been locally coordinated through the "Water U Wadin For" campaign. Additional activities aimed at involving and educating the public on stormwater pollution prevention have included:

- Public involvement programs (Storm Drain Stenciling, Adopt-a-Stream, bio-engineering projects)
- Workshops (Erosion control, Stream and Wetland Protection/Restoration, industrial operations, pesticide application, etc.)
- Educational materials (SWIM Newsletter, handouts/brochures, newspaper inserts/articles, Slime Stoppers Video)
- Special events and festivals (Big Sweep, Water Week, Used Oil Recycling Week, Spring Show, Earth Day, etc.)

For additional information regarding the City of Charlotte's SWQMP or other activities, contact Steve Jadlocki, Water Quality Program Administrator at (704) 336-4398.

1.5.4 Initiative for Mountain Island Lake

The Clean Water Management Trust Fund has provided a $6.15 million grant to Gaston County, Lincoln County, the Trust for Public Lands and the Centralina Council of Governments to purchase 1,231 acres of Crescent Resources property in Gaston and Lincoln counties. This initiative was spearheaded by the Catawba Lands Conservancy, the Community Foundation of Gaston County, Foundation for the Carolinas and the Trust for Public Land.

This tract of land resulted in the purchase of nearly six miles of Mountain Island Lake shoreline for preservation and protection. Combined with the 2,700 acres acquired by Mecklenburg County for watershed protection, about 53 percent of the lake shoreline is held in public hands. Computer modeling is being developed to determine which other Mountain Island Lake parcels should receive top priority for purchase to provide further protection in this water supply watershed.

For more information on the Initiative for Mountain Island Lake, contact Mark Harrison or Harry Hoover at (704) 364-8969.

1.5.5 Muddy Creek Watershed Restoration Initiative

The NC Wildlife Resources Commission, Duke Power, Natural Resources Conservation Service, Trout Unlimited, Clean Water Management Trust Fund, National Fish and Wildlife Foundation, Western Piedmont Council of Governments, DWQ, McDowell County Soil and Water Conservation District, Burke County Department of Community Development, City of Morganton and the Foothills Conservancy of NC are working together to reduce sediment loads in Muddy Creek. This project is expected to consist of streambank restoration sites, channel realignment, clearing blockages, bank stabilization, fencing out livestock, establishment of buffers with willing landowners, and public education and outreach.

This initiative is forming partnerships among industry, resource and conservation agencies, local governments, and landowners to pursue sedimentation and water quality improvements in the Muddy Creek watershed. The ultimate goal is to improve fish habitat and water quality in the Catawba River and demonstrate the effectiveness of BMPs.

In 1999, the project partners began to implement a stream improvement project, conduct a Muddy Creek watershed assessment to determine the feasibility and cost of significant sediment improvement, and outreach and education through a newsletter and a brochure.

1.6 Corporate Initiatives

1.6.1 Duke Power

Duke Power has an ongoing watershed management-related initiative in several respects. Duke has an environmental monitoring program that has performed water quality monitoring for over 20 years. In response to the increased demand for water resources as a result of growth, Duke has recently diversified its monitoring to include bacteriological, phytoplankton, aquatic plants and fish. Duke has also been very interested in developing partnerships with other groups interested in water quality management. Duke publishes *The Catawba Magazine* as a means of sharing information to the public about water quality issues and resource issues in the Catawba River basin.

1.7 Citizen Efforts

1.7.1 Catawba River Foundation and the Riverkeeper Program

In 1992, the county commissioners of five counties (Mecklenburg, Union, Gaston and Lincoln counties in NC and York County in SC) appointed 100 citizens to the Catawba River Corridor Study Group. The Group also had representatives from Duke Power, Jansen and Centralina Council of Governments. The Study Group made eight recommendations to the commissioners. One of these recommendations was to create a Catawba Riverkeeper Program.

In 1997, the Lake Wylie and Lake Norman Marine Commissions established the Catawba River Foundation, Incorporated to improve and protect the water quality of the Catawba River. The Foundation is a nonprofit corporation, which has been designated by the National Association of Water Keeper Alliance, Incorporated as the umbrella organization for the RIVERKEEPER® movement on the Catawba River. In January 1998, the Foundation contracted Donna Lisenby to be the Catawba Riverkeeper. The Foundation plans to establish individual Creek/Covekeepers programs on each of the eleven impoundments located in North and South Carolina. These Creek/Covekeeper programs would work in coordination with the Riverkeeper. Currently, there is an established Lake Wylie Creek/Covekeeper, and one is being formed on Lake Norman.

For more information on the Catawba Riverkeeper, contact Donna Lisenby at 1-87-Riverkeeper. For more information on the Catawba River Foundation, contact Mike McLaurin at (704) 348-2075.

1.7.2 Gaston County Quality of Natural Resources Commission (QNRC)

Established in 1988, the Gaston County QNRC is a citizen-based organization working together to improve the quality of air and water resources in the county. The mission of the QNRC is to:

- assess the state of natural resources in Gaston County;
- review environmental concerns of the residents and determine if state and federal regulations are sufficient to address them;
- study alternatives and make recommendations to the Board of County Commissioners;
- communicate with county residents and encourage active understanding of pollution problems in the county and alternatives for improving the environment; and
- coordinate and communicate with appropriate county officials and agencies.

In addition to cooperating on the Long Creek project (see Part 1.2.1 above), the QNRC has: 1) held workshops to educate the public about changes in state water pollution control policy and gathered information on the needs and interests of the residents to affect new pollution control policies; 2) worked with the City of Gastonia to improve water quality on Kaglor Branch by creating a stormwater detention basin and constructing wetlands in Rankin Park; and 3) worked with a local boy scout troop to plant hardwoods above the Bessemer City water supply intake to protect the intake from sedimentation.

For more information on the Gaston County QNRC activities, call (704) 922-0303.

1.7.3 Catawba Lands Conservancy (CLC)

The CLC is a nonprofit land trust dedicated to preserving the land, water and wildlife resources of the lower Catawba River basin in NC, including all or portions of Catawba, Gaston, Iredell, Lincoln, Mecklenburg and Union counties. CLC works in partnership with private landowners, public agencies, developers and others to place land into conservation. The CLC acquires property through donations of land or conservation easements, as well as purchases.

Many of CLC's conservation efforts are focused on working with landowners to permanently protect riparian buffers and wetlands along the Catawba River and its tributaries. The CLC has a number of these stream corridor protection efforts underway in the Catawba River basin including:

Mountain Island Lake Initiative -- The Conservancy is a lead partner in the Mountain Island Lake Initiative (see Part 1.5.4 above), an effort to acquire and permanently protect approximately 4,800 acres in the Mountain Island Lake Watershed. These lands, in addition to the 2,700 acres protected as Nature Preserves in Mecklenburg County and 1,231 acres protected in Gaston and Lincoln Counties, will protect the drinking water source for nearly 600,000 NC residents. Priorities in the watershed include the lakeshore and Johnson, Gar, Torrence and McDowell Creeks.

South Fork Catawba River -- The Conservancy is working with landowners to protect buffers along the river and its tributaries in Gaston and Lincoln counties. CLC provides outreach to landowners about the benefits of riparian buffers, as well as conservation options and benefits.

Over 600 acres along the river have already been protected. The CLC expects to protect an additional 215 acres along Long and Little Long Creeks in Gaston County, as well as 245 acres on both sides of the river in Lincoln County. A conservation plan for a portion of the South Fork River in Gaston County is being prepared with funds from the Clean Water Management Trust Fund and the Community Foundation of Gaston County.

Stanley Creek -- A private landowner has agreed to donate a conservation easement protecting approximately 60 acres along the creek. The Conservancy will also initiate outreach to other landowners in the Stanley Creek basin in an effort to protect a continuous forested riparian buffer along this tributary to Dutchmans Creek.

Waxhaw Creek -- A grant from the Clean Water Management Trust Fund, through the Conservation Trust for North Carolina, will allow the Conservancy to identify and prioritize land in the Waxhaw Creek watershed that is essential to protect the water quality of the creek. The Creek supports the only remaining population of the federally endangered Carolina Heelsplitter (*Lasmigona decorata)* mussel in the Catawba River basin.

For more information on the Conservancy and its water quality protection efforts, contact: Catawba Lands Conservancy at (704) 342-3330.

1.7.4 Lake Norman Marine Commission

The Lake Norman Marine Commission was authorized by the General Assembly in 1969. The Lake Norman Marine Commission is composed of one representative from the four counties in the Lake Norman watershed: Catawba, Iredell, Lincoln and Mecklenburg. The Commission has the authority to make regulations applicable to Lake Norman and its shoreline area concerning all matters relating to or affecting public recreation and water safety. In lieu of, or in addition to, passing regulations supplementary to state law and regulations concerning the operations of vessels on Lake Norman, the Commission may request that the Wildlife Commission pass local regulations on this subject after public notice.

In addition to these regulatory activities on Lake Norman, the Lake Norman Marine Commission has been instrumental in increasing public awareness of water quality issues on the lake. The Commission has developed a brochure for citizens on erosion control methods, buffer requirements, and illegal discharge fines and penalties. Through this brochure, the public is made aware of violation reporting procedures. The Commission also developed a reporting form that is to be faxed to the DENR regional office for reporting violations.

For more information on the Lake Norman Marine Commission, call (704) 372-2416.

1.7.5 Lake Wylie Marine Commission

The Lake Wylie Marine Commission was established as an interstate compact between North and South Carolina in 1989. The counties of Mecklenburg, Gaston and York (SC) fund the Commission equally and appoint seven Commissioners, with each county having two appointees and a third appointee that rotates among the three counties.

The Lake Wylie Marine Commission has regulatory authority provided that the regulations do not supercede federal or state law. The Marine Commission's authority extends up to1000 feet beyond the full pond level of Lake Wylie. The Marine Commission has passed two local regulations. In 1991, the Commission passed the first regulation in the Carolinas that governs the operation of personal watercraft (i.e., jet skis). In 1992, the Commission passed a regulation that governs the operation of motorboats. Currently, the Marine Commission is considering a regulation that would govern the operation of water-skiing. The Marine Commission is also involved in the establishment or recommendation for no-wake zones. In addition to passing local regulations, the Marine Commission is actively involved with other agencies from both states on various lake issues including increased lake patrols, better boating education, state legislation, environmental protection, etc.

The Marine Commission is also actively involved with various environmental organizations and individuals such as NC Department of Environment and Natural Resources, SC Department of Health and Environmental Control, Duke Power, the Catawba Riverkeeper and others. The Lake Wylie Marine Commission has been focusing its environmental resources on preventing illegal dumping into Lake Wylie and participating in the development process to ensure environmental compliance. When violations are discovered, the Marine Commission works with the counties and state to insure that prompt enforcement action is taken.

For information about the Lake Wylie Marine Commission, contact Mike McLaurin at (704) 348-2705 or visit their website at http://www.charweb.org/organizations/wylie.index.htm.

1.7.6 Mountain Island Lake Marine Commission

The Mountain Island Lake Marine Commission was established by the NC General Assembly in 1997. The counties of Mecklenburg, Gaston and Lincoln fund the Commission and appoint members to the Commission. There are seven commissioners, with Mecklenburg and Gaston counties each having three commissioners and Lincoln having one commissioner.

The Mountain Island Lake Marine Commission has regulatory authority provided that the regulations do not supercede federal or state law. This Commission is currently considering local regulations that would affect the operation of personal watercraft. The Marine Commission is also involved in the establishment or recommendations for no-wake zones. Also, the Marine Commission is helping to establish a US Coast Guard Auxiliary Flotilla on the lake. In addition to considering local regulations, the Marine Commission is actively involved with local law enforcement, the NC Wildlife Resources Commission and legislators on various lake issues.

The Marine Commission is also actively involved with various environmental organizations and individuals such as NC Department of Environment and Natural Resources, Duke Power, the Catawba Riverkeeper and others. The Mountain Island Lake Marine Commission has been focusing its environmental resources on participating in the development process to ensure environmental compliance. When violations are discovered, the Marine Commission works with the counties and state to insure that prompt enforcement action is taken.

For information about the Mountain Island Lake Marine Commission, contact Mike McLaurin at (704) 348-2705.

1.7.7 Trust for Public Land Mountain Island Lake Technical Study

The purpose of this study is to make an assessment of environmental and land use conditions in the Mountain Island Lake watershed and to identify the areas within the watershed where development may pose the greatest risk to water quality on the lake. The study was commissioned by the Trust for Public Lands and conducted by the Carolinas Lands Conservation Network, with assistance from the Centralina Council of Governments. A computer model was used to compute a calculated buffer around the lake and its tributaries, and then individual stream segments were prioritized based on a series of factors. This information is expected to be of significant benefit to the region to protect those waters to be at greatest water quality risk and to reduce nonpoint source pollution in the watershed.

1.8 Regional Activities

1.8.1 Catawba River Bi-State Task Force

The Bi-State Task Force is a forum for discussing issues among stakeholders in the Catawba River basin. The Bi-State Task Force quarterly meetings are open to the public. Meetings typically consist of experts addressing key topics and a "River Roundtable" that allows anyone in the group to share concerns. The Task Force also sponsors an annual public conference at UNCC on such issues as water allocation, ecosystem management and water quality management.

For more information on the Catawba River Task Force, contact Trille Mendenhall of Charlotte-Mecklenburg Utilities at (704) 399-2221.

1.8.2 Catawba Water Quality Consortium (CWQC)

The Consortium was formed in 1996 to enhance communication and share technical information among entities conducting water quality monitoring in the Catawba River basin. Membership in the organization represents a wide spectrum of state, federal and local agencies with interests in water quality. The consortium also acts as a sounding board for ideas related to water quality.

For more information on the Catawba Water Quality Consortium, contact David Chestnut at (803) 898-4066.

1.8.3 Voices and Choices

Several organizations partnered together to bring about an Environmental Summit for the Central Carolinas region, defined as Anson, Cabarrus, Catawba, Cleveland, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, Stanly and Union counties in NC, and three SC counties of Chester, Lancaster and York. Many organizations, ranging from nonprofits, private and public sector, and environmental groups, continue to be involved in this initiative.

Prior to the Environmental Summit, a series of regional meetings were held for people to express views, concerns and choices for the future of the Central Carolina's region. The issues most

commonly raised were: 1) growth planning, sprawl and land use policies; 2) surface and groundwater protection; 3) waste management and disposal; 4) transportation alternatives and impact on air quality; and 5) preservation of open space and the aesthetic appeal of the region. The Environmental Summit was held in November 1998 with over 700 people in attendance.

A need to continue an inclusive initiative to develop regional consensus on issues affecting the environment in the Central Carolinas was also identified. Five action teams are formed to develop and implement specific plans. Specific recommendations for addressing water quality include:

- Improve land use decision-making and enforce pollution regulations with education as one component.
- Reduce the number of wastewater treatment plants through regionalization.
- Reduce nutrient loads from point sources where loads contribute to impairment of downstream waters.
- Improve wastewater collection systems to reduce the number of system leaks and overflows.
- Encourage and facilitate development of local sediment and erosion control programs.
- Fund more erosion control inspector positions at the state level.
- Continue developing color guidelines and reducing color discharges on the South Fork Catawba River.
- Implement more buffer zones around waters.

For more information on the Voices and Choices Initiative, contact the Central Carolinas Choices at (704) 376-9214.