Watershed Restoration Plan for the Catawba River Basin

2001

NCDENR

DIVISION OF WATER QUALITY
DWQ

N. C. Wetlands Restoration Program

Executive Summary

This document, prepared by the North Carolina Wetlands Restoration Program (NCWRP), presents a description of Targeted Local Watersheds within the Catawba River Basin. It is the first update since the original Basinwide Wetlands and Riparian Restoration Plan for the Catawba River Basin was released in 1998. This plan is different from the preceding document in that a more in-depth description is provided focusing on the areas of interest, the Targeted Local Watersheds. Local watersheds are targeted based on their need and opportunity for stream, wetlands and riparian buffer restoration. The watershed approach is the outgrowth of the recognition that water quality improvements are likely to have more pronounced and longer lasting effects if assessments and restoration efforts are focused on the local watershed level as opposed to discrete and isolated stream segments within the basin as a whole. The NCWRP hopes that the geographic targets provided will be used by other agencies, groups and local governments for the location of water quality improvement projects. Coordinating project implementation in watersheds with significant restoration need can allow for organizations with similar goals to generate greater positive ecological impact on North Carolina's aquatic resources through complementary efforts with cumulative impacts.

This document is designed for use in conjunction with the Guide to NCWRP's Watershed Restoration Planning Strategy (Version 1). General information pertaining to program goals and plan methodology are provided in the planning guide. Information relating to Catawba River Basin restoration goals and basin-specific resource assessments are contained within this Restoration Plan.

In general, this document provides an overview of the Catawba River Basin, describes each priority subbasin, and describes each Targeted Local Watershed. In the overview of the basin (Section 2) is a map showing all nine Catawba River subbasins, highlighting the Priority Subbasins and the 16 Targeted Local Watersheds. Section 2 contains a general description of the basin, habitat information, permitted wetlands losses and use support information.

In Section 3, basin-specific restoration goals are outlined, as well as a brief discussion regarding the Priority Subbasin and Targeted Local Watershed selection process. This section also provides detailed information regarding the stakeholder process that was a valuable part of the development of this plan, as public input was solicited and weighed heavily in the selection of Targeted Local Watersheds.

Subbasins and Targeted Local Watersheds are described in Section 4. Each section describes a subbasin and is followed by a map of that subbasin. Maps of Targeted Local Watersheds follow the text describing the watersheds within the Priority Subbasin section. Three Targeted Local Watersheds have been selected outside of the original Priority Subbasins. These were selected on the merit of potential stream restoration opportunities in those watersheds. These Targeted Local Watersheds are described at the end of Section 4.

Section 5 contains descriptions of several water quality initiatives taking place within the Catawba River Basin, as well as contact information.

Table of Contents

List of Figures and Tables

Section 1: Introduction

Purpose and Background of the NC Wetlands Restoration Program

Recognizing the value of wetlands and riparian areas for maintaining water quality, storing floodwaters, providing fish and wildlife habitat, and performing other valuable functions, the North Carolina General Assembly established the North Carolina Wetlands Restoration Program (NCWRP) in 1996 (N.C.G.S. 143-214.8-214.13). The purpose of the NCWRP is to restore, enhance, preserve and create wetlands, stream, and stream-side (riparian) areas throughout North Carolina's seventeen major river basins. The goals of the program are:

1. To protect and improve water quality through restoration of wetlands, stream, and riparian buffer functions and values lost through historic, current, and future permitted impacts.

2. To achieve a net increase in wetlands acres, functions, and values in all of North Carolina's major river basins.

3. To promote a comprehensive approach for the protection of natural resources.

4. To provide a consistent approach to address compensatory mitigation requirements associated with wetland regulations, stream and riparian buffer regulations, and to increase the ecological effectiveness of compensatory mitigation projects.

Purpose of Watershed Restoration Plans

To accomplish the goals described above, the NCWRP develops Watershed Restoration Plans to focus planning and implementation of restoration activities within each of the 17 major river basins. These plans provide information on areas in the state that have been determined to be a priority for restoration efforts. The NCWRP uses the Watershed Restoration Plans to target degraded wetland and riparian areas which, if restored, could contribute significantly to the goal of protecting and enhancing watershed functions.

A significant purpose of this document is to communicate to interested parties and individuals specific areas in the Catawba River Basin that will be the focus of projects for the NCWRP. The document concentrates on identifying the NCWRP's areas of focus and providing justification for those choices. It is intended to complement two other NC Division of Water Quality documents: 1) The Catawba River Basinwide Water Quality Plan (1999), and 2) the Guide to the NCWRP's Watershed Restoration Planning Strategy (version 1).

One purpose for communicating the specific watersheds in which the NCWRP intends to focus its projects is to encourage other groups and organizations to consider implementing projects in these areas also. It is the NCWRP's position that multiple

restoration projects concentrated within a local watershed will result in greater benefits to water quality.

Application of Geographic Information Systems (GIS)

In order to target areas of focus, the NCWRP relies heavily on geographic data. With a variety of habitat and water quality data available electronically, NCWRP staff can interactively view a variety of information for river basins, subbasins and local watersheds to help make decisions about areas on which to focus. Information available includes water quality data (use support ratings and surface water quality classifications), resource information (location of streams, wetlands and important aquatic habitats), and basic location references (such as municipalities, roads and county boundaries).

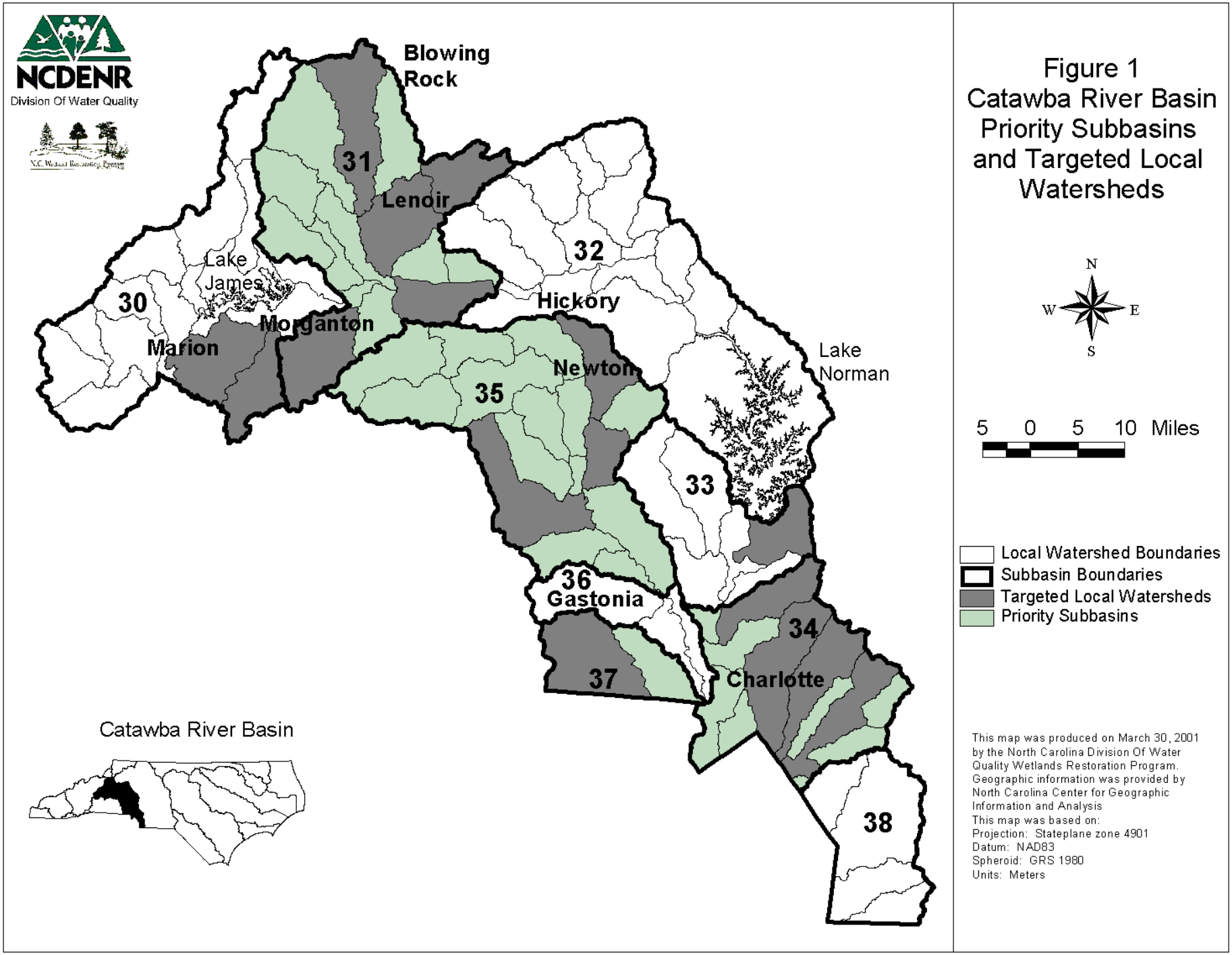
As a component of the Watershed Restoration Plans, GIS-based maps have been developed to communicate NCWRP target priorities for restoration work. In each restoration plan maps of the whole basin, Priority Subbasins and Targeted Local Watersheds are provided. Most of these maps are black and white in order to minimize printing costs. However, a full set of color maps are provided through the NCWRP web site for those who are interested in referencing more thorough and detailed geographic information on NCWRP targets.

This Section describes and summarizes the types of information evaluated by the NCWRP in applying the methodology described in Section 2 of the Guide to the NCWRP's Watershed Restoration Strategy. Selection of watersheds or potential restoration sites requires an assessment of multiple data and information on the location and condition of natural resources. The information described below was compiled from a number of existing sources including DWQ's Basinwide Water Quality Management Plan, the Natural Heritage Program Rare Plant and Animal Lists, and the Wildlife Resources Commission, Division of Game and Inland Fisheries Draft Management Plan for the Catawba River Basin.

Section 2: Overview of the Catawba River Basin

The Catawba River winds 224 miles through central North Carolina, originating in the eastern slopes of the Blue Ridge Mountains in Avery, Burke, Caldwell and McDowell counties and flowing southeast to the North Carolina- South Carolina border near Charlotte. The Catawba River Basin encompasses 3,285 square miles in 12 different counties, and is the eighth largest river basin in the state (Figure 1). Many of the streams in the upper portion of the basin have good to excellent water quality and are classified as trout streams. The Linville River, one of only four rivers in the state designated as a Natural and Scenic River, is in the upper portion of the Catawba River Basin.

Land use changes from rural to urban as the river enters the piedmont from the mountains. Nonpoint source pollution in runoff from agriculture and urban areas impacts water quality in the streams, rivers and lakes as one moves down through the Catawba basin. Urban areas within the basin include Lenoir, Hickory, Morganton, Gastonia, and


NCDENR
Division Of Water Quality
Blowing Rock
31
Lenoir
32
Lake James
30
Hickory
Morganton
Marion
Lake Norman
Newton
35
33
36
Gastonia
34
37
Charlotte
38
Catawba River Basin
Figure 1
Catawba River Basin Priority Subbasins and Targeted Local Watersheds
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5 0 5 10 Miles
Local Watershed Boundaries
Subbasin Boundaries
Targeted Local Watersheds
Priority Subbasins
This map was produced on March 30, 2001 by the North Carolina Division Of Water Quality Wetlands Restoration Program.
Geographic information was provided by North Carolina Center for Geographic Information and Analysis
This map was based on:
Projection: Stateplane zone 4901
Datum: NAD83
Spheroid: GRS 1980
Units: Meters

Charlotte. Changing demographics and development trends are anticipated to have a negative affect on water quality in the future if efforts are not made in the short term to protect the riparian zone and stream system that make up the Catawba River.

The Catawba River is unique in North Carolina, in that it is composed largely of a series of impoundments, the Catawba chain lakes, a sequence managed by Duke Power for the purposes of hydropower generation. The lakes include Lake James, Rhodhiss Lake, Lake Hickory, Lookout Shoals Lake, Lake Norman, Mountain Island Lake, and Lake Wylie. Major tributaries to the Catawba River, starting at the Upper Catawba, are the Catawba River Headwaters, Linville River, South Muddy Creek, Johns River, and Lower Creek. In the mid-section of the basin, Middle and Lower Little Rivers join the main stem; Henry Fork, Jacob Fork and Indian Creek are tributaries to the South Fork of the Catawba, which flows directly into Lake Wiley near the South Carolina border. In the Lower Catawba Basin, Dutchman's Creek, Sugar Creek, McAlpine Creek, and Twelve Mile Creek are encompassed in the drainage that contributes to flow over the South Carolina border. Crowders Creek joins in the drainage area of the South Fork Catawba.

Use Support

North Carolina waters are classified according to their best-intended uses. Determining how well a water supports its designated uses is an important method of interpreting water quality data and assessing water quality. The NCWRP uses the use support assessments as a primary component in the prioritization process for determining restoration need within a local watershed. A stream that is designated as "partially supporting" or "not supporting" its designated uses indicates that wetland or stream restoration initiatives within that local watershed could be beneficial to water quality. If a stream is listed as impaired and nonpoint source pollution is determined to be the primary factor affecting water quality, it is likely that this watershed would become a Targeted Local Watershed, thus prioritized for restoration efforts.

Section 303(d) of the federal Clean Water Act requires states develop a 303(d) list of waters not meeting water quality standards or which have impaired uses. The 303(d) list and accompanying data are updated as the basinwide plans are revised. In some cases, the new data will demonstrate water quality improvement and waters may receive a better
use rating. These waters may be removed from the 303(d) list since water quality improvement has been attained. In other cases, the new data will show a stable or decreasing trend in overall water quality resulting in the same, or lower, use support
rating. Attention remains focused on these waters until water quality has improved.

In some cases, a stream or lake appears on the 303(d) list, but has a fully supporting rating. There are two major reasons for this: 1) biological data show full use support, but chemical impairment continues; or 2) fish consumption advisories exist on the water. These waters will remain on the 303(d) list until the problem pollutant meets water quality standards or until a Total Maximum Daily Load model is developed. Thus there are inconsistencies between the use support impaired waters and the 303(d) listed waters.

Waters considered supporting their uses may continue to appear on the 303(d) list because of standard violations. The 2000 303(d) List is not yet EPA approved.

The Catawba River Basin has a total of 3,005 miles of freshwater streams that are monitored and evaluated by the DWQ. Of these streams, less than 1% are rated as not supporting, 6% are rated as partially supporting, and 79% are rated as fully supporting their uses. A remaining 15% of freshwater streams in the Catawba River Basin are not rated.

Use support assessments for the Catawba River Basin are summarized in Chapter 3 and Section B of the Catawba River Basinwide Water Quality Plan. The document can be downloaded from their website at http://h2o.enr.state.nc.us/basinwide/, or available from the Division of Water Quality at (919) 733-5083 ext. 354.

Permitted Wetlands Losses in the Catawba River Basin

According to the wetlands tracking database maintained by the Wetlands/401 Unit of the Water Quality Section, Division of Water Quality, during 1996-2000 a total of 122.83 acres of wetlands loss were permitted in the Catawba River Basin (Table 1). During that period, 64.65 acres of wetlands mitigation were required to compensate for permitted losses. Permitted stream impacts in the basin during the period 1996-2000 totaled 104,306 linear feet (Table 2). During 1999-2000, 33,355 linear feet of stream restoration were required to mitigate for those two year's permitted losses. There were also 8,897 linear feet of non-regulatory gain in 2000. Non-regulatory gain occurs when projects are initiated voluntarily (not associated with compensatory mitigation); Mecklenburg County Storm Water Services and NC Wildlife Resources Commission both completed stream restoration projects of this nature.

Table 1 Wetlands Losses (acres), 1995-2000

Subbasin	1995	1996	1997	1998	1999	2000	Total
30	0.83	1.38	0.53	0.45	1.32	0.01	4.52
31	0.61	3.45	1.12	0.18	0	0.55	5.91
32	1.42	1.45	0.03	0.94	0.28	0.64	4.76
33	3.11	1.65	6.45	1.28	2.82	0.7	16.01
34	6.73	17.17	7.7	2.66	3.59	5.03	42.88
35	0.54	0.06	0.01	2.6	0.03	0.31	3.55
36	0.02	0.56	0.04	0	0.43	0	1.05
37	0.3	0	0	0.04	0.15	0.39	0.88
38	7.61	2.09	17.5	9.29	1.5	5.28	43.27
Total	21.17	27.81	33.38	17.44	10.12	12.91	122.83

Table 2 Stream losses (linear feet), 1997-2000

Subbasin	1997	1998	1999	2000	total
30	600	254	6,600	70	7,524
31	749	775	95	2,192	3,811
32	130	10,320	2,179	3,729	16,358
33	117	600	14,323	5,156	20,196
34	0	995	21,034	14,890	36,919
35	0	5,487	90	5,461	11,038
36	0	0	865	39	904
37	0	115	150	0	265
38	0	3,145	930	3,716	7,791
total	1,596	21,691	46,266	35,253	104,806

Sensitive Species and Habitat Information

The Catawba River Basin is a large watershed that hosts a diversity of habitats within its expansive geographic range. In the headwaters of both the main stem Catawba River and the South Fork Catawba are areas of near pristine water quality, designated Significant Aquatic Habitat and Outstanding Resource Waters, respectively. The seven chain lakes provide an abundance of lacustrine habitats, as well as affiliated wetlands on the lakes, the river proper, and its tributaries. Since there has been little systematic or comprehensive accounting of biological resources within the Catawba River Basin, it is believed that such an investigation would lead to a greater understanding of the diversity of flora and fauna within the basin.

Wetland Communities

Because the Catawba River spans two separate physiographic provinces-the mountains and the piedmont- the basin supports a wide range of natural communities. There are examples of several rare wetland community types within the basin, including the Hillside Seepage Bog, Southern Appalachian bog (Northern subtype), and the Upland Pool (NC Natural Heritage Program, 1999). Also present in the basin are the Spray Cliff, Swamp Forest Bog Complex, and Upland Depression Swamp. More common, but still rare, are the High and Low Elevation Seeps. Such bog and wetland areas are often home to rare plant and animal species, including the Bog Turtle, the Bog Fern, and the Purple Fringeless Orchid.

Wetland and Riparian Area Species Information

The Catawba River supports at least 88 fish species (excluding hybrids), including a variety with recreational importance in different regions of the basin. The NC Wildlife Resources Commission supports both cold and warm water fisheries through stocking. Brook, brown and rainbow trout are stocked in the Linville River and McDowell County areas, while warmwater

species are stocked in Lake James and Rhodhiss Lake (striped bass, threadfin shad, walleye), Lake Norman, and Mountain Island Lake (striped bass).

Over 60 rare animal species exist in the Catawba River Basin, with at least partially water-dependent species including 1 reptile, 4 fish, 10 mollusks, 2 crustaceans, several insects with an aquatic larval stage, and 1 streambank-dwelling mammal (the Southern Water Shrew) (NC Natural Heritage Program, 1999). The basin is also home to 128 rare plant species, including 10 federally listed threatened or endangered species. Many of these uncommon species are found in the mountain region of the basin, often occurring on high-elevation rock outcrops. Cove forests and wetland areas that also support many rare plants in the basin include bogs, seeps, and wet meadows, as well as the spray zone of waterfalls. Because many of these plants and animals live in bogs, wetlands, and waterways they are affected by changes in water quality and quantity.

A detailed listing of the state's rare plant and animal species can be found in "The Natural Heritage Program List of Rare Animal Species" and "The Natural Heritage Program List of Rare Plant Species" which are published every two years. More information about rare communities, plants and animals in the Catawba River Basin can be found in the Catawba River BasinwideWater Quality Plan (available at the DWQ website at http://h2o.enr.state.nc.us/basinwide), or by contacting the NC Natural Heritage Program. The website for the Natural Heritage Program is http://www.ils.unc.edu/parkproject/nhp/.

Section 3: Restoration Goals for the Catawba River Basin

Based on an assessment of existing watershed characteristics and extensive resource information, the NCWRP has developed four broad restoration goals for the Catawba River Basin. Each goal reflects the NCWRP strategy for focusing restoration efforts within local watersheds in order to target projects that can address identified resource needs and provide basinwide benefits in reducing water quality impacts from nonpoint source pollution. The goals also reflect the NCWRP's focus on restoring wetland and riparian area values such as maintaining and enhancing water quality, increasing storage of floodwaters, and improving fish and wildlife habitat. The restoration goals for the Catawba River Basin are listed below, including specific objectives for reaching those goals.

Goal #1:

Protection and improvement of water quality throughout the Catawba River Basin by focusing restoration projects within Targeted Local Watersheds to address measurable water quality problems.

Objectives:

Implement projects that restore natural channel configuration using methods of bioengineering as opposed to hardening of stream system;

Stabilize streambanks and shorelines to reduce erosion and sedimentation;

Reduce nutrient loadings, sediment, and other pollutants from surface runoff by increasing the soil retention, filtration and nutrient uptake functions of wetlands and riparian areas.

Goal #2:

Increase floodwater retention capabilities within the Catawba River Basin by focusing on restoration projects that can increase storage capacity where floodwater retention capabilities are most needed.

Objectives:

Restore the natural hydrologic functions of wetlands and riparian areas;

Reduce the flow volume and force of floods by increasing the floodwater storage potential of wetlands and riparian areas.

Goal #3:

Protection and improvement of aquatic habitat in the Catawba River Basin by restoring wetlands and riparian areas within Targeted Local Watersheds to support and maintain aquatic species.

Objectives:

Restore wetlands and riparian areas that will protect and enhance the habitat and diversity of aquatic species including commercially valuable species, recreationally valuable species, and rare, threatened, and endangered plant and animal species;

Reduce sediment discharges that are detrimental to populations of fish, shellfish, aquatic insects, and submerged aquatic vegetation;

Reduce the amount of nutrients entering surface waters that can cause fish kills and limit recreational activities such as swimming, boating and fishing;

When appropriate for the restoration of wetland and riparian hydrology, encourage the removal of impediments to anadromous fish migrations that are no longer functioning as needed.

Goal #4:

Protection and improvement of wildlife and plant habitat in the Catawba River Basin by restoring wetlands and riparian areas within targeted local watersheds to support and maintain the diversity of plants and animals.

Objectives:

Restore and protect riparian buffers, corridors, and other key links to high value habitat areas;

Restore and protect natural breeding, nesting and feeding characteristics to promote species richness and diversity;

Restore and protect rare, threatened and endangered species' habitats.

Priority Subbasins and Targeted Local Watersheds

In order to meet the identified restoration goals, the NCWRP has selected four Priority Subbasins and 16 Targeted Local Watersheds in the Catawba basin (see Section 4). These geographic priorities have been selected based on need and opportunity for restoration in order to focus projects in specific areas within the basin. The decision-making process used to make these selections is described in detail in the Guide to the NCWRP's Watershed Restoration Planing Strategy (version 1). The purpose for selecting subbasins and local watersheds is to concentrate project efforts in areas with the highest need and opportunity for restoration. In doing so, projects are more likely to result in water quality protection and improvement through the cumulative effect of multiple projects.

Public Input into the Selection Process

To solicit input on proposed local watershed selections, NCWRP held a meeting at the Charlotte-Mecklenburg Government Center on August 22, 2000. The purpose of the meeting was to lay the groundwork for involvement of citizens and resource professionals in the development of the revision for the Watershed Restoration Plan for the Catawba River. An overview of the Catawba River Basinwide Water Quality Plan and the NCWRP watershed planning approach were part of the program which specifically asked participant's to brainstorm on restoration needs and opportunities within the NCWRP Priority Subbasins and proposed Targeted Local Watersheds.

Representation from federal, state and local government agencies, environmental and resource protection groups and organizations, and other interested parties from throughout the Catawba River Basin were invited to participate, and were notified of the meeting during the outreach process of developing this report.

As a follow-up to the resource professionals meeting, a letter was sent on September 11, 2000 detailing draft local watershed selections. At this point, much effort had gone into analyzing available data and soliciting input from the public. Response to the draft local watershed picks weighed heavily in the final selection of local watersheds.

The following agencies and organizations sent responses to the NCWRP during the comment period:

Catawba Lands Conservancy
NC Wildlife Resources Commission
Mecklenburg County Department of Environmental Protection
Western Piedmont Council of Governments
DENR-DWQ, Basinwide Planning Program
NCDENR-DWQ, Asheville Regional Office
Lincolnton Planning Department
Charlotte-Mecklenburg Storm Water Services
Burke County Community Development

Section 4: Priority Subbasins and Targeted Local Watersheds in the Catawba River Basin

This section summarizes the condition of natural resources within each of the NCWRP's Priority Subbasins in the Catawba River Basin. Potential causes of resource degradation within these areas are briefly described using information contained in the Basinwide Water Quality Management Plans, comments provided by resource professionals within the basin, and comments from the public within the basin. Maps of each Priority Subbasin and Targeted Local Watershed in the Catawba River Basin are provided in their respective sections. There are three Targeted Local Watersheds that are not within a Priority Subbasin, and these are presented at the end of this section. These watersheds were selected based on resource information and the involvement of the locality or cooperation among entities within those areas to implement water quality projects.

The terms "Targeted Local Watershed" and "catchment" are used throughout this section; these terms denote a small, defined drainage area within a larger subbasin. Specifically, the term "Targeted Local Watershed" refers to the 14-digit hydrologic unit as defined by the Natural Resources Conservation Service; within this report the last five digits are used as reference. The term "subbasin" is reserved solely to denote a subbasin of the larger Catawba River Basin, as defined by the DWQ.

In the summary information representing each local watershed, the following terms apply: "Approx. Miles of Impaired Streams" indicates the approximate number of stream miles within that local watershed that are rated as either partially supporting (ps) or not supporting (ns); "major sources of impairment" indicates point and/or nonpoint source pollution; and "303 (d)

list" indicates whether the Targeted Local Watershed contains waters which are on North Carolina's 2000 303(d) List (not yet EPA approved) for impaired waters.

Please note that the use support data displayed on these subbasin maps does not include all of the use support designations assigned by DWQ. A more detailed explanation of use support information and complete listing of use support designations may be obtained from DWQ's Basinwide Water Quality Plans, produced for each major river basin in the state.

Subbasin 31

Subbasin 31 (Figure 2) encompasses 581 square miles with a population density of 160 persons/square mile. The subbasin covers parts of Caldwell and Burke Counties, which are projected to have population increases of 11.7% and 23.9%, respectively, during the period 1990-2015 (Catawba River Basinwide Water Quality Plan, 1999). The majority of the land cover in this subbasin is forest/wetlands, with approximately 11% in pasture/managed herbaceous and cultivated crop, 1% surface water, and 3% urban. There are no registered cattle operations in this subbasin. One registered swine operation accommodates 2,800 animals. There are 558 miles of fully supporting freshwaters in the subbasin, 35.3 stream miles rated partially supporting, 0.0 miles not supporting, and 75.6 miles of streams that are not rated.

The majority of the upper portion of the subbasin is in Pisgah National Forest, and the water quality of the monitored streams in this area is good to excellent based on biological data (1999 Catawba River Basinwide Water Quality Plan). The headwater reaches of this subbasin are cold mountain streams, many designated as High Quality Waters because they are native trout waters. Portions of this basin, including Wilson Creek, are within the Pisgah National Forest and are designated Outstanding Resource Waters. The subbasin becomes increasingly urbanized toward the south and southeast around Lenoir and Morganton. Water quality ratings were lower in these areas (Good-Fair; Fair based on biological data).

There has been much interest in restoration and preservation opportunities in this subbasin, especially in the Lower Johns River and the area of the Catawba River between Lake James (in Subbasin 30) and Rhodhiss Lake (in Subbasin 31).

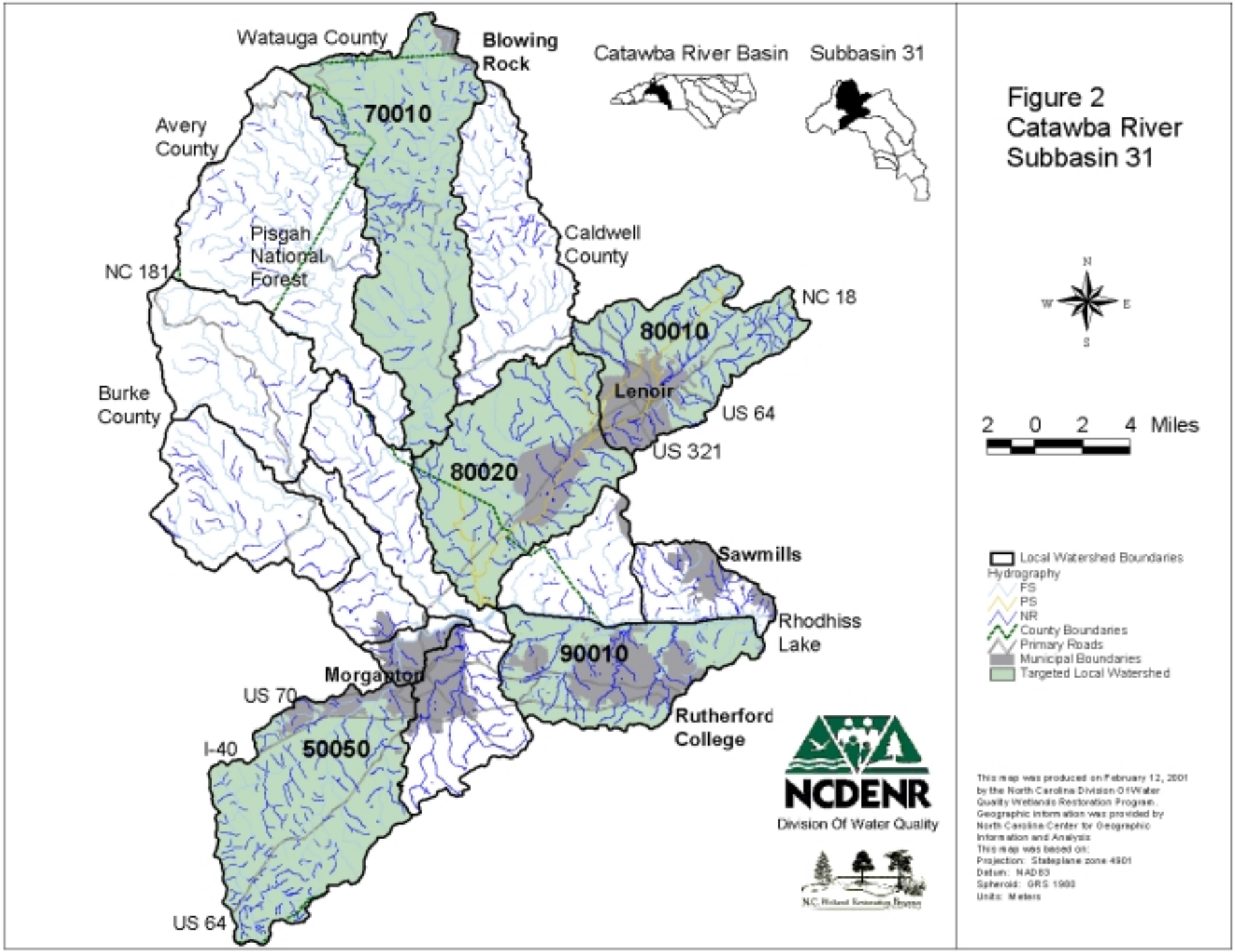


Figure 2
Catawba River
Subbasin 31

This map was produced on February 12, 2001 by the North Carolina Division Of Water Quality Wetlands Restoration Program. Geographic information was provided by North Carolina Center for Geographic Information and Analysis.
This map was based on:
Projection: Stateplane zone 4901
Datum: NAD83
Spheroid: GRS 1980
Units: Meters

Table 3 Statistics for Targeted Local Watersheds within Subbasin 31

Targeted Local Watershed	Silver Creek	Upper Johns River	Lower Creek (Upper)	Lower Creek (Lower)	McGalliard Creek
	50050	70010	80010	80020	90010
Land Area (square miles):	60.9	74	40.6	57.6	38
Approx. Miles of Impaired Streams:	0	0	21.8	13.5	0
Problem Parameters:	N/A	N/A	Sediment	Sediment, Turbidity	N/A
Major Sources of Impairment:	None	None	Nonpoint	Nonpoint	None
Possible Causes of Impairment:	N/A	N/A	Urban, Agriculture, Cattle Access	Urban, Agriculture, Development	N/A
On 2000 303(d) List (not yet EPA approved)?	No	No	Yes	Yes	No
Agricultural Land Cover:	18%	2%	13%	16%	13%
Developed Land Cover:	3%	0%	11%	3%	6%
Forested Land Cover:	77%	98%	75%	81%	75%
Within Water Supply Watershed?	Yes	No	No	Yes	Yes
Designated High Quality or Outstanding Resource Water?	Yes	No	No	No	No
Classified Trout Waters?	No	Yes	No	No	No
Presence of Natural Heritage Element?	Yes	Yes	No	No	No

Silver Creek, Clear Creek Local Watershed 50050

This Targeted Local Watershed (Figure 3) was selected based on resource features as opposed to degraded water quality. Positive resource features include High Quality Waters in several protected areas on the eastern portion of the catchment, the presence of a rare insect (a caddisfly, which has an aquatic larval stage), and water supply watershed in the northerern portion of the catchment. The City of Morganton lies in the northern end of this Targeted Local Watershed, and it is bisected by major thoroughfares I-40 and US 64. All waters monitored within this watershed (Silver Creek, Little Silver Creek, Clear Creek, Bailey Fork and all their tributaries) are rated as fully supporting. Possible nonpoint source impacts to water quality associated with agriculture and urban land use have been noted (Catawba River Basinwide Water Quality Plan, 1999). Several areas in the eastern headwaters of this local watershed are protected by a land trust. The northern portion of the catchment is designated as a water supply watershed for the City of Morganton. At the northern end of the catchment there is a Clean Water Management Trust Fund land acquisition site and a Section 319 nonpoint source land acquisition site, both initiated by the City of Morganton. Increasing development pressure in the vicinity of Silver Creek was noted in public comments.

Upper Johns River **Local Watershed 70010**

This local watershed represents the upper Johns River (Figure 4), the majority of which lies within Pisgah National Forest. This watershed was chosen due to positive resource features, in part because the majority of waters in this catchment are designated Significant Aquatic Species Habitat by the NC Natural Heritage Program. The catchment contains waters classified by DWQ as Trout Waters. Grandfather Mountain is at the headwaters of this watershed. Significant efforts are underway in the lower Johns River area to protect the river corridor, and complementary stream restoration opportunities in this local watershed were noted in public comments.

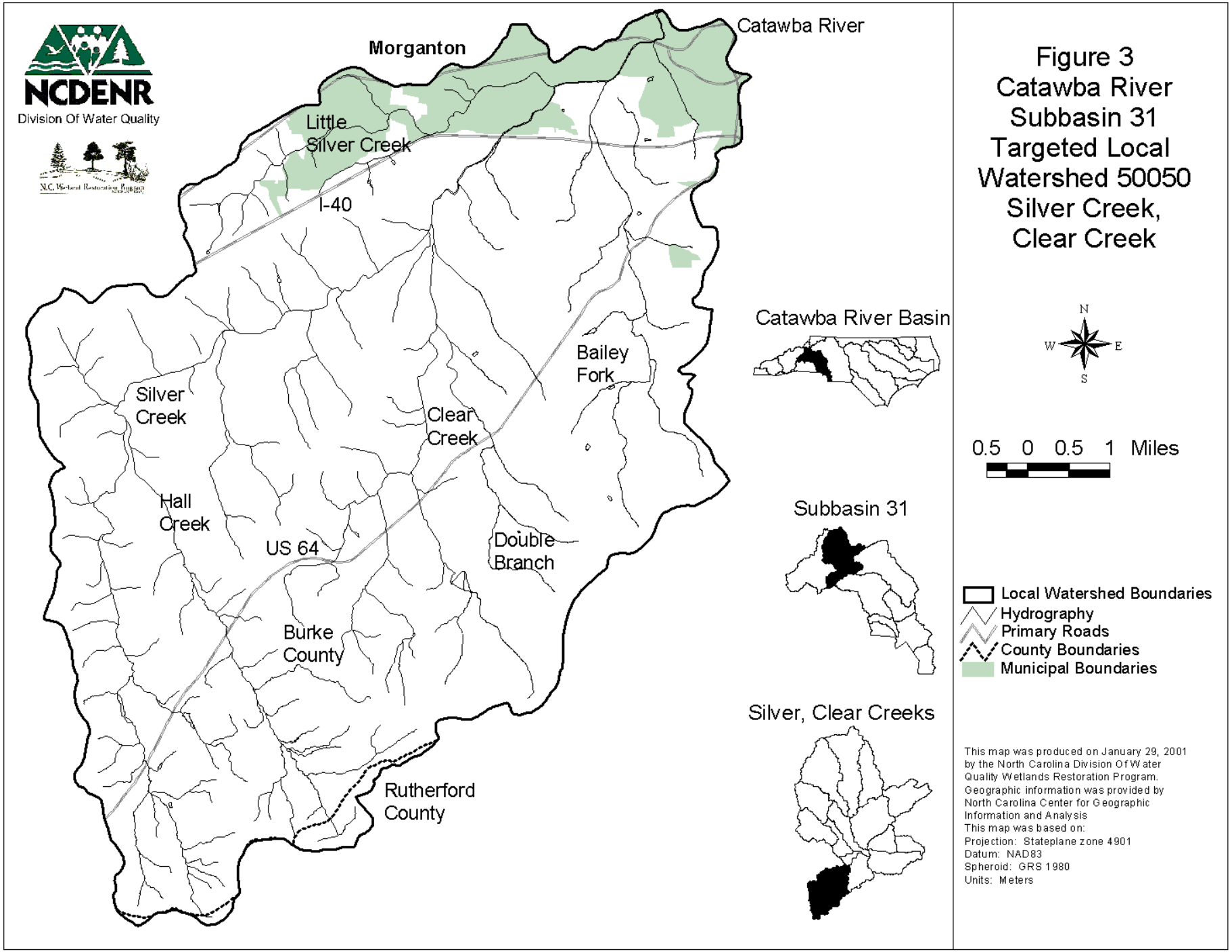
Lower Creek **Local Watersheds 80010 and 80020**

Several creeks in the more urbanized areas of Subbasin 31 are designated partially supporting and are on the 2000 303(d) List (not yet EPA approved). The entire length of Lower Creek (Figure 5) below Zack's Fork is impaired. Zacks Fork, Greasy Creek, Spainhour Creek, and Bristol Creek are on the above stated 303(d) List as well. These creeks are rated as partially supporting due to nonpoint source pollution. Lower Creek is also listed due to point source impacts. Lower Creek and many of its tributaries suffer from urban development and runoff. Several efforts have been made to characterize the impacts of nonpoint source pollution in this local watershed (including a survey as part of a grant to the Western Piedmont Council of Governments), and to devise a plan to develop best management practices that are intended to alleviate some of the stresses on this waterbody.

The lower portion of Lower Creek (Figure 5) was chosen as a target for NCWRP efforts in part because it has several stream segments on the 2000 303(d) List (not yet EPA approved) and it is within a water supply watershed. These streams are listed as impaired due in part to nonpoint sources of pollution such as cattle access to creeks, urban runoff, and construction activities. Nonpoint source controls have been recommended for this local watershed, and stream restoration opportunities (for both the northern and southern Lower Creek local watersheds) were noted in public comments.

McGalliard Creek **Local Watershed 90010**

Four main tributaries (Howard, McGalliard, Hoyle, and Island Creeks) carry water from this local watershed north to Lake Rhodhiss (Figure 6). There are no impaired streams within this catchment, and a high percentage of land is undeveloped. All land within this local watershed is part of a water supply watershed. Valdese, Drexel, Connelly Springs and Rutherford College are the communities within this catchment. The major roadway crossing this basin is I-40. Possible nonpoint source impacts to water quality associated with urban land use have been noted (Catawba River Basinwide Water Quality Plan, 1999).


NCDENR
Division Of Water Quality
N.C. Wetland Restoration Program
Morganton
Catawba River
Little Silver Creek
I-40
Bailey Fork
Silver Creek
Clear Creek
Hall Creek
US 64
Double Branch
Burke County
Rutherford County
Catawba River Basin
Subbasin 31
Silver, Clear Creeks
Figure 3
Catawba River
Subbasin 31
Targeted Local
Watershed 50050
Silver Creek,
Clear Creek
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0.5 0 0.5 1 Miles
Local Watershed Boundaries
Hydrography
Primary Roads
County Boundaries
Municipal Boundaries
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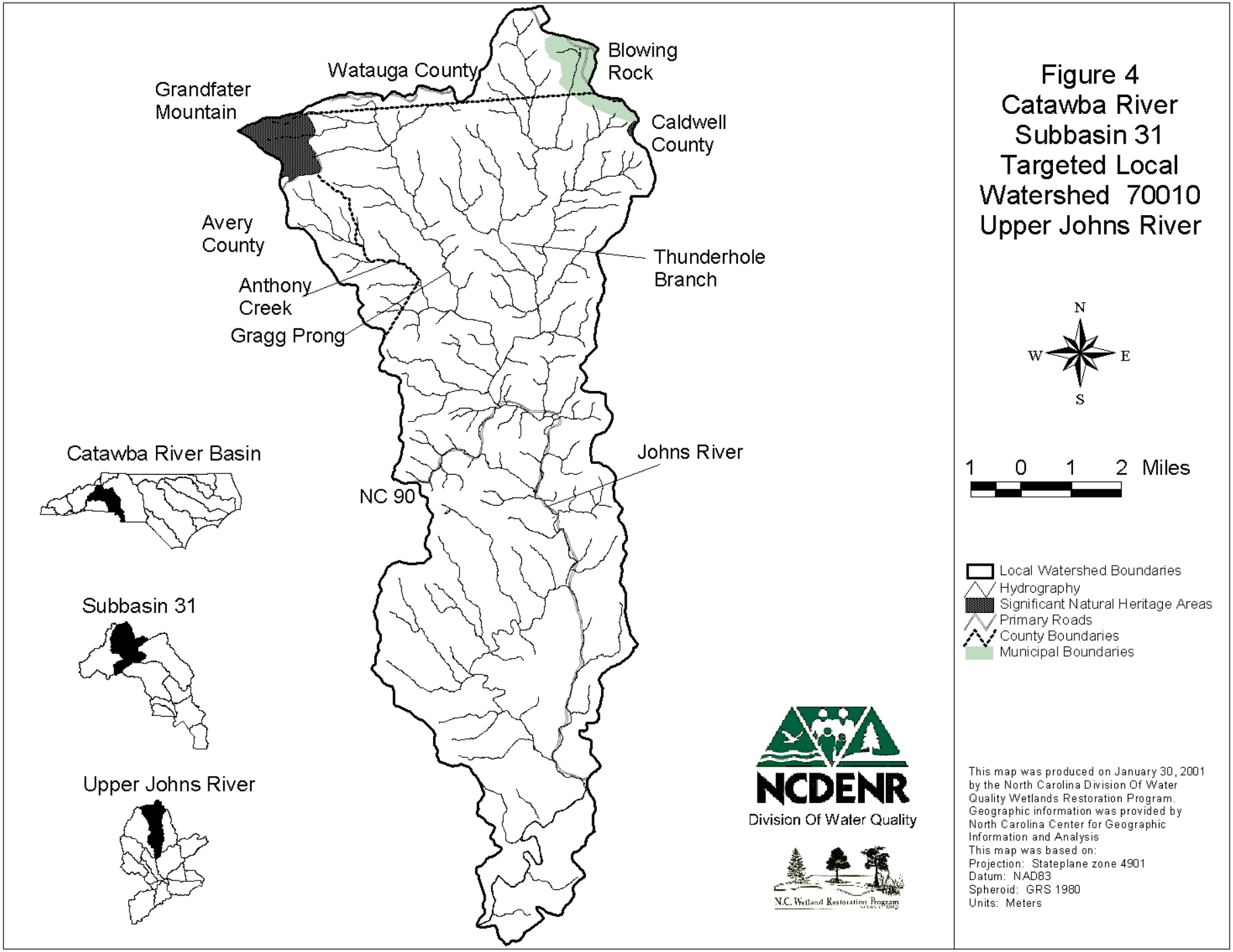
Spheroid: GRS 1980
Units: Meters


Watauga County
Blowing Rock
Grandfater Mountain
Caldwell County
Avery County
Thunderhole Branch
Anthony Creek
Gragg Prong
Johns River
NC 90
Catawba River Basin
Subbasin 31
Upper Johns River
NCDENR
Division Of Water Quality
N.C. Wetland Restoration Program
Figure 4
Catawba River
Subbasin 31
Targeted Local
Watershed 70010
Upper Johns River
N
W
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1 0 1 2 Miles
Local Watershed Boundaries
Hydrography
Significant Natural Heritage Areas
Primary Roads
County Boundaries
Municipal Boundaries
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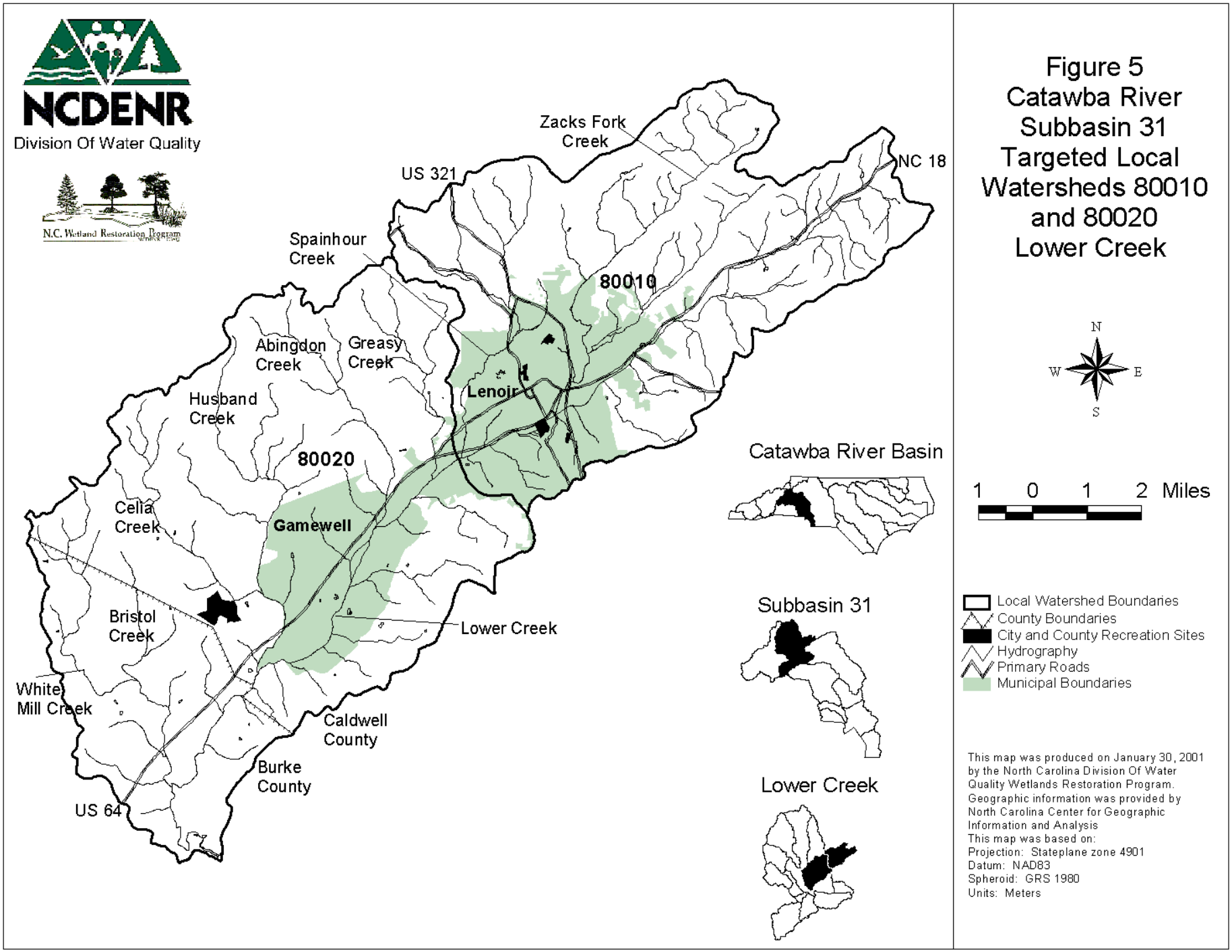
NCDENR
Division Of Water Quality
N.C. Wetland Restoration Program
Zacks Fork Creek
US 321
NC 18
Spainhour Creek
80010
Abingdon Creek
Greasy Creek
Husband Creek
Lenoir
80020
Gamewell
Celia Creek
Bristol Creek
Lower Creek
White Mill Creek
Caldwell County
Burke County
US 64
Catawba River Basin
Subbasin 31
Lower Creek
Figure 5
Catawba River
Subbasin 31
Targeted Local
Watersheds 80010
and 80020
Lower Creek
N
W
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Local Watershed Boundaries
County Boundaries
City and County Recreation Sites
Hydrography
Primary Roads
Municipal Boundaries
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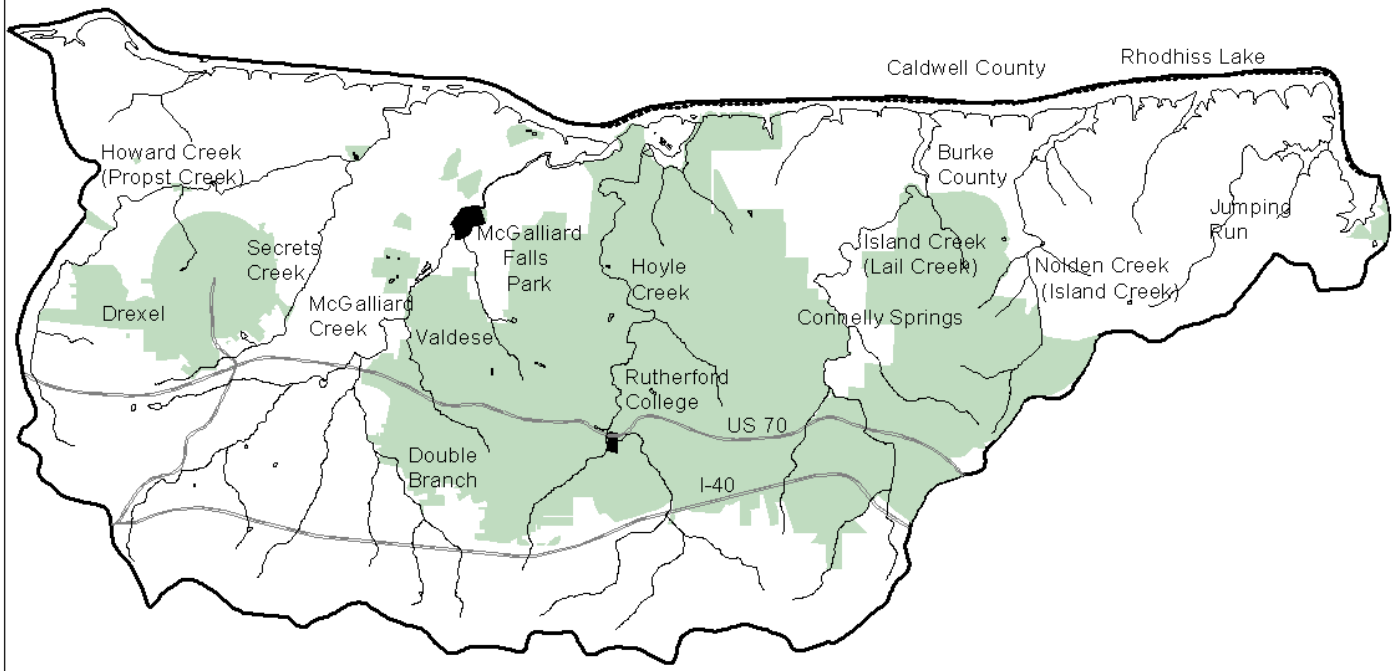
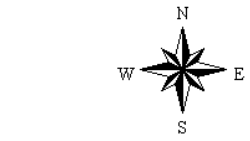
Division Of Water Quality

N.C. Wetland Restoration Program

Figure 6
Catawba River Subbasin 31 Targeted Local Watershed 90010 McGalliard Creek

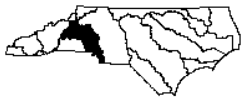




1 0 1 Miles

- Hydrography
- Primary Roads
- County Boundaries
- City and County Recreation Sites
- Municipal Boundaries
- Local Watershed Boundaries

Catawba River Basin



Subbasin 31

McGalliard Creek

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Units: Meters

Subbasin 34

Subbasin 34 covers 324 square miles and is one of the most densely populated areas in North Carolina. The streams in this subbasin (Figure 7) are part of a larger watershed that spans both North Carolina and South Carolina. All of the major streams within the Targeted Local Watersheds within Subbasin 34 have segments listed on North Carolina's 2000 303(d) List (not yet EPA approved) for impaired waters. Water from this subbasin discharges into Lake Wateree, a 303(d) listed water in South Carolina. Subbasin 34 is the most heavily developed of any in the Catawba River Basin. It contains the greater Charlotte area, and urban stormwater and municipal wastewater heavily influence the local streams. Charlotte is required to comply with National Pollutant Discharge Elimination System Phase I Stormwater Regulations. Mecklenburg County is proposed for Phase II stormwater regulations.

Municipal and county agencies responsible for water quality within this subbasin have taken a proactive approach to addressing water quality problems and restoration opportunities. Efforts are being made to incorporate natural stream channel design and habitat improvements into restoration of stream segments within the subbasin. Areas that experience considerably frequent flooding are being assessed, and relocation of homes and businesses within these areas is being pursued through a Federal Emergency Management Agency buy-out program on behalf of the local government. Several NPDES permitted wastewater dischargers within the subbasin have either been upgraded or removed, so some water quality improvements are anticipated. The City of Charlotte and Mecklenburg County have initiated stream buffer ordinances through the Charlotte-Mecklenburg "Surface Water Improvement & Management (S.W.I.M.)" program

Two projects are in the design stage to be implemented within this subbasin by the NCWRP. A watershed study has been proposed by the NCWRP to the City of Charlotte and Mecklenburg County to develop a comprehensive strategy to address restoration projects within the Charlotte area.

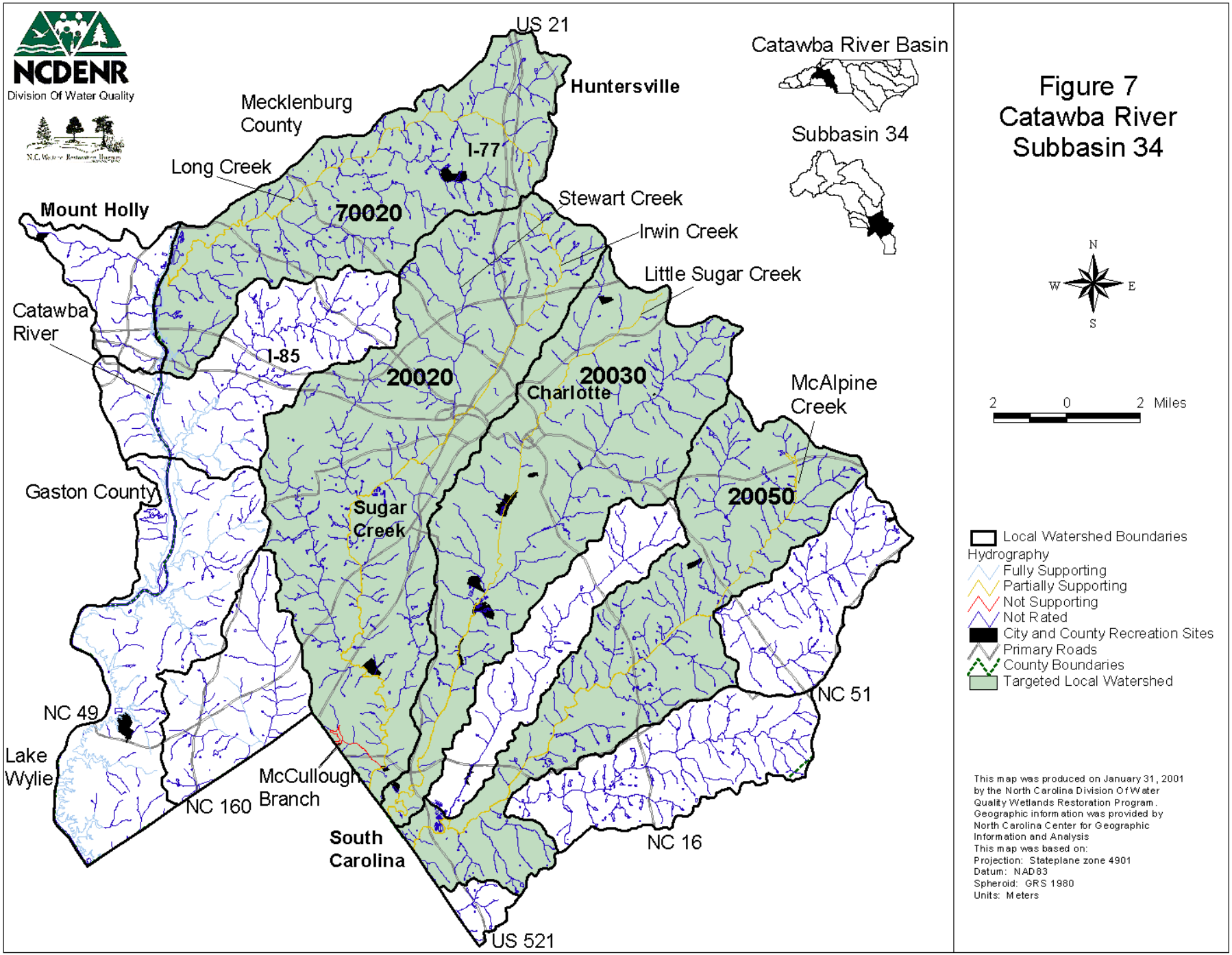

Figure 7
Catawba River Subbasin 34

Table 4 Statistics for Targeted Local Watersheds within Subbasin 34

Targeted Local Watershed	Long Creek	Irwin, Sugar Creeks	Little Sugar Creek	McAlpine Creek
	70020	20020	20030	20050
Land Area (square miles):	40	67.7	50.7	44.9
Approx. Miles of Impaired Streams:	15.3	27.7	20.7	20.4
Problem Parameters:	Turbidity, Manganese	Turbidity, Fecal Coliform Bacteria	Fecal Coliform Bacteria	Turbidity, Fecal Coliform Bacteria
Major Sources of Impairment:	Nonpoint	Point, Nonpoint	Point, Nonpoint	Point, Nonpoint
Possible Causes of Impairment:	Urban, Agriculture, Construction	Irwin Creek WWTP, Urban	Little Sugar WWTP, Urban	Urban
On 2000 303(d) List (not yet EPA approved)?	Yes	Yes	Yes	Yes
Agricultural Land Cover:	21%	11%	6%	12%
Developed Land Cover:	12%	48%	52%	34%
Forested Land Cover:	65%	40%	42%	54%
Within Water Supply Watershed?	Yes	No	No	No
Designated High Quality or Outstanding Resource Water?	No	No	No	No
Classified Trout Waters?	No	No	No	No
Presence of Natural Heritage Element?	No	Yes	No	No

Long Creek Local Watershed 70020

Long Creek (Figure 8) is the major tributary to the Catawba River in this local watershed. The entire length of Long Creek is rated as partially supporting, and serves as part of the drinking water supply system for the City of Charlotte. Approximately half of the land in this basin lies within the municipality of Charlotte. Huntersville lies in the very northern section of the watershed. Intense residential and commercial development are occurring within the Long Creek watershed. Several roadways cross Long Creek, most notably I-77 in the northeastern portion of the watershed. It is noted that nonpoint source pollution is likely to weigh heavily in the sources of water quality impairment in this catchment.

Irwin Creek and Sugar Creek Local Watershed 20020

Irwin Creek/Sugar Creek (Figure 9), the major tributaries in this local watershed, is the first of three very heavily developed local watersheds selected within the Catawba River Basin. This

catchment is the most heavily transected by major roadways, most notably I-77 and I-85. Irwin Creek receives runoff from Charlotte-Douglas Airport. Approximately half of the stream miles in this local watershed are impaired, with likely sources of water quality degradation due to both point and nonpoint pollution. Sugar Creek has been severely polluted for many years, as indicated by historical data. Irwin Creek (11.8 miles), Sugar Creek (13.3 miles) and McCullough Branch (2.6 miles) each have stream segments listed on the 2000 303(d) List (not yet EPA approved). This local watershed has a high percentage of impervious land cover, and the creeks are heavily influenced by stormwater. There are several areas within this local watershed that are the focus of a Federal Emergency Management Agency buy-out program, a voluntary effort initiated by Mecklenburg County to remove structures from flood-prone areas.

Little Sugar Creek **Local Watershed 20030**

Little Sugar Creek (Figure 10) runs through the heart of Charlotte, a heavily developed watershed with a high percentage of impervious land cover; it also runs through Freedom Park, a well-utilized recreational site for city residents. Both point and nonpoint source pollution are noted as probable sources of impairment in this catchment, and Little Sugar Creek is heavily influenced by stormwater. Little Sugar Creek has 20.7 miles of impaired waters on the 2000 303(d) List (not yet approved by EPA). Several areas on this creek are part of a Federal Emergency Management Agency buy-out program, a voluntary effort initiated by Mecklenburg County to remove structures from flood-prone areas. This local watershed is the site of two initiatives funded by the Clean Water Management Trust Fund; a riparian buffer acquisition and a stormwater project.

McAlpine Creek **Local Watershed 20050**

McAlpine Creek (Figure 11) is the third in the series of local watersheds selected by the NCWRP within the heavily developed areas of Charlotte. McAlpine Creek has 20.4 miles of impaired waters on the 2000 303(d) List (not yet EPA approved). It is also noted McAlpine Creek has water quality impacts potentially due to nonpoint source pollution, mostly urban in nature. A segment in the southern reach of McAlpine Creek was the site of a stormwater improvement project implemented by Mecklenburg County through the Clean Water Management Trust Fund.

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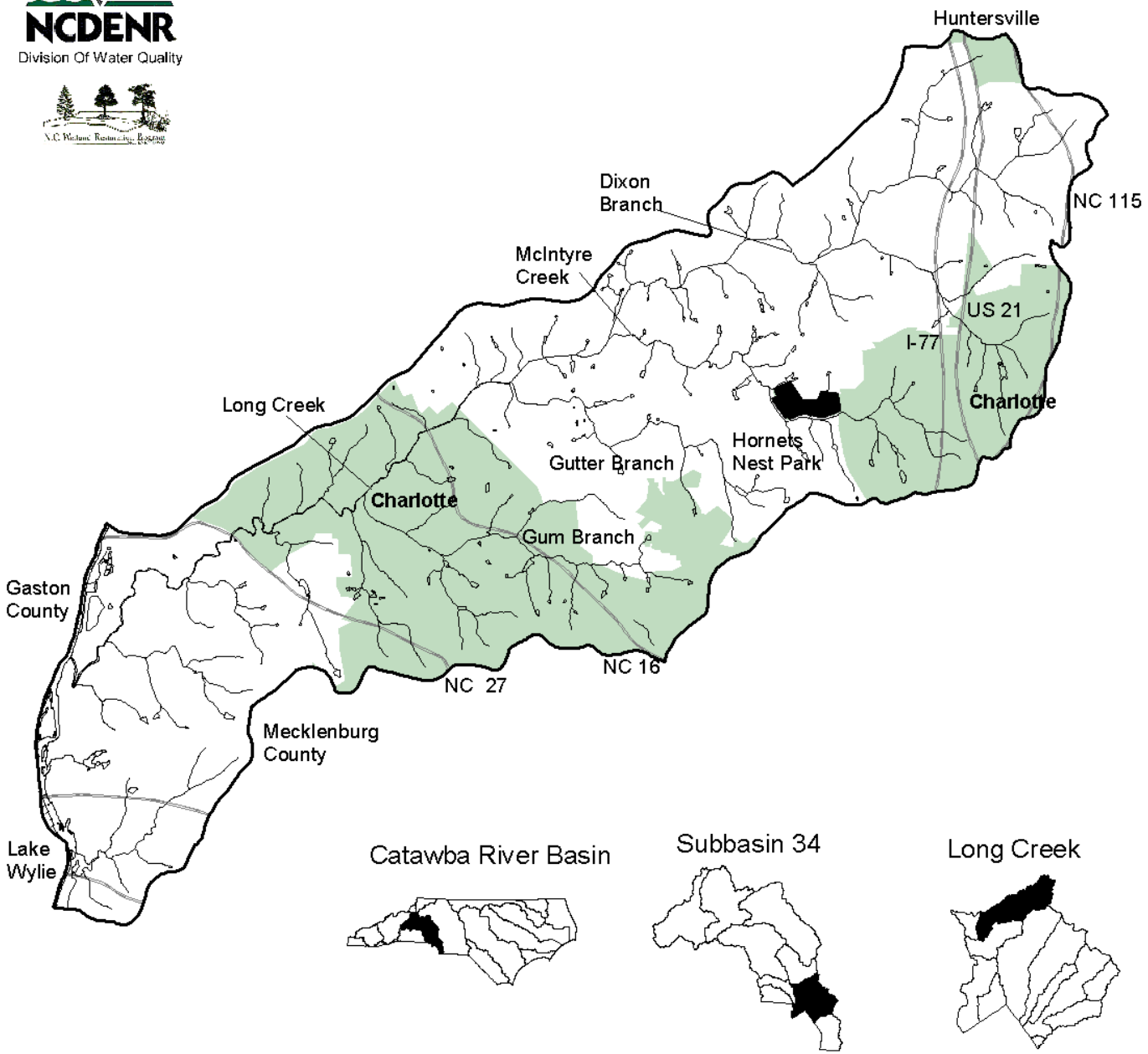
Figure 8
Catawba River Subbasin 34 Targeted Local Watershed 70020 Long Creek



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- Local Watershed Boundaries
- County Boundaries
- City and County Recreation Sites
- Hydrography
- Primary Roads
- Municipal Boundaries

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Units: Meters

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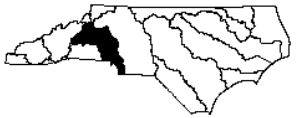
Division Of Water Quality

N.C. Wetland Restoration Program

Figure 9
Catawba River Subbasin 34 Targeted Local Watershed 20020 Irwin Creek, Sugar Creek

Catawba River Basin



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Subbasin 34

- Local Watershed Boundaries
- City and County Recreation Sites
- Significant Natural Heritage Areas
- Hydrography
- Primary Roads
- County Boundaries
- Municipal Boundaries

Irwin Creek, Sugar Creek

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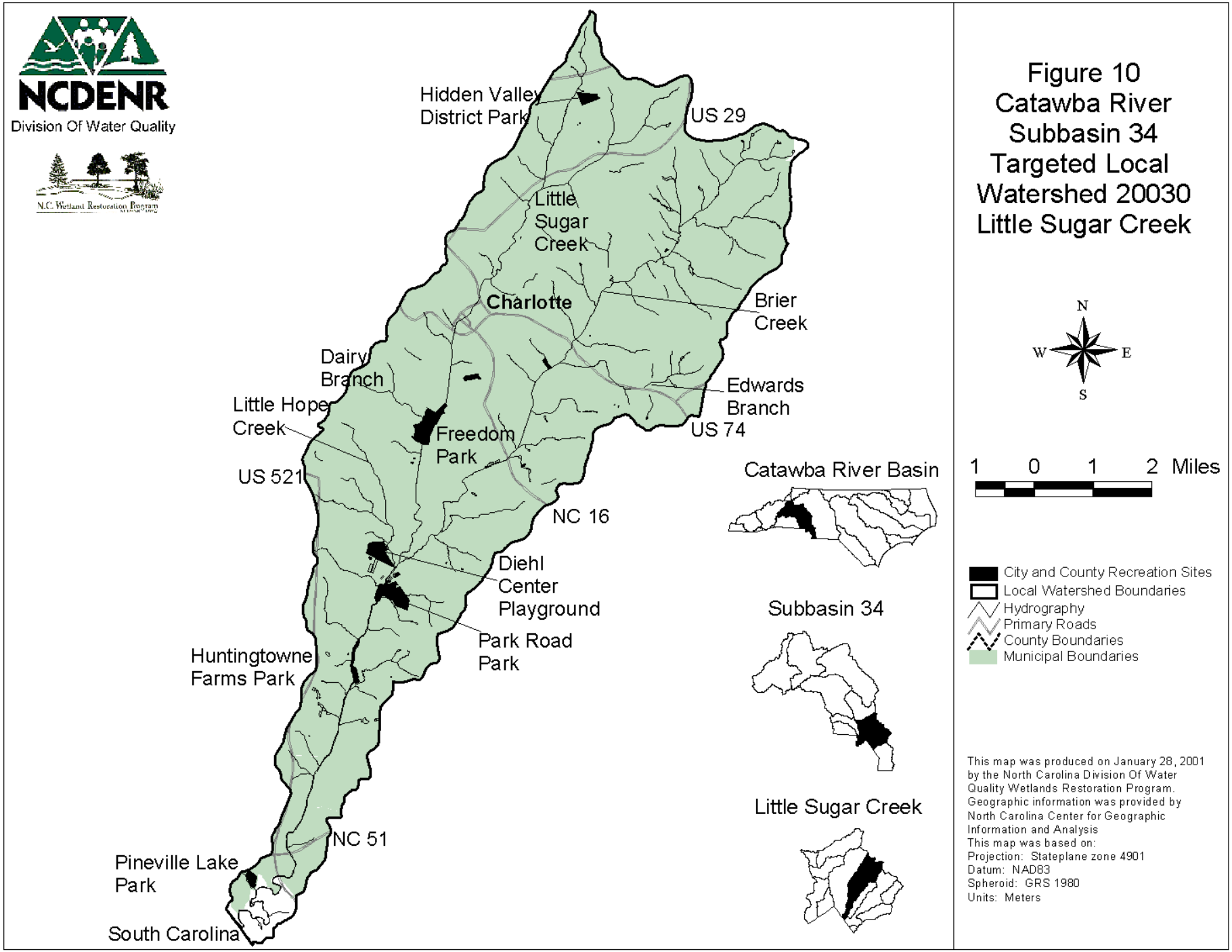
Units: Meters


NCDENR
Division Of Water Quality
N.C. Wetland Restoration Program
Hidden Valley
District Park
US 29
Little
Sugar
Creek
Charlotte
Brier
Creek
Dairy
Branch
Edwards
Branch
US 74
Little Hope
Creek
Freedom
Park
US 521
NC 16
Diehl
Center
Playground
Park Road
Park
Huntingtowne
Farms Park
NC 51
Pineville Lake
Park
South Carolina
Figure 10
Catawba River
Subbasin 34
Targeted Local
Watershed 20030
Little Sugar Creek
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1 0 1 2 Miles
Catawba River Basin
Subbasin 34
Little Sugar Creek
City and County Recreation Sites
Local Watershed Boundaries
Hydrography
Primary Roads
County Boundaries
Municipal Boundaries
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Units: Meters

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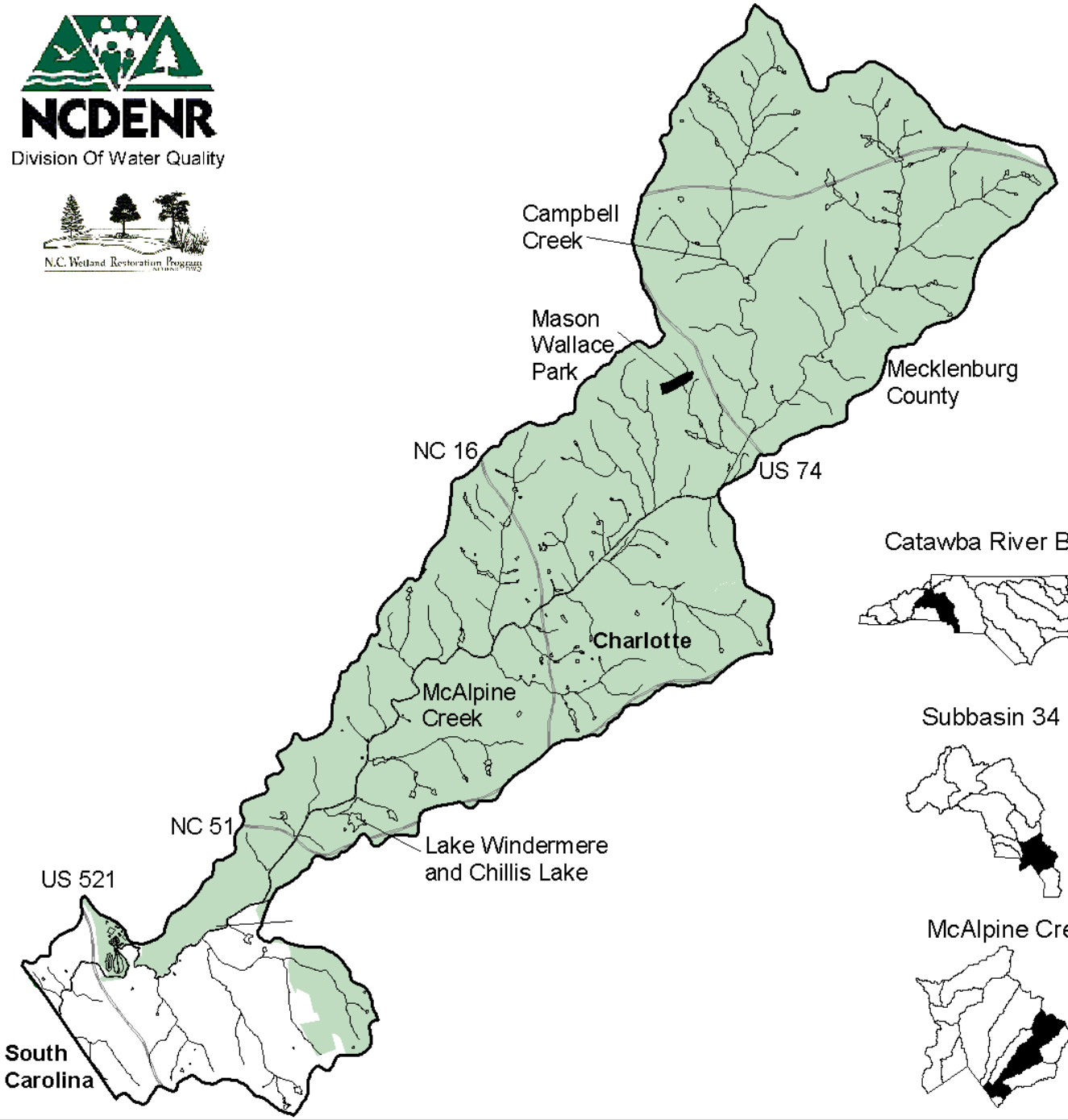
N.C. Wetland Restoration Program

Figure 11
Catawba River Subbasin 34 Targeted Local Watershed 20050 McAlpine Creek



1 0 1 Miles

Catawba River Basin

Subbasin 34

McAlpine Creek

City and County Recreation Sites
Local Watershed Boundaries
Hydrography
Primary Roads
County Boundaries
Municipal Boundaries

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Spheroid: GRS 1980
Units: Meters

Subbasin 35

The streams in Subbasin 35 (Figure 12) run the range from excellent quality in the western region of the subbasin to degraded urban streams in the east. Subbasin 35 covers 559 square miles, with the majority of land in agriculture or forest, with some urban areas. Approximately half the basin is within designated water supply watersheds (WS-II to WS-IV), and there are Outstanding Resource Waters in the far west portion of the subbasin. The subbasin contains parts of Burke, Catawba, Gaston, and Lincoln Counties, and the municipalities of Hickory, Lincolnton, and Newton. Major roads in this area are I-40 and US 321 on the north and east of the subbasin, respectively.

Table 5 Statistics for Targeted Local Watersheds within Subbasin 35

Targeted Local Watershed	Clark Creek (Upper)	Clark Creek (Lower)	Indian Creek
	30010	30020	50010
Land Area (square miles)	39.9	25.1	75
Approx. Miles of Impaired Streams	5.0	5.1	0
Problem Parameters:	Turbidity, Fecal Coliform Bacteria	Turbidity, Fecal Coliform Bacteria	Fecal Coliform Bacteria
Major Sources of Impairment:	Point, Nonpoint	Point, Nonpoint	None
Possible Causes of Impairment:	Agriculture, Urban	Agriculture, Urban	None
On 2000 303(d) List (not yet EPA approved)?	Yes	Yes	No
Agricultural Land Cover:	43%	49%	54%
Developed Land Cover:	13%	5%	2%
Forested Land Cover:	43%	46%	43%
Within Water Supply Watershed?	No	Yes	Yes
Designated High Quality or Outstanding Resource Water?	No	No	Yes
Classified Trout Waters?	No	No	No
Presence of Natural Heritage Element?	No	No	No

Clark Creek Locals Watershed 30010 and 30020

Clark Creek (Figure 13) is the major tributary in this local watershed, and runs the length of the basin from Hickory, through Newton, to Maiden. Several major roadways cross this watershed, including I-40 and US 321. The streams in the upper portion of the watershed (north of Newton) have higher water quality ratings than the mainstem of Clark Creek, which is rated as partially supporting beginning in the vicinity of Newton. There are many heavily developed or cleared tracts within this watershed, which is indicative of a high percentage of impervious surface. Severe streambank erosion and

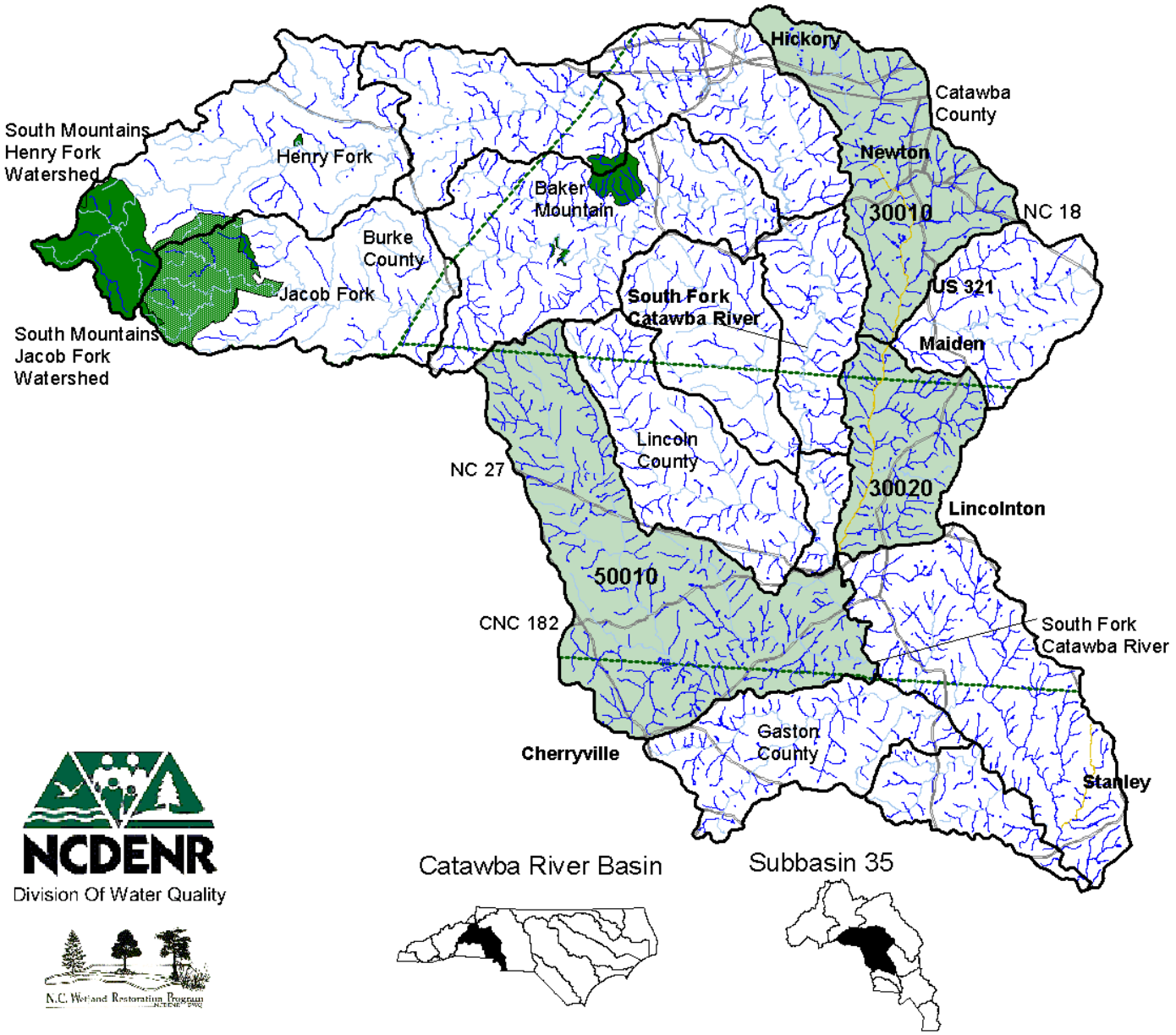

Figure 12
Catawba River Subbasin 35

N
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- Local Watershed Boundaries
- Hydrography
  - FS
  - NR
  - PS
- State Park
- Significant Natural Heritage Areas
- Primary Roads
- County Boundaries
- Targeted Local Watershed

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Catawba River Basin

Subbasin 35

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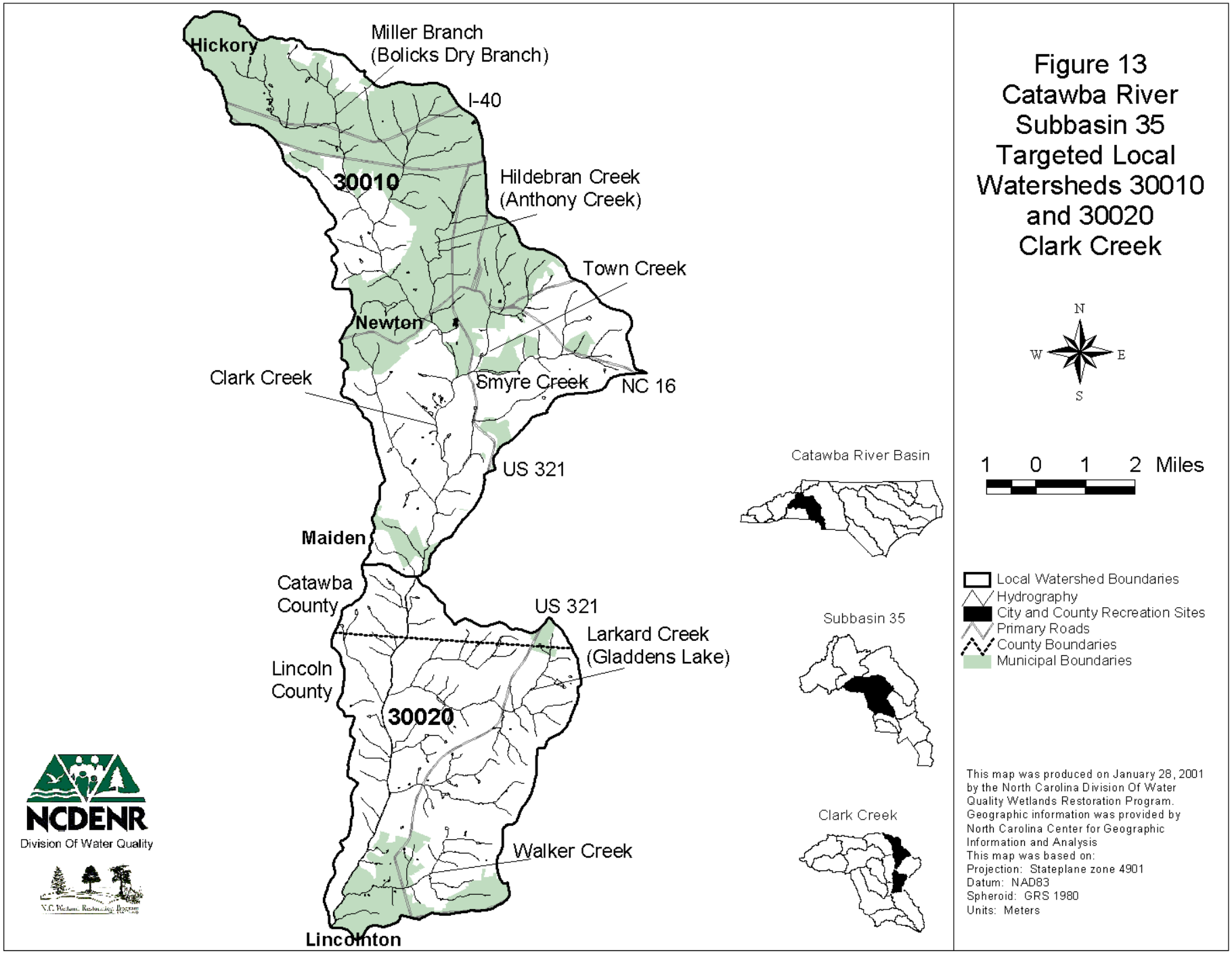
Units: Meters

aquatic habitat degradation due to siltation are noted problems. Point source and nonpoint source pollution are indicated as possible sources of impairment in this catchment. This local watershed is the site of a "Watershed Assessment and Restoration Project" underway through the DWQ.

The lower reaches of Clark Creek (Figure 13) flow into Lincoln County, continuing on to South Fork Catawba. This lower watershed is not as developed as the upper part of the watershed (Local Watershed 30010), but a high percentage of land is cleared and in agricultural use. US 321 bisects this local watershed, the southern end of which is part of a water supply watershed. There was an abundance of public support for the NCWRP selection of the Clark Creek watershed (Targeted Local Watersheds 30010 and 30020).

Indian Creek **Local Watershed 50010**

Indian Creek and Little Indian Creek (Figure 14) run through this catchment, the majority of which is part of a water supply watershed. There are no impaired waters within this local watershed and development potential is not high. Certain waters within this catchment are designated by the DWQ as High Quality Waters. Possible nonpoint source impacts to water quality associated with agricultural land use have been noted (Catawba River Basinwide Water Quality Plan, 1999). Preservation and restoration opportunities were mentioned in public comment.


Hickory
Miller Branch
(Bolicks Dry Branch)
I-40
30010
Hildebran Creek
(Anthony Creek)
Town Creek
Newton
Clark Creek
Smyre Creek
NC 16
US 321
Maiden
Catawba
County
US 321
Larkard Creek
(Gladdens Lake)
Lincoln
County
30020
Walker Creek
Lincolnton
NCDENR
Division Of Water Quality
Figure 13
Catawba River
Subbasin 35
Targeted Local
Watersheds 30010
and 30020
Clark Creek
N
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1 0 1 2 Miles
Catawba River Basin
Subbasin 35
Clark Creek
Local Watershed Boundaries
Hydrography
City and County Recreation Sites
Primary Roads
County Boundaries
Municipal Boundaries
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Quality Wetlands Restoration Program.
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Spheroid: GRS 1980
Units: Meters

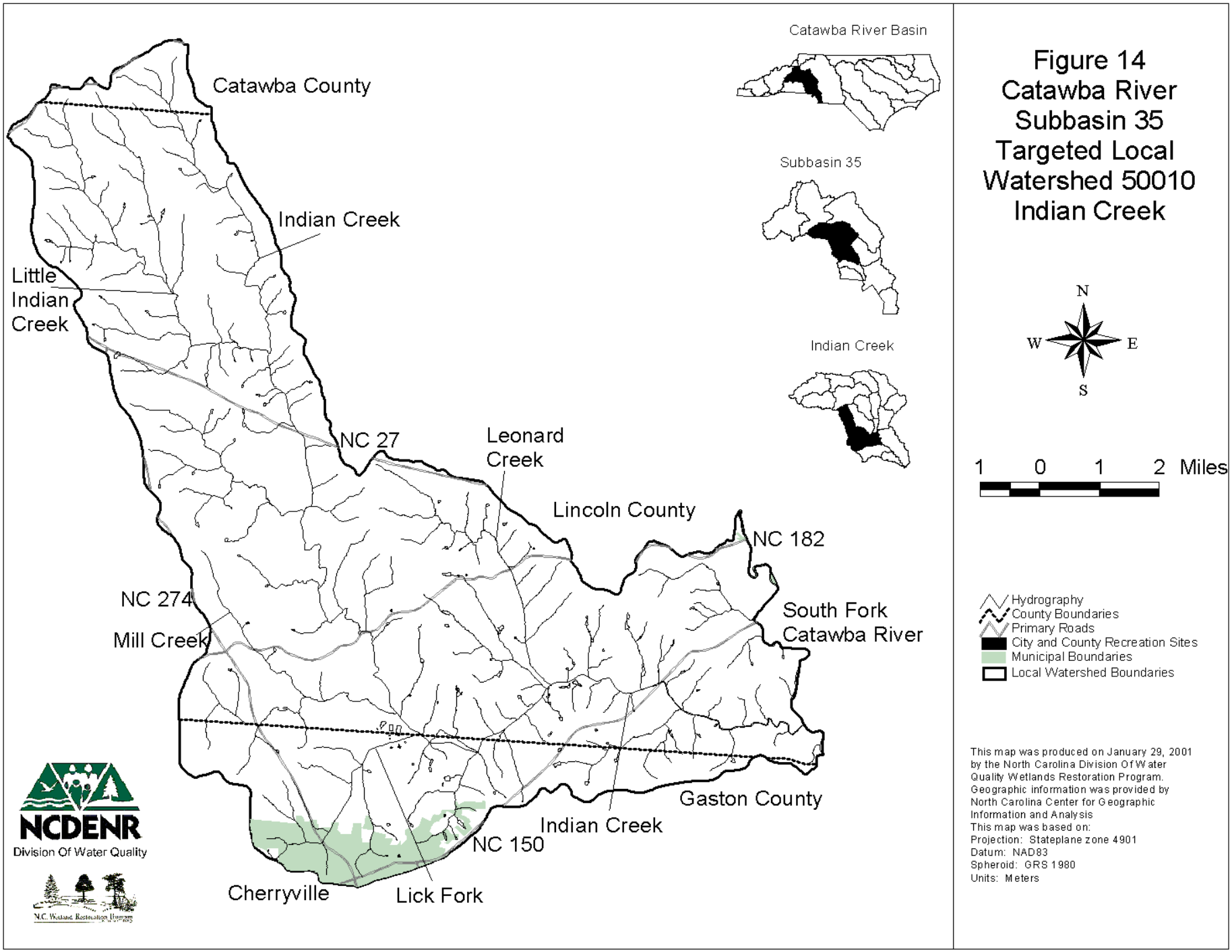

Figure 14
Catawba River Subbasin 35 Targeted Local Watershed 50010 Indian Creek

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Datum: NAD83
Spheroid: GRS 1980
Units: Meters

Subbasin 37

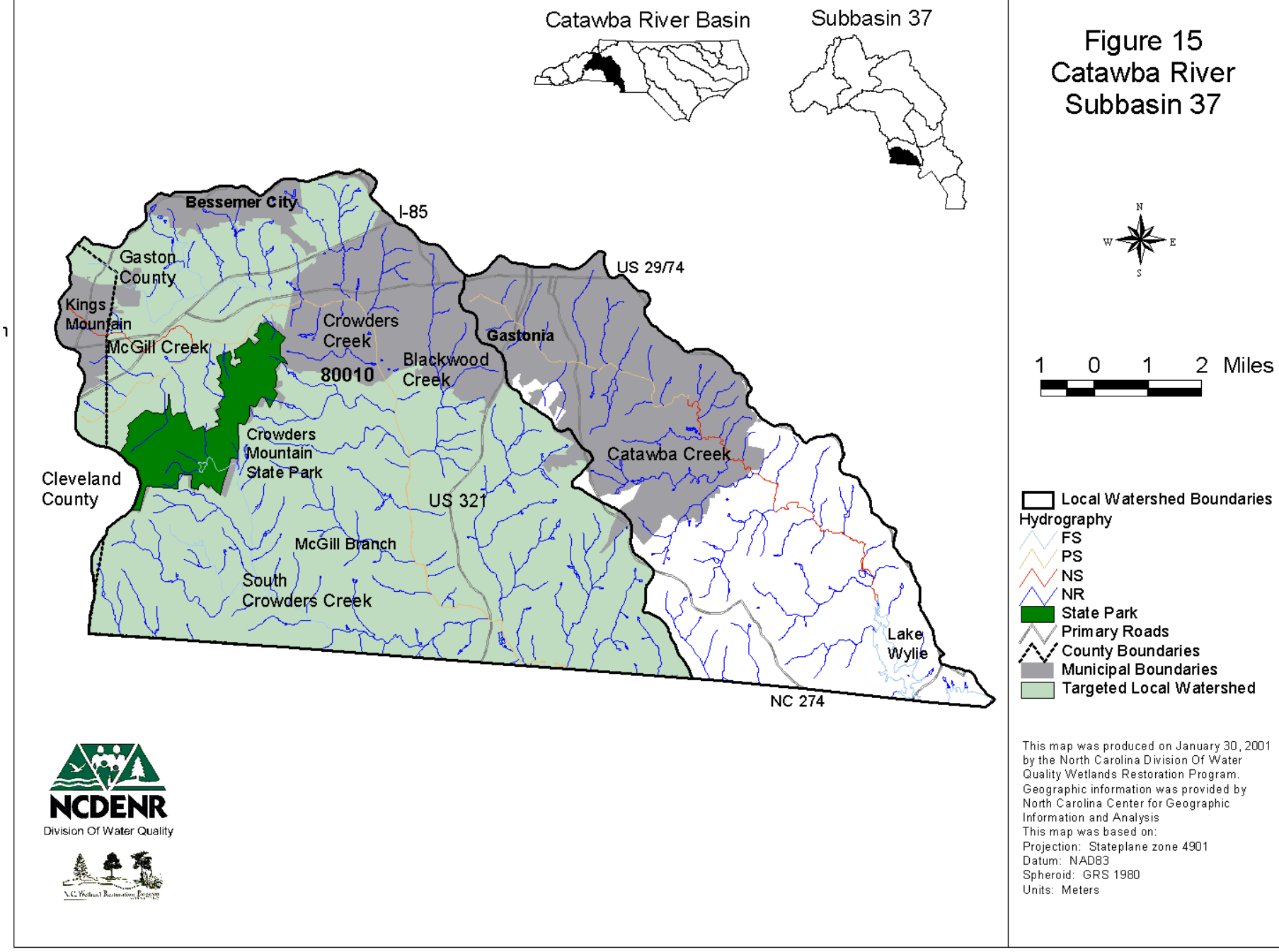
This subbasin (Figure 15) has a drainage area of 106 sq. miles, one of the smallest subbasins in the Catawba River Basin. More than one-third of the streams within this subbasin are rated as impaired. Parts of Gastonia, Bessemer City and Kings Mountain are within the subbasin. Major roadways bisecting the area are I-85 and US 321. Crowders Mountain State Park is in the western part of the subbasin.

Table 6 Statistics for Targeted Local Watershed within Subbasin 37

Targeted Local Watershed	Crowders Creek
	80010
Land Area (square miles)	71.9
Approx. Miles of Impaired Streams	15.8
Problem Parameters:	Fecal Coliform Bacteria
Major Sources of Impairment:	Point, Nonpoint
Possible Causes of Impairment:	Urban, Industrial
On 2000 303(d) List (not yet EPA approved)?	Yes
Agricultural Land Cover:	20%
Developed Land Cover:	13%
Forested Land Cover:	66%
Within Water Supply Watershed?	No
Designated High Quality or Outstanding Resource Water?	No
Classified Trout Waters?	No
Presence of Natural Heritage Element?	Yes

Crowders Creek Local Watershed 80010

Crowders Creek (Figure 16) runs through agricultural areas and receives runoff from a heavily developed part of Gastonia. Major roadways (I-85 and US 321) cross this watershed. This water body has exhibited substantial biological impairment over time, likely from both point and nonpoint sources. Significant Natural Heritage areas are contained within Crowders Mountain State Park on the west side of this watershed, and a small raction of this catchment is part of a water supply watershed. There was significant public response to the inclusion of this local watershed in the NCWRP's restoration plans.


Catawba River Basin
Subbasin 37
Figure 15
Catawba River
Subbasin 37
Bessemer City
I-85
Gaston
County
US 29/74
Kings
Mountain
McGill Creek
Crowders
Creek
Gastonia
80010
Blackwood
Creek
Crowders
Mountain
State Park
Catawba Creek
Cleveland
County
US 321
McGill Branch
South
Crowders Creek
Lake
Wylie
NC 274
N
W
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1 0 1 2 Miles
Local Watershed Boundaries
Hydrography
FS
PS
NS
NR
State Park
Primary Roads
County Boundaries
Municipal Boundaries
Targeted Local Watershed
NCDENR
Division Of Water Quality
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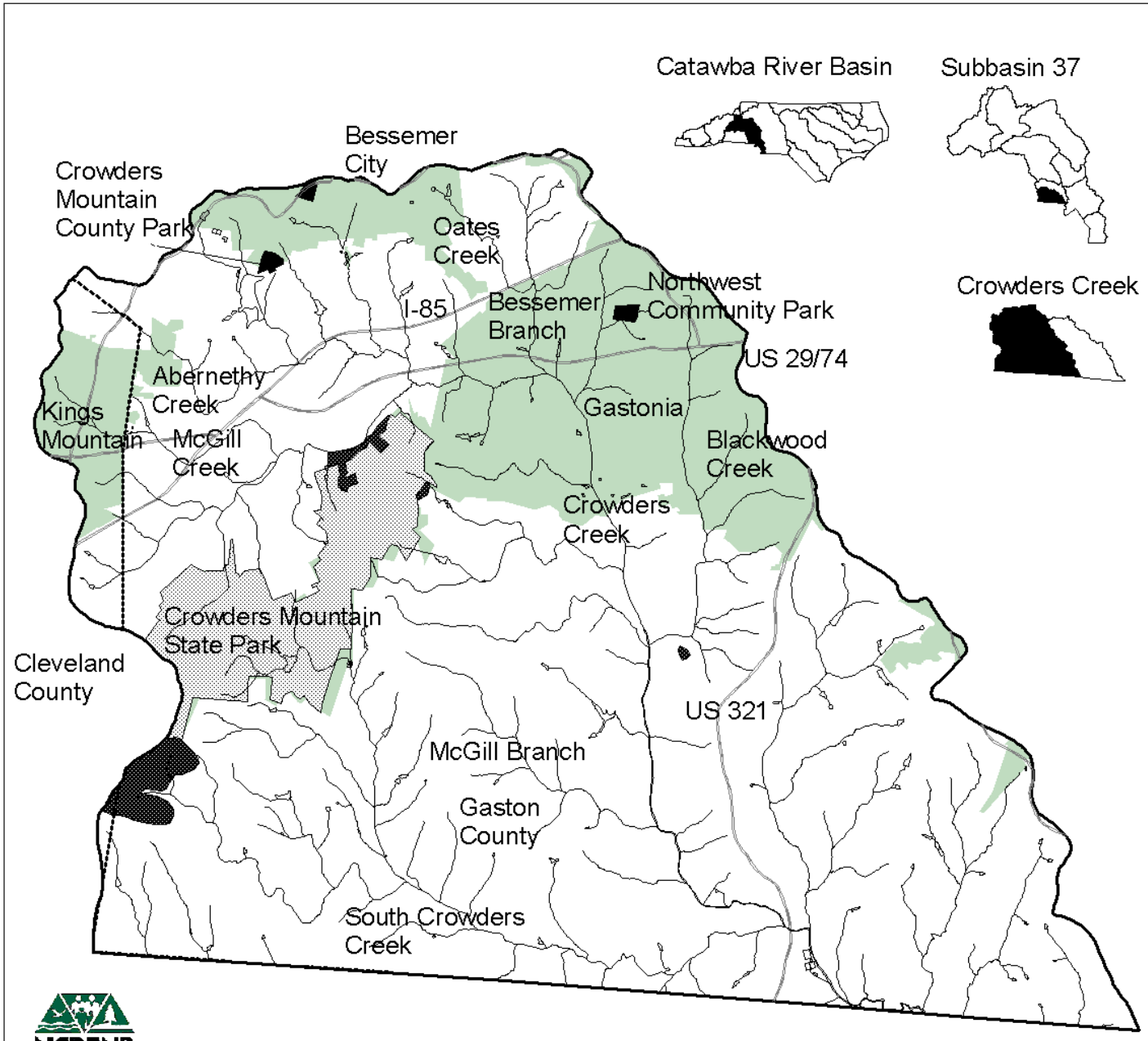

Figure 16
Catawba River Subbasin 37 Targeted Local Watershed 80010 Crowders Creek

N
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1 0 1 Miles

- Hydrography
- County Boundaries
- Primary Roads
- Local Watershed Boundaries
- City and County Recreation Sites
- State Park
- Significant Natural Heritage Areas
- Municipal Boundaries

NCDENR
Division Of Water Quality

This map was produced on January 29, 2001 by the North Carolina Division Of Water Quality Wetlands Restoration Program.
Geographic information was provided by North Carolina Center for Geographic Information and Analysis
This map was based on:
Projection: Stateplane zone 4901
Datum: NAD83
Spheroid: GRS 1980
Units: Meters

Table 7 Statistics for Targeted Local Watersheds Outside of Priority Subbasins

Targeted Local Watershed	N. Muddy Creek	S. Muddy Creek	McDowell Creek
	40010	40020	70010
Land Area (square miles)	58.6	40	38.3
Approx. Miles of Impaired Streams	4.7	0	9.8
Problem Parameters:	Sediment, Turbidity	Sediment, Turbidity	N/A
Major Sources of Impairment:	Point, Nonpoint	None	Nonpoint
Possible Causes of Impairment:	Agriculture, Urban	None	N/A
On 2000 303(d) List (not yet EPA approved)?	Yes (Corpening Creek)	No	Yes
Agricultural Land Cover:	13%	14%	31%
Developed Land Cover:	2%	0%	6%
Forested Land Cover:	84%	84%	60%
Within Water Supply Watershed?	No	No	Yes
Designated High Quality or Outstanding Resource Water?	No	No	No
Classified Trout Waters?	No	No	No
Presence of Natural Heritage Element?	Yes	Yes	Yes

Muddy Creek Local Watersheds 40010 and 40020

The majority of land in the North Muddy Creek watershed (Figure 17) is forested, with an abundance of cleared land within the riparian corridor. Marion lies in the northwestern region of the watershed, with I-40 nearly bisecting the catchment. The most degraded water quality in this local watershed is Corpening Creek, flowing from Marion to North Muddy Creek in the center of the basin. Corpening Creek (4.7 miles) is on the 2000 303(d) List (not yet EPA approved) due to nonpoint source pollution and urban impacts. The North Muddy Creek catchment contains Bobs Creek Pocket Wilderness, a Significant Natural Heritage area. Sampling performed by the Division of Water Quality indicates sedimentation and turbidity as problem parameters, with agriculture a potential source of water quality degradation. Public comments suggest that there are problems with active streambank erosion on North Muddy Creek, as well as an abundance of restoration opportunities.

The South Muddy Creek (Figure 17) watershed contains several protected bogs. There is no water quality impairment according to Division of Water Quality sampling, though there is noted sedimentation and turbidity in South Muddy Creek. Agriculture is noted as a possible contributer to sediment and turbidity. It was noted in public comments that there is need for restoration and streambank stabilization to alleviate active erosion on South Muddy Creek.

A local water quality initiative, The Muddy Creek Watershed Restoration Initiative, is pursuing development of a watershed assessment of both North and South Muddy Creek, in an effort to decrease sedimentation in both of these tributaries to the Catawba River. Two projects have been pursued with the aid of the Clean Water Management Trust Fund. One is a restoration project at the northern end of the catchment, the other is a land acquisition/restoration near Marion.

McDowell Creek Local Watershed 70010

McDowell Creek (Figure 18) is a tributary to Mountain Island Lake north of Charlotte, a water body that serves as a drinking water supply for several municipalities. This local watershed is of interest due to its 303(d) listing, rapid growth in the watershed, and because it is part of a drinking water supply system. The Mecklenburg Department of Environmental Protection has initiated a water quality outreach program in this watershed (Watershed Information Now, or "WIN") in an effort to involve the public in water quality and watershed issues. There are many conservation areas surrounding Mountain Island Lake. Increased conservation efforts, including land acquisition funded in part through Clean Water Management Trust Fund, are underway within the McDowell Creek watershed.

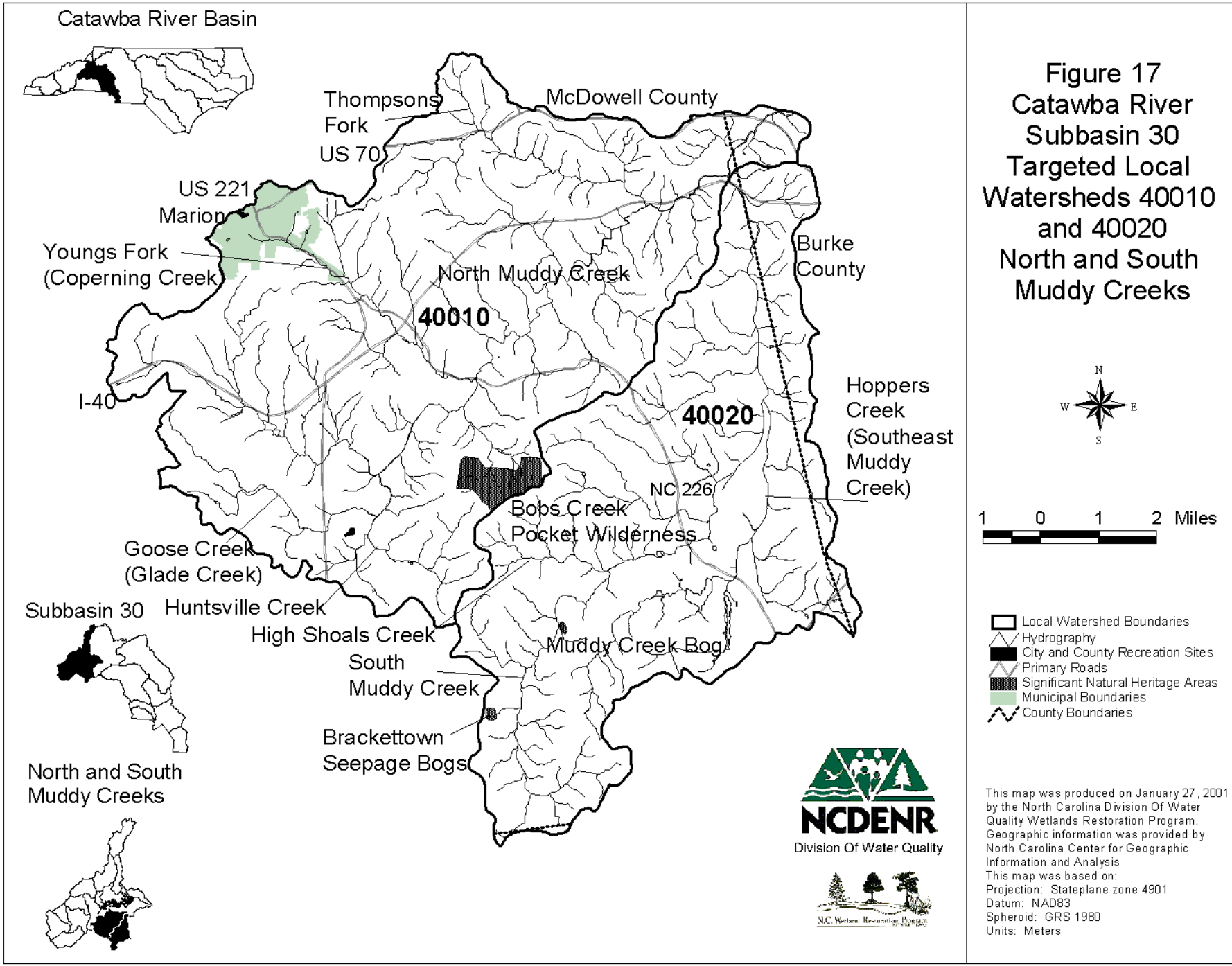

Figure 17
Catawba River Subbasin 30 Targeted Local Watersheds 40010 and 40020 North and South Muddy Creeks

This map was produced on January 27, 2001 by the North Carolina Division Of Water Quality Wetlands Restoration Program.
Geographic information was provided by North Carolina Center for Geographic Information and Analysis
This map was based on:
Projection: Stateplane zone 4901
Datum: NAD83
Spheroid: GRS 1980
Units: Meters

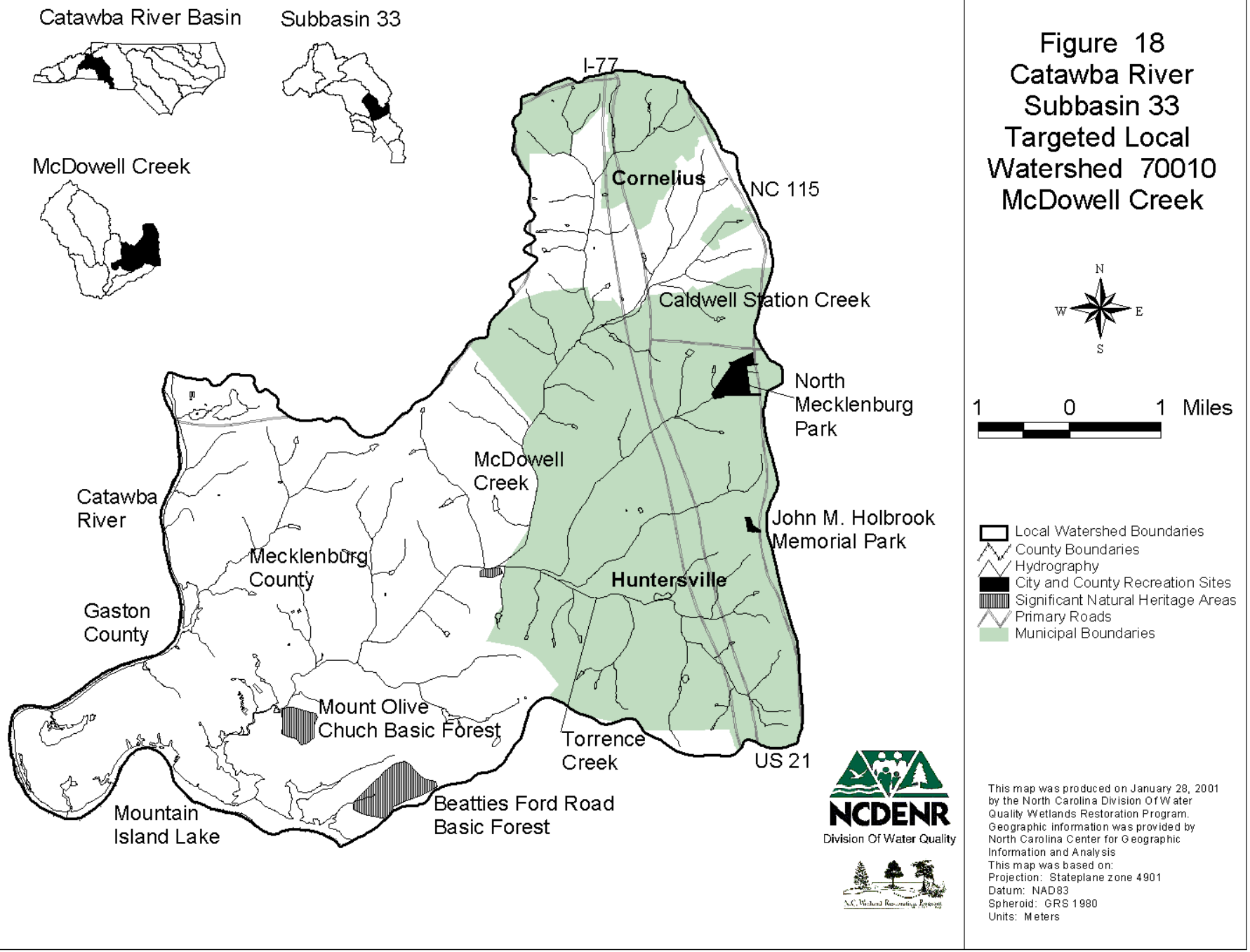

Figure 18
Catawba River Subbasin 33 Targeted Local Watershed 70010 McDowell Creek

This map was produced on January 28, 2001 by the North Carolina Division Of Water Quality Wetlands Restoration Program.
Geographic information was provided by North Carolina Center for Geographic Information and Analysis
This map was based on:
Projection: Stateplane zone 4901
Datum: NAD83
Spheroid: GRS 1980
Units: Meters

Section 5: Other Initiatives in the Catawba River Basin

This section is intended to provide descriptions of initiatives that are taking place within the Catawba River Basin related to water quality monitoring, water quality improvement, and education of the public. Some of these programs are required by law, as in the Phase I and Phase II stormwater regulations, and some programs are voluntary efforts, such as the RiverKeeper Program. This list is not comprehensive, as the Catawba River Basin is a large watershed with many agencies, local governments, citizens, and non-governmental organizations addressing local issues on a local scale. It is the intention of this section to provide a brief overview of several noteworthy initiatives that were brought forth at the resource professionals meeting and through solicitation of public input. It is hoped that interested parties may derive direction for their efforts by locating compatible projects and available resources within the basin. Contact information is provided in Table 3 at the end of this section.

Federal Programs

Several municipalities within the Catawba River Basin are subject to **EPA's Phase I or Phase II Stormwater Regulations**. The City of Charlotte was the only jurisdiction that was part of the Phase I requirements, which precede Phase II in timeframe and breadth of permitting requirements. There are twenty local governments and five counties in the Catawba River Basin proposed for Phase II stormwater requirements.

State Programs

An effort is underway to finalize temporary basinwide **Riparian Buffer Rules** for the Catawba River Basin. A stakeholder-driven process was initiated in 2000 to address the need for protection of the river corridor and tributaries in a comprehensive manner. Temporary basinwide riparian buffer rules are expected to be finalized during 2001; these rules will likely address riparian buffers on the mainstem of the river below Lake James and on all seven lakes within the basin. Permanent riparian buffer rules will likely follow over the next two years to address tributaries to the mainstem.

Long Creek Watershed, Gaston County, is the site of an EPA 319 National Nonpoint Source Monitoring Project. This project, initiated in 1991, is moving into its final phase, and has been a successful effort in identifying and alleviating nonpoint source water quality problems within the Long Creek watershed (Subbasin 36). Early efforts identified water quality degradation from farms, towns, streambank erosion and construction sites. The recommended best management practices (BMPs) focused on erosion control, streambank protection, animal waste control, and stormwater management as means to improve water quality. In reflecting on this project, cooperators recognize the importance of stakeholder involvement, flexibility and patience of project staff in working with landowners and municipalities, and an array of considerations regarding data collection, BMP design, and monitoring. The North Carolina Cooperative Extension Service heads the lengthy list of cooperators on this project, which serves as a model for collaborative nonpoint source project implementation.

Local Initiatives

Several municipalities within the lower basin have initiated stream buffer ordinances independent of a basinwide approach; these efforts are part of the Charlotte-Mecklenburg Stream Buffer Ordinance, the "**Surface Water Improvement & Management (S.W.I.M.)**" program. Charlotte, Cornelius, Davidson, Huntersville, Matthews, Mint Hill, Pineville, and unincorporated Mecklenburg County have either adopted or are in the process of adopting stream buffer ordinances. The S.W.I.M. program is a proactive effort to involve the community in water quality issues in the Greater Charlotte area. The program has many components, including citizen education (adopt- a- stream, storm drain stenciling, and pollution reporting), and citizen outreach (including print, radio and television advertisements). Surveys of the population allow the agency to tailor the program to reach intended audiences.

The **Muddy Creek Watershed Restoration Initiative** is a cooperative effort to assess water quality and restoration needs on two tributaries to the Catawba River in McDowell County (see text p. 35). Many agencies and private organizations have collaborated in this effort aimed at restoring trout habitat in these two catchments where erosion is causing sedimentation and habitat degradation. Water quality monitoring includes sediment, macroinvertebrate, fish, and recently, bacteriological sampling as well as water chemistry. In addition, a watershed assessment is underway to identify priority sites for restoration. The program includes a strong landowner outreach and education component to facilitate landowner participation in the project. Two stream segments have already been restored as part this effort.

Private and Non-Profit Organizations

The Foothills Conservancy of NC and **The Catawba Lands Conservancy** have each developed a Catawba River Riparian Corridor Conservation Design project through funding by the Clean Water Management Trust Fund and The Conservation Trust for NC. These projects identify riparian lands for restoration and/or preservation within the Catawba River Basin, and outline strategies for reaching preservation goals.

As the land management and development arm of Duke Energy, **Crescent Resources, Inc.** is one of the largest private landowners in both North and South Carolina. In May of 2000, Crescent made a pledge to protect riparian buffers along 200 miles of perennial streams in the two states, including protection of all its land along streams that flow into the Catawba River and its lakes. The company also pledged to financially assist with efforts to help other landowners protect another 100 miles of streams in the two states. This initiative is viewed as one of the largest private water protection efforts in the Southeast.

The Catawba RiverKeeper program is an effort aimed at better understanding and protecting the resources of the Catawba River. The RiverKeeper program takes a three-pronged approach to meet its goals: a volunteer corps to help monitor water quality; a

strong public education and outreach program, incorporating collaborative projects; and a process to address legal issues, including legislative and enforcement actions.

Contacts:

The following agencies and organizations are involved in a variety of water quality initiatives in the Catawba River Basin, and should be contacted for further information regarding programs of interest. The NCWRP appreciates the input of all organizations that responded to outreach efforts during the development of this plan.

Table 8 Contact Information

Organization	Name	Address	Phone	Web site
NC Wetlands Restoration Program	Jocelyn Elliott	1617 Mail Service Center, Raleigh, NC 27699-1617	919-716-1921	http://h2o.enr.state.nc.us
Division of Water Quality, Basinwide Planning Program	Darlene Kucken	1617 Mail Service Center, Raleigh, NC 27699-1617	919-733-5083 ext. 354	http://h2o.enr.state.nc.us /basinwide/
Clean Water Management Trust Fund	Bern Schumak, Central Field Rep.	13529 Cliffhaven Lane, Huntersville, NC 28078	704-947-0506	http://cwmtf.net/
NC Wildlife Resources Commission	Chris Goudreau	645 Fish Hatchery Road, Marion, NC 28752-9929	828-652-4360	http://www.ncwildlife.org/
Catawba RiverKeeper	Donna Lisenby	296 Elizabeth Ave., Suite 403A Charlotte, NC 28204	704-373-1916	http://www.catawbariverkeeper.org/
Catawba Lands Conservancy		105 W. Morehead St., Charlotte, NC 28202	704-342-3330	http://catawbalands.org./
Foothills Conservancy	Tom Kenney	P.O. Box 3023 Morganton, NC 28655-3023	828-437-9930	
Muddy Creek Watershed Restoration Initiative	Andy Brown	Equinox Environmental Consultation and Design	828-253-6856	
Duke Power	Steve Johnson		704-373-4391	

References

Catawba River Basinwide Water Quality Plan
NC DENR, Division of Water Quality
Water Quality Section
December, 1999

Basinwide Assessment Report, Catawba River Basin
NC DENR, Division of Water Quality
Environmental Sciences Branch
August, 1998

Draft Fisheries Management Direction for the Catawba River Basin
NC Widlife Resources Commission
April, 1988

Catawba River Basin Natural Resources Plan
NC DENR and NC Wildlife Resources Commission
Draft June, 2000

Rare Species and Natural Communities of the Catawba River Basin
NC DENR-Division of Parks and Recreation, NC Natural Heritage Program
October, 1999

Lower Creek Watershed Project
Western Piedmont Council of Governments
October, 1998

Long Creek News
NC Cooperative Extension Service, NC State University
October, 2000

A Region Awakens
Foundation for the Carolinas and The Trust for Public Lands
2000

Appendix

Targeted Local Watersheds

Subbasin 31	Local Watershed	Major Tributary
	03050101070010	Johns River
	03050101080010	Lower Creek (Upper)
	03050101080020	Lower Creek (Lower)
	03050101050050	Silver Creek, Clear Creek
	03050101090010	McGalliard Creek
Subbasin 34	03050101170020	Long Creek
	03050103020020	Irwin Creek
	03050103020030	Little Sugar Creek
	03050103020050	McAlpine Creek
Subbasin 35	03050102030010	Clark Creek (Upper)
	03050102030020	Clark Creek (Lower)
	03050102050010	Indian Creek
Subbasin 37	03050101180010	Crowders Creek

Additional Local Watersheds Outside of Priority Subbasins:

Subbasin 30	03050101040010	North Muddy Creek
	03050101040020	South Muddy Creek
Subbasin 33	03050101170010	McDowell Creek