

# Chapter 8 - Catawba River Subbasin 03-08-37 Includes Crowders Creek and its tributaries

## 8.1 Water Quality Overview

<i>Subbasin 03-08-37 at a Glance</i>	
<b>Land and Water Area (sq. mi.)</b>	
Total area:	106
Land area:	105
Water area:	1
<b>Population Statistics</b>	
1990 Est. Pop.:	64,977 people
Pop. Density:	619 persons/mi <sup>2</sup>
<b>Land Cover (%)</b>	
Forest/Wetland:	63%
Surface Water:	1%
Urban:	15%
Cultivated Crop:	1%
Pasture/ Managed Herbaceous:	20%
<b>Use Support Ratings</b>	
<i>Freshwater Streams:</i>	
Fully Supporting:	0.0 mi.
Fully Supporting but Threatened:	14.5 mi.
Partially Supporting:	21.9 mi.
Not Supporting:	9.8 mi.
Not Rated:	26.8 mi.
<i>Lakes:</i>	
Lake Wylie - Fully Supporting	
(Note: 300 acres of the Catawba Creek Arm and 570 acres of the Crowders Creek Arm are Fully Supporting but Threatened.)	

This small subbasin contains portions of Bessemer City and South Gastonia. The largest discharger is Gastonia with two permitted discharges; one to Catawba Creek and one to Crowders Creek. Bessemer City WWTP discharges to Abernethy Creek, a tributary to Crowders Creek, and to Crowders Creek. Crowders Creek (or its tributaries) receives a total of 13.2 MGD of effluent from dischargers, which is a likely explanation for the degraded water quality conditions. A map of this subbasin including water quality sampling locations is presented in Figure B-9. Biological ratings for these sample sites are presented in Table B-8.

Nine facilities currently monitor effluent toxicity under conditions of their NPDES permits. Six of these facilities have had a history of problems meeting their permitted limits.

The benthic site on Crowders Creek was first sampled in 1988 and was rated Poor due to problems associated with a discharge from a chicken processing plant. The most recent sampling showed a slight improvement. Fish community analysis at Crowders Creek and Catawba Creek resulted in a Poor rating for both streams. Phytoplankton surveys on the Crowders Creek and Catawba Creek arms of Lake Wylie have indicated elevated levels of nutrients and chlorophyll *a* and algal bloom conditions.

Biological and chemical monitoring data are used to develop use support ratings. These ratings are used to prioritize DWQ activities towards protecting and restoring waters in the basin. Catawba Creek and Crowders Creek are rated as impaired. Refer to Appendix II for a complete

listing of monitored waters and use support ratings.

Catawba 030837

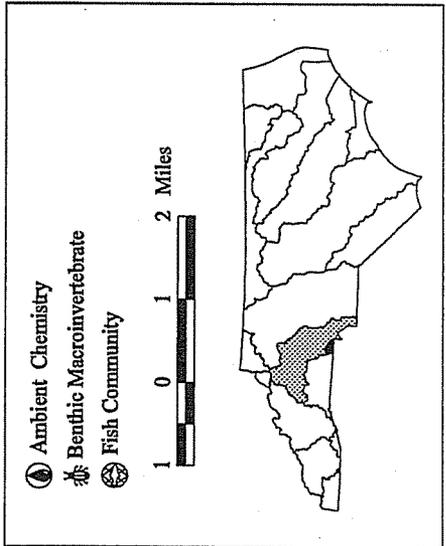
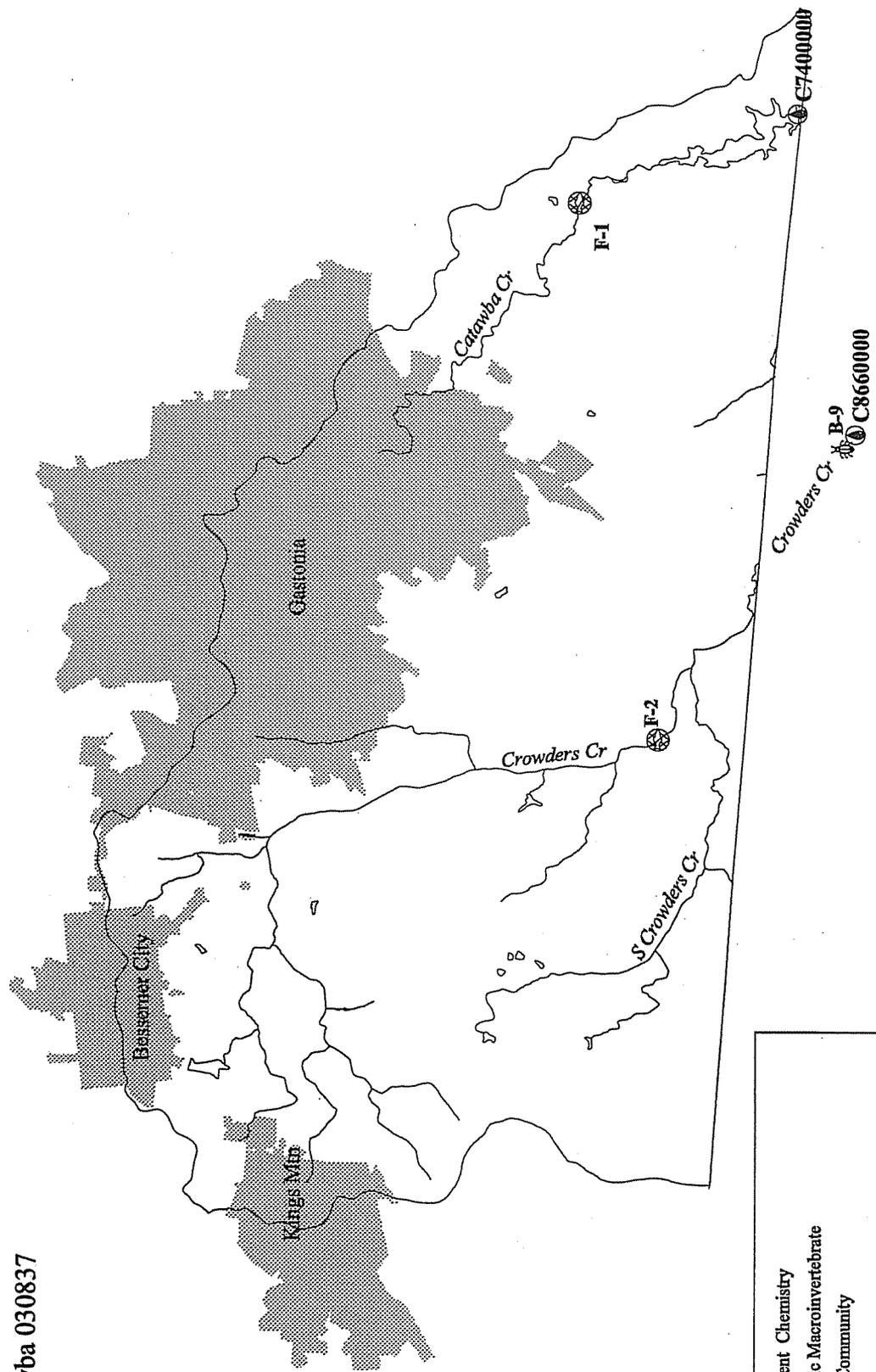


Figure B-9 Sampling Locations within Subbasin 03-08-37

Table B-8 Biological Assessment Sites in Catawba River Subbasin 03-08-37 (1997)

Site	Stream	County	Road	Rating
B-9	Crowders Creek	Gaston	SC 564	Fair
F-1	Catawba Creek	Gaston	SR 2435	Poor
F-2	Crowders Creek	Gaston	SR 1108	Poor

Key:

B = Benthic Macroinvertebrate Sites

F = Fish Sites

For more detailed information on water quality in subbasin 03-08-37, refer to the *Basinwide Assessment Report - Catawba River Basin - August 1998*, available from the DWQ Environmental Sciences Branch at (919) 733-9960.

## 8.2 Prior Basinwide Plan Recommendations (1995) and Achievements

### 8.2.1 Impaired Waterbodies

The 1995 basinwide plan identified several streams as impaired. Each of these impaired waters are discussed below.

#### **Catawba Creek, Crowders Creek, Unnamed Tributary to Crowders Creek, McGill Creek, Abernethy Creek and Unnamed Tributary to Abernethy Creek**

A water quality study of 25 stream miles of McGill, Crowders and Abernethy Creeks in Gaston County was performed in order to calibrate a water quality model. The study was initiated due to high instream waste concentrations in Crowders Creek and observations of poor water quality downstream in the Crowders Creek Arm of Lake Wylie.

Results of the study suggested that regionalized wastewater collection by the Gastonia Crowders Creek WWTP significantly reduced loading of oxygen-consuming wastes to Crowders Creek due to advanced tertiary treatment. It was recommended that smaller facilities continue to tie on to the Gastonia WWTP.

It was also recommended that all facilities with a permitted design flow of greater than or equal to 1 MGD be required to meet limits of 1.0 mg/l total phosphorus (TP) and 6.0 mg/l total nitrogen (TN) by January 1, 2000.

#### Status of Progress

The Lake Wylie management strategy, presented in the 1995 basinwide plan, and progress on this recommendation are discussed in Section A, Chapter 4, Part 4.1 because the strategy affected dischargers in more than one subbasin.

## **Mill Creek**

Mill Creek was misreported as impaired (not supporting) in the 1995 basinwide plan, and the management strategy was to remove point source discharges.

### Status of Progress

The status of the creek at that time should have been reported as not rated (NR). There are currently no permitted discharges to this creek.

## **8.2.2 Other Recommendations**

### **Lake Wylie Management Strategy**

The Lake Wylie Management Strategy within the 1995 Catawba River Basinwide Water Quality Management Plan was based on a joint water quality investigation between the South Carolina Department of Health and Environmental Control (DHEC) and DWQ. The long-range plan was developed to address concerns regarding eutrophication.

### Status of Progress

The Division has already required marked reductions in point source loads and is working to gain a better understanding of nonpoint source nutrient contributions to Lake Wylie and ways to control them. Significant reductions in pollutants are being achieved by various point sources. This strategy is discussed in more detail in Section A because the Lake Wylie watershed and management area covers more than one subbasin. Examples of the point source pollutant reduction initiatives in the Lake Wylie watershed and recommendations for the next five years are presented in Section A, Chapter 4, Part 4.1.

## **8.3 Current Priority Issues and Recommendations**

### **8.3.1 Monitored Impaired Waters**

There are two impaired waters in this subbasin based on the most recent DWQ sampling data. These waters and recommendations for improving water quality are discussed below and in Part 8.3.2. It is worth noting that there is significant development occurring in this subbasin which could result in decreasing water quality in the headwaters. DWQ has limited monitoring stations in this subbasin, and these monitoring efforts should be expanded in the future to better assess the effects of this development. Local land use planning should be implemented to assure water quality is protected.

### **Catawba Creek**

Approximately 7.4 miles of Catawba Creek are impaired (not supporting) due to both point and nonpoint sources of pollution. The Gastonia WWTP has impacted the creek, along with urban

runoff. The Catawba Creek arm of Lake Wylie is not impaired; however, DWQ is concerned about the eutrophication of this arm of the lake. About 300 acres of the Catawba Creek arm are rated fully supporting but threatened (ST).

#### 1999 Recommendation(s)

The Gastonia WWTP on Catawba Creek was decommissioned in early 1999. All waste is being sent to a state-of-the-art facility on Long Creek. The removal of this discharge and the operation of a new facility are expected to improve water quality on Catawba and Long Creeks. The Catawba Creek arm should also reflect this improvement. DWQ will further assess water quality to measure changes after the removal of this effluent. For further information, refer to the Section A, Chapter 4 discussion on the Lake Wylie nutrient management strategy.

### **Crowders Creek**

The entire NC portion of Crowders Creek (15.8 mi.) is impaired (partially supporting) due to both point and nonpoint sources of pollution. Point sources include the Gastonia WWTP (with several discharges to this facility) and nonpoint sources include urban runoff. About 570 acres of the Crowders Creek arm are rated fully supporting but threatened (ST).

#### 1999 Recommendation(s)

CBP Resources, a chicken processing plant, ceased its discharge to Crowders Creek in December 1998. The plant is sending its discharge to the Gastonia Crowders Creek WWTP. This facility currently removes phosphorus and is being modified to remove total nitrogen in 2001. DWQ will conduct monitoring to assess the cumulative impacts of the Gastonia area above the WWTP and improvements to water quality as a result of improvements at the Crowders Creek WWTP.

Further monitoring will be conducted in the Abernethy Creek watershed to better assess water quality impacts to Crowders Creek and possible improvements to water quality resulting from rerouting the Bessemer City WWTP effluent to the Crowders Creek facility.

The significant improvements made by the dischargers in this watershed are expected to result in measurable improvements in water quality in Crowders Creek. The Crowders Creek arm of Lake Wylie should also show improvements. For further information, refer to the Section A, Chapter 4 discussion on the Lake Wylie nutrient management strategy.

### **8.3.2 303(d) Listed Waters**

During the next five years, it will be a priority of DWQ to begin to address waters listed on the state's year 2000 (not yet EPA approved) 303(d) list. In this subbasin, several streams are on the 303(d) list. These include: Catawba Creek, McGill Creek, an unnamed tributary to Crowders Creek and Crowders Creek. Both Catawba and Crowders Creeks are currently considered to be impaired and are discussed further above. Each of these creeks will be monitored to identify the potential parameters causing water quality problems. Further information on the 303(d) list and listing requirements can be found in Appendix IV.