Chapter 4 -
Cape Fear River Subbasin 03-06-04
Includes Cane Creek, Collins Creek and the Haw River

4.1 Water Quality Overview

Subbasin 03-06-04 at a Glance

Land and Water Area (sq. mi.)

Total area:	331
Land area:	327
Water area:	4

Population Statistics

1990 Est. Pop.:	20,213 people
Pop. Density:	62 persons / mi^2

Land Cover (%)

Forest / Wetland:	73.0
Surface Water:	1.7
Urban:	0.3
Cultivated Cropland:	3.0
Pasture / Managed Herbaceous:	22.0

Use Support Ratings

Freshwater streams:

Fully Supporting:	207.1 mi.
Partially Supporting:	15.9 mi.
Not Supporting:	0.0 mi.
Not Rated:	18.3 mi.

Lakes:

Cane Creek Reservoir - Fully Supporting

Pittsboro Lake - Not Supporting

This subbasin contains the lower reaches of the Haw River in Alamance, Orange and Chatham counties. This section of the Haw River is approximately 25-river miles in length and is completely within the Carolina Slate Belt. Tributary streams within this subbasin are strongly influenced by geology and characteristically have large boulder and/or rubble riffle areas. Therefore, many of the tributary streams in this subbasin are prone to extremely low flow conditions during summer months. A map of the subbasin, including water quality sampling locations, is presented in Figure B-4.

Biological ratings for these sample locations are presented in Table B-4. The current sampling resulted in impaired ratings for two streams and one lake in this subbasin. Refer to Appendix III for a complete listing of monitored waters and use support ratings. See Section A, Chapter 3, Table A-31 for a summary of lakes and reservoirs use support data.

Much of the land use within this subbasin is forest, although pasture, cultivated crops and urban land uses also account for significant portions of the subbasin. All three counties within this subbasin have large numbers of registered livestock and animal operations, particularly cattle and poultry operations in Chatham County.

There are 7 permitted dischargers in this subbasin. Only Pittsboro WWTP (Robeson Creek) has a permitted flow of more than 0.5 MGD.

Ambient water quality data are collected from three locations in this subbasin: two mainstem locations on the Haw River (US 15-501 near Bynum and below B. Everett Jordan dam near Moncure) and Robeson Creek at SR 1939 near Seaforth. These data have indicated good water quality with few violations in water quality criteria. Additionally, data from the two Haw River locations in this subbasin indicate an improvement in water quality compared to conditions recorded from ambient monitoring sites in the Haw River at Haw River and Saxapahaw.

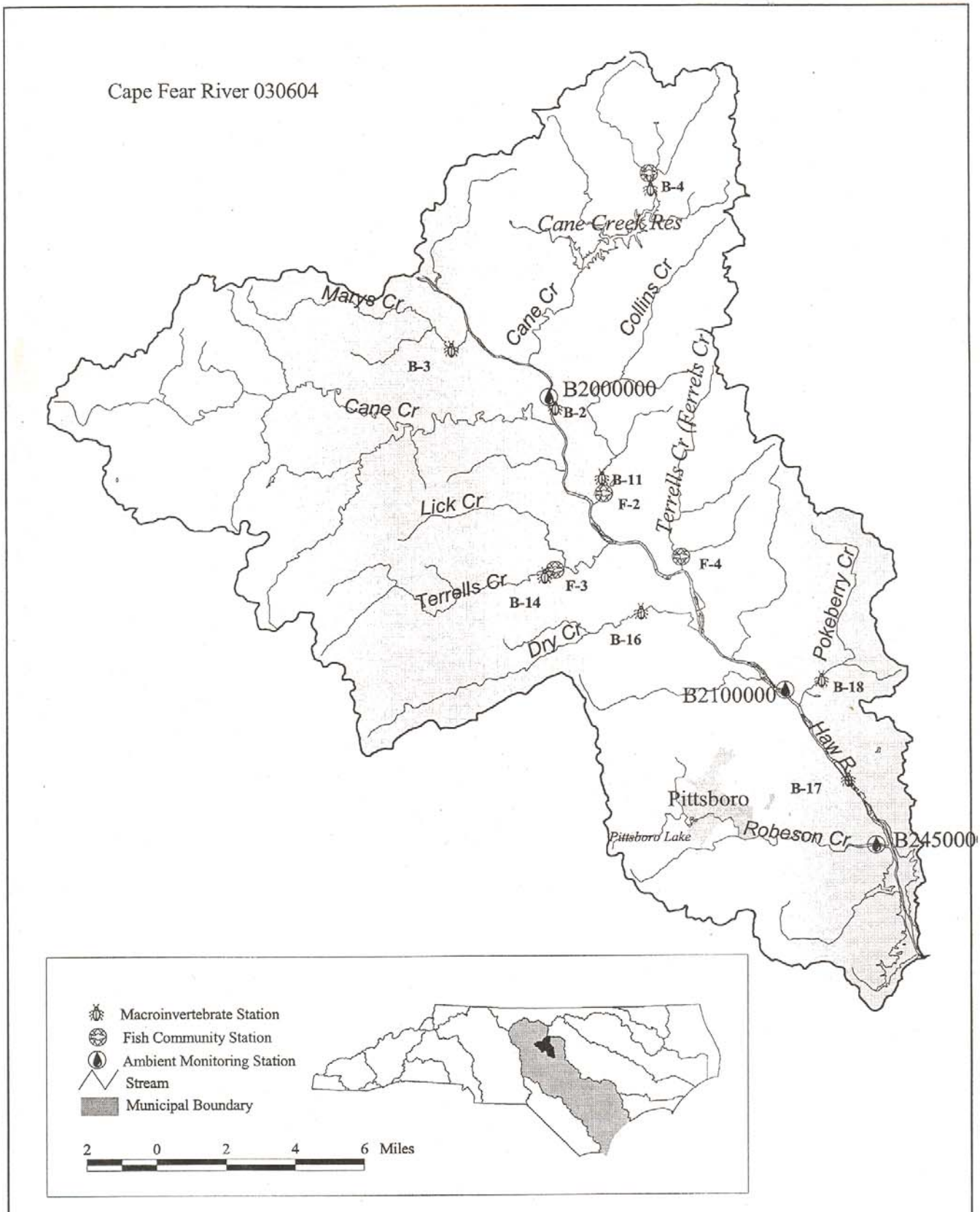

Figure B-4 Sampling Locations within Subbasin 03-06-04

Table B-4 Biological Assessment Sites in Cape Fear River Subbasin 03-06-04

BENTHOS				***Bioclassification***	
Site #	**Stream**	**County**	**Location**	**1993**	**1998**
B-2	Haw River	Alamance	SR 1005	Good-Fair (s)	Good-Fair (s)
B-3	Marys Creek	Alamance	SR 2174	Not Sampled	Fair (w)
B-4	Cane Creek	Orange	SR 1114	Good (w)	Good & Excellent (w)
				Good-Fair (s)	Good (s)
B-11	Collins Creek	Chatham	SR 1539	no sample	Good-Fair (w)
B-14	Terrells Creek	Chatham	NC 87	Good (w)	Good-Fair (s)
B-16	Dry Creek	Chatham	SR 1520	Good (w)	Good-Fair (w)
B-17	Haw River	Chatham	US 64	Good (s)	Good (s)
B-18	Pokeberry Creek	Chatham	SR 1711	Good-Fair (w)	Good (w)
FISH				***Bioclassification***	
Site #	**Stream**	**County**	**Location**	**1994**	**1998**
F-2	Collins Creek	Chatham	SR 1539	no sample	Poor
F-3	Terrells Creek	Chatham	NC 87	Fair	Fair
F-4	Ferrels Creek	Chatham	SR 1525	no sample	Good-Fair

(w) Winter collection, (s) Summer collection

Benthic macroinvertebrate samples have been collected from two Haw River locations since 1984, including two basinwide surveys in 1993 and 1998. These data indicate that water quality conditions improve downstream near the Haw River arm of Jordan Lake (Good bioclassifications, US 64) compared to upstream reaches at Saxapahaw (Good-Fair bioclassifications, SR 1005). A benthos sample also was collected from the Saxapahaw location in November 1998 during extremely low flow conditions. Although the bioclassification did not change from summer data, taxa richness values were much lower. These data may reflect the effects of greater instream waste concentrations from upstream sources during extremely low flow conditions.

For more detailed information on water quality in this subbasin, refer to *Basinwide Assessment Report – Cape Fear River Basin – June 1999*, available from DWQ Environmental Sciences Branch at (919) 733-9960.

4.2 Impaired Waters

Portions of Robeson Creek were identified as impaired in the 1996 Cape Fear River Basinwide Water Quality Plan. Portions of Robeson Creek, Marys Creek and Pittsboro Lake are currently rated impaired according to recent DWQ monitoring. Current status of each stream is discussed below. Prior recommendations, future recommendations and projects aimed at improving water quality for these waters are also discussed when applicable. 303(d) listed waters are summarized in Part 4.3, and waters with other issues, recommendations or projects are discussed in Part 4.4.

Robeson Creek

1996 Recommendations

Robeson Creek was not supporting (NS) in the upper segment and partially supporting (PS) in the lower segment. A reconnaissance study was recommended to determine the source of low dissolved oxygen (DO) upstream of the Pittsboro WWTP discharge and to evaluate improvements to the facility. A follow-up benthic survey was also recommended.

Current Status

A special study to assess the effects of an oil spill into a small tributary of Robeson Creek was conducted in 1997. No aquatic life was found in the tributary, and the spill may have affected waters further downstream in the Robeson Creek watershed. Robeson Creek (6.2 miles from 0.7 miles downstream of SR 2159 to the Haw River) is currently partially supporting (PS) according to recent DWQ monitoring. There have been chlorophyll *a* violations in the lower segment and impaired biological communities in both segments. Instream habitat degradation associated with urban nonpoint sources and a discharge from the City of Pittsboro WWTP is a possible cause of impairment. A new highway bypass and other construction around Pittsboro are adding to nonpoint source problems. The City of Pittsboro has upgraded the WWTP, but has occasional violations including exceeding permitted limits for total phosphorus. A chicken processing plant has had spills from its spray line into an unnamed tributary of Robeson Creek that may contribute to nutrient problems in the lower segment.

2000 Recommendations

Local initiatives are needed to improve water quality in Robeson Creek. DWQ encourages development of a land use plan that protects water quality in this watershed. The 303(d) list approach will be to resample for biological and chemical data to attempt to determine potential problem parameters and develop a TMDL to address nutrients causing high chlorophyll *a* levels.

The Haw River Assembly was awarded funds to initiate a watershed awareness campaign in the Robeson Creek watershed including Pittsboro. The Haw River Assembly will seek cooperation from city and county agencies, the Triangle J Council of Governments, Cooperative Extension Service, and the Natural Resources Conservation Service to coordinate development of a broader restoration initiative. This funding will provide for landowner outreach and education and initiate broader opportunities for conservation and restoration.

Marys Creek

Current Status

Marys Creek (9.7 miles from source to Haw River) is currently partially supporting (PS) according to recent DWQ monitoring because of an impaired biological community. Instream habitat degradation associated with agricultural nonpoint sources may be a cause of impairment. Indications of nutrient enrichment were also noted. Holding ponds have been installed at milking parlors on dairy farms in the watershed. Fencing cattle out of streams has also been

implemented by some of the dairy operations on a voluntary basis. Marys Creek is on the state's year 2000 303(d) list (not yet EPA approved).

2000 Recommendations

DWQ encourages groups interested in watershed projects to work with DWQ and other agencies to identify sources of impairment to this stream and to implement best management practices to reduce agricultural nonpoint source impacts (see nonpoint source agency contacts in Appendix V). The 303(d) list approach will be to resample for biological and chemical data to attempt to determine potential problem parameters.

Pittsboro Lake

Current Status

Pittsboro Lake (38 acres, SW of Pittsboro) is currently not supporting (NS) according to recent DWQ monitoring. The lake is impacted by urban and rural nonpoint source pollution. The lake is also affected by algal blooms stimulated by excessive nutrient input from the watershed. Pittsboro Lake is a small impoundment located just outside of, and owned by, the Town of Pittsboro in Chatham County. The lake, which is a retired water supply, is actually a system of two separate ponds connected by a canal that becomes dry during periods of low precipitation. The drainage area for Pittsboro Lake is composed of forested, urban and agricultural areas. Pittsboro Lake is currently part of a town park.

When sampled by DWQ in 1993, this lake had a significant macrophyte infestation problem. Field observations in 1998 continued to identify a problem with excessive macrophyte growth in the lake. There has been no dredging or macrophyte control actions (either mechanical or chemical) to reduce the plant growth in the lake. Hurricane Fran (1996) did remove a great deal of the plant material and algae observed in the lake in 1993 by DWQ. The lake is also affected by algal blooms and nutrient loading.

2000 Recommendations

Local initiatives are needed to improve water quality in Pittsboro Lake. DWQ encourages development of a land use plan that protects water quality in the lake. A stormwater program with an educational component would help to reduce nutrient input into Pittsboro Lake. The 303(d) list approach will be to develop TMDL to address nutrients causing high chlorophyll *a* levels.

4.3 303(d) Listed Waters

There are two streams (15.9 stream miles) and one lake in the subbasin rated as impaired and on the state year 2000 303(d) list (not yet EPA approved). Robeson Creek, Marys Creek and Pittsboro Lake are discussed above. For information on 303(d) listing requirements and approaches, refer to Appendix IV.

4.4 Other Issues, Recommendations and Projects

The following surface water segments are rated as fully supporting using recent DWQ monitoring data. However, these data revealed some impacts to water quality. Although no action is required for these surface waters, continued monitoring is recommended. Enforcement of sediment and erosion control laws will help to reduce impacts on these streams and lakes. DWQ encourages the use of voluntary measures to prevent water quality degradation. Education on local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. For information on water quality education programs, workshops and nonpoint source agency contacts, see Appendix V.

Cane Creek South, Collins Creek, Terrells Creek South, Terrells Creek North, Dry Creek and the Haw River mainstem are in agricultural watersheds and subject to streambank erosion and habitat degradation. Implementation of agricultural BMPs would reduce potential impacts to the smaller streams and reduce the potential for impacts to the mainstem.

Approximately 8% of the waters in this subbasin are impaired by nonpoint source pollution (mostly urban). All the waters of the subbasin are affected by nonpoint sources. DENR, other state agencies and environmental groups have programs and initiatives underway to address water quality problems associated with nonpoint sources. DWQ will notify local agencies of water quality concerns in this subbasin and work with these various agencies to conduct further monitoring, as well as assist agency personnel with locating sources of funding for water quality protection.

Upper Cape Fear River Basin Association

The Upper Cape Fear River Basin Association (UCFRBA) is starting to sample 45 sites in the upper Deep and Haw River watersheds. The data will be analyzed to support various studies and will be used with DWQ data to develop use support ratings for waters in the Cape Fear River basin during the upcoming basinwide cycle.

Cane Creek Reservoir

Algal bloom samples were collected from Cane Creek Reservoir in July and August 1998. Chlorophyll *a* above the state water quality standard was reported in June and August 1998. The North Carolina Clean Water Management Trust Fund awarded OWASA a one million-dollar grant to help acquire land and conservation easements in the Cane Creek Reservoir watershed. See Section C, Chapter 1, Part 1.5.1 for a complete description of the project.