Chapter 20 -
Cape Fear River Subbasin 03-06-20
Includes the Black River, Colly Creek and Moores Creek

20.1 Water Quality Overview

Subbasin 03-06-20 at a Glance

Land and Water Area (sq. mi.)

Total area:	343
Land area:	338
Water area:	5

Population Statistics

1990 Est. Pop.:	5,231 people
Pop. Density:	15 persons / mi^2

Land Cover (%)

Forest / Wetland:	77.9
Surface Water:	0.8
Urban:	0.2
Cultivated Crop:	18.0
Pasture / Managed Herbaceous:	3.1

Use Support Ratings

Freshwater Streams:

Fully Supporting:	142.5 mi.
Partially Supporting:	0.0 mi.
Not Supporting:	0.0 mi.
Not Rated:	35.7 mi.

Lakes:

Singletary Lake - Fully Supporting

This subbasin is located in the coastal plain. The subbasin contains no major urban areas, but includes the towns of White Lake, Currie and Atkinson. White Lake WWTP is the only permitted discharger in the subbasin.

The characteristics of streams in this subbasin are typical of most coastal plain areas: low geographic relief, low pH blackwaters, and a tendency for all but the largest rivers to stop flowing in summer. The Black River in this area has been classified as Outstanding Resource Waters (ORW). Agriculture is the major land use, and nonpoint source pollution is the major water quality problem, especially in the tributaries. A map of the subbasin, including water quality sampling locations, is presented in Figure B-20.

Biological ratings for these sample locations are presented in Table B-20. The current sampling resulted in no streams being rated as impaired. 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.

Water quality in this subbasin appears to be generally good. Benthic macroinvertebrate data indicate stable water quality in the Black River for nearly a decade. Tributaries to the Black River stop flowing in the summer, so water quality assessments of tributary streams were conducted in the winter. Fair conditions were recorded at the Lyons Swamp Canal, mostly as a result of habitat degradation and heavy agricultural land use. Moore Creek had Good water quality due to its relatively undisturbed local land use and the generally lower levels of agricultural intensity in the watershed.

Fish community data were collected from Colly Creek and White Oak Branch. Fish tissue data from the Black River show elevated levels of mercury in most bowfin and bass; similar levels have been observed throughout the coastal plain.

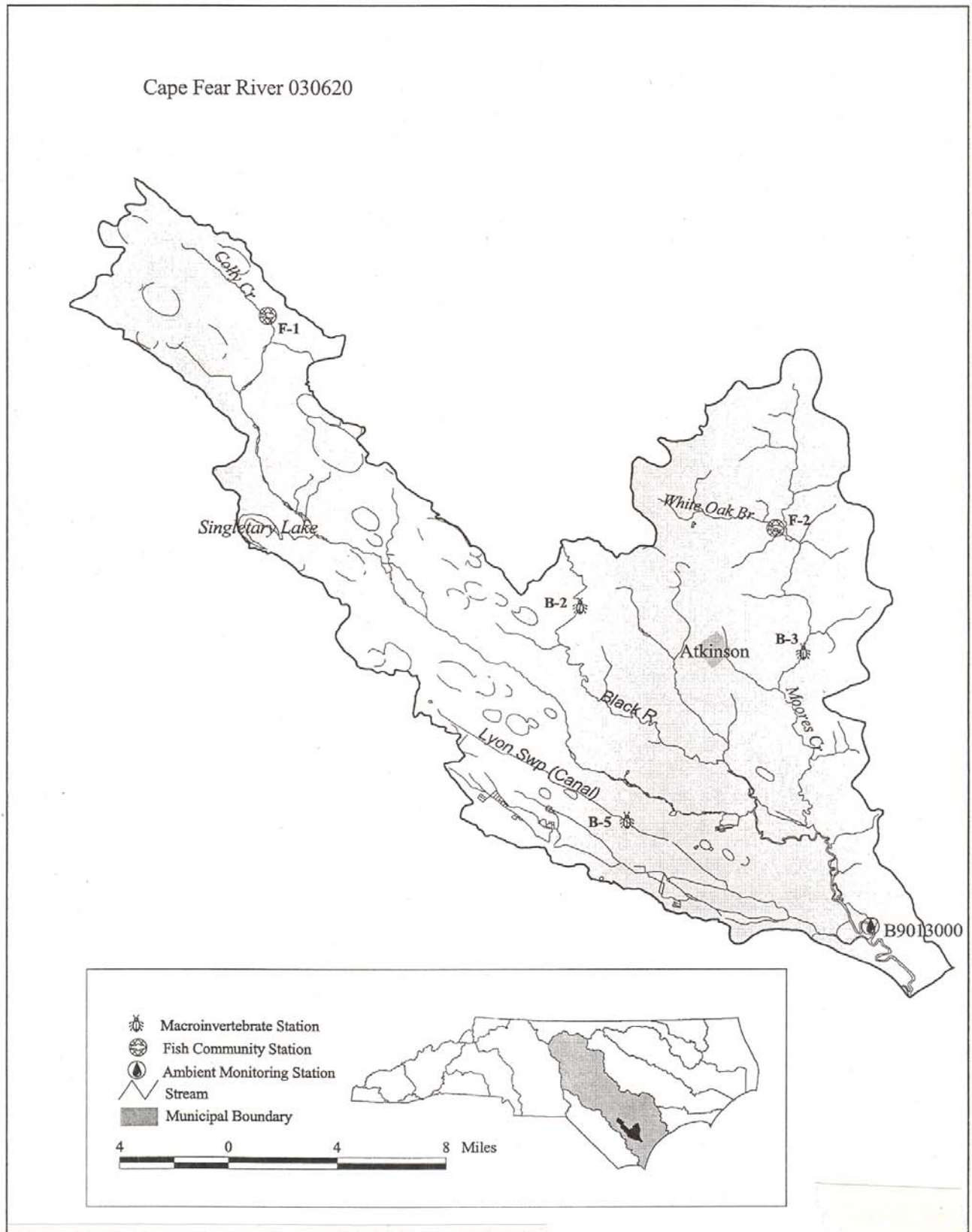

Figure B-20 Sampling Locations within Subbasin 03-06-20

Table B-52 Biological Assessment Sites in Cape Fear River Subbasin 03-06-20

BENTHOS				***Bioclassification***	
Site #	**Stream**	**County**	**Location**	**1993**	**1998**
B-2	Black River	Bladen	NC 11 nr Atkinson	Good	Good
B-	Moores Creek	Bladen	NC 53	no sample	Good
B-	Lyons Swamp Canal	Bladen	NC 11	no sample	Fair

FISH				***Bioclassification***	
Site #	**Stream**	**County**	**Location**	**1993/1994**	**1998**
F-1	Colly Creek	Bladen	US 701	---	Good-Fair
F-2	White Oak Branch	Pender	SR 1206	---	Good-Fair

FISH TISSSUE				***No. Samples Exceeding Criteria***		
Station	**Description**	**Year Sampled**	**Total Samples**	**Metals**	**Organics**	**Comments**
FT-1	Black River near Atkinson	1994	20	13	0	EPA mercury limit exceeded in 13 samples of bass or bowfin; FDA/NC mercury limit also exceeded in 3 bowfin
	Black River near Atkinson	1998	36	26	0	EPA mercury limit exceeded in 26 samples; FDA/NC mercury limit also exceeded in 12 samples
FT-2	Black River at NC 210	1995	6	4	0	EPA mercury limit exceeded in 4 bowfin samples; FDA/NC mercury limit also exceeded in 1 bowfin

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.

20.2 Impaired Waters

There were no waters identified as impaired in the 1996 Cape Fear River Basinwide Water Quality Plan. There are currently no waters rated as impaired according to recent DWQ monitoring. Waters with other issues, recommendations or projects are discussed in Part 20.4.

20.3 303(d) Listed Waters

There are no streams in the subbasin that are impaired and on the state's year 2000 303(d) list (not yet EPA approved). Portions of the Black River are not impaired; however, because of fish consumption advisories, this 34.5-mile segment is on the 303(d) list (see Part 20.4 below). For information on 303(d) listing requirements and approaches, refer to Appendix IV.

20.4 Other Issues, Recommendations and Projects

The following surface waters are 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.

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.

Portions of Colly Creek and White Oak Branch were impacted during Hurricane Fran in 1996. These streams were also subject to massive de-snagging operations after the storm (see Section A, Chapter 4, Part 4.11). Because this region is regularly impacted by hurricanes and tropical storms, it is recommended that further monitoring be conducted to evaluate the post-hurricane recovery of macroinvertebrates.

The Lower Cape Fear River Program

The Lower Cape Fear River Program maintains one sampling station in this subbasin that is used along with DWQ ambient data to make use support determinations in this subbasin. Refer to Section C, Part 1.4.5 for more information on the program and the UNCW Center for Marine Sciences.

Mercury Advisories

DWQ sampling in 1994 and 1998 noted mercury in fish tissue at levels greater than EPA limits and FDA/NC limits. Mercury in fish tissue is not exclusive to the Cape Fear River basin. In recent years, elevated levels of mercury in some fish species have been noted in other coastal areas. This issue is discussed further in Section A, Chapter 4, Part 4.8.4.

Largemouth bass, bowfin and chain pickerel in the South River and the Black River just below the South River contain higher than normal levels of mercury. Consumption of bass, bowfin and chain pickerel should be limited to no more than two meals per person per month. Women of childbearing age and children should eat no bass, bowfin or chain pickerel taken from this area until further notice. Swimming, boating and other recreational activities are not affected by this advisory.

1999 Hurricanes

In September and October 1999, three hurricanes made landfall near the mouth of the Cape Fear River. Although streams throughout the basin were impacted, the streams in the lower Cape Fear River subbasins were severely impacted. The extent of water quality problems and recovery of ecosystems in this subbasin will not be known for some time. Refer to Section A, Chapter 4, Part 4.11.