

# Chapter 20

## Cape Fear River Subbasin 03-06-20

Including: Black River, Colly Creek, Moores Creek and Singletary Lake

### 20.1 Subbasin Overview

#### *Subbasin 03-06-20 at a Glance*

##### **Land and Water Area**

Total area:	343 mi <sup>2</sup>
Land area:	338 mi <sup>2</sup>
Water area:	5 mi <sup>2</sup>

##### **Population Statistics**

2000 Est. Pop.:	14,421 people
Pop. Density:	42 persons/mi <sup>2</sup>

##### **Land Cover (percent)**

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

##### **Counties**

Bladen, Pender and Sampson

##### **Municipalities**

Atkinson and White Lake

Subbasin 03-06-20 is in the coastal plain and drains wetland areas with tannin stained streams. There are also acidic streams draining natural bay lakes. Most of the watershed is forested with some agriculture present. Population is expected to grow by 55,000 people in counties with portions or all of their areas in this subbasin by 2020.

There are two individual NPDES wastewater discharge permits in this subbasin with a permitted flow of 0.82 MGD (Figure 23). The largest is White Lake WWTP (0.8 MGD). Refer to Appendix VI and Chapter 30 for more information on NPDES permit holders. Issues related to compliance with NPDES permit conditions are discussed below in Section 20.4 for other waters.

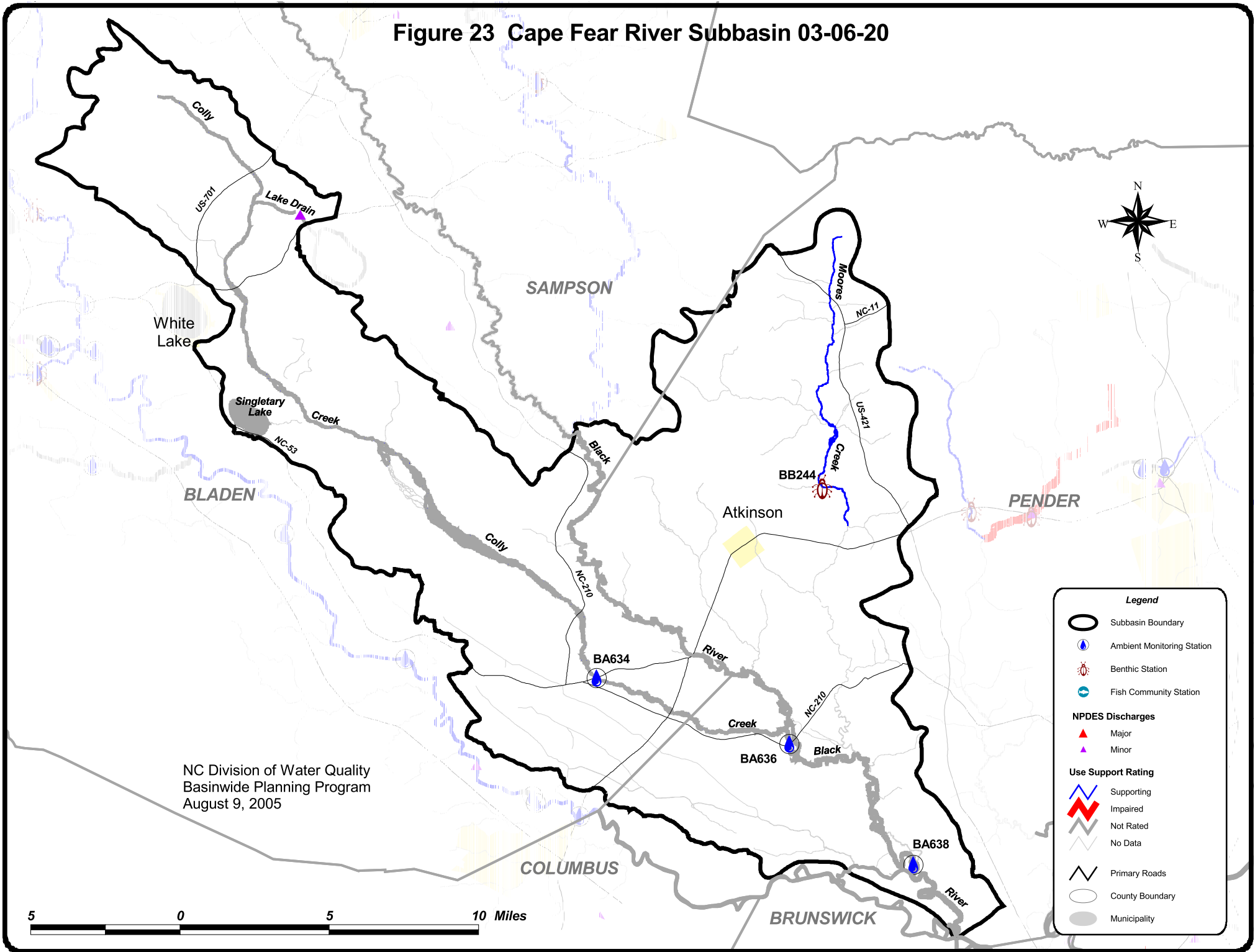
There are 18 registered swine operation in this subbasin.

There was one benthic community sample (Figure 23 and Table 23) collected during this assessment period. Data were also collected from three ambient monitoring stations including two LCFRP (Appendix V) stations and one DWQ ambient station. One lake was also monitored. Refer to the *2003 Cape Fear River Basinwide Assessment*

Report at <http://www.esb.enr.state.nc.us/bar.html> and Appendix IV for more information on monitoring.

Waters in the following sections are identified by assessment unit number (AU#). This number is used to track defined segments in the water quality assessment database, 303(d) Impaired waters list and the various tables in this basin plan. The assessment unit number is a subset of the DWQ index number (classification identification number). A letter attached to the end of the AU# indicates that the assessment is smaller than the DWQ index segment. No letter indicates that the assessment unit and the DWQ index segment are the same.

Figure 23 Cape Fear River Subbasin 03-06-20



NC Division of Water Quality  
 Basinwide Planning Program  
 August 9, 2005

**Legend**

- Subbasin Boundary
- Ambient Monitoring Station
- Benthic Station
- Fish Community Station
- NPDES Discharges**
- Major
- Minor
- Use Support Rating**
- Supporting
- Impaired
- Not Rated
- No Data
- Primary Roads
- County Boundary
- Municipality

5 0 5 10 Miles

**Table 23 CAPE FEAR Subbasin 03-06-20**

AU Number	Classification	Length/Area		Aquatic Life Assessment				Recreation Assessment					
				AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors	Sources	
Description													
<b>Black River</b>													
18-68b	C Sw ORW	40.5	FW Miles	<b>NR</b>	BA636	NCE	Low DO	10.2	ND	BA636	NCE		
					BA638	NCE	Low DO	28.1		BA638	NCE		
From Subbasin 19/20 boundary to Cape Fear River													
<b>Colly Creek</b>													
18-68-17	C Sw	34.9	FW Miles	<b>NR</b>	BA634	NCE	Low pH	87.5	<b>S</b>	BA634	NCE	Low pH	Unknown
From source to Black River													
<b>Moores Creek</b>													
18-68-18a	C Sw	13.0	FW Miles	<b>S</b>					ND				
From source to Buxton Branch					BB244	M	2003						
18-68-18b	C Sw	9.9	FW Miles	ND					ND				
From Buxton Branch to Black River													
<b>Singletary Lake</b>													
18-68-17-5-1	B Sw	576.0	FW Acres	<b>NR</b>	BL34	NCE	Low pH	100	ND			Low pH	Unknown
From source to Lake Drain													

AL - Aquatic Life	BF - Fish Community Survey	E - Excellent	S - Supporting, I - Impaired
REC - Recreation	BB - Benthic Community Survey	G - Good	NR - Not Rated
	BA - Ambient Monitoring Site	GF - Good-Fair	NR* - Not Rated for Recreation (screening criteria exceeded)
	BL- Lake Monitoring	F - Fair	ND-No Data Collected to make assessment
	S- DEH RECMON	P - Poor	<b>Results</b>
		NI - Not Impaired	CE-Criteria Exceeded > 10% and more than 10 samples
	<b>Miles/Acres</b>	S- Severe Stress	NCE-No Criteria Exceeded
	FW- Fresh Water	M-Moderate Stress	
	S- Salt Water	N- Natural	

**Aquatic Life Rating Summary**

S	m	13.0	FW Miles
NR	m	75.4	FW Miles
NR	m	576.0	FW Acres
NR	e	2.5	FW Miles
ND		143.8	FW Miles

**Recreation Rating Summary**

S	m	34.9	FW Miles
ND		199.8	FW Miles
ND		576.0	FW Acres

**Fish Consumption Rating Summary**

I	m	50.4	FW Miles
I	e	184.3	FW Miles
I	e	576.0	FW Acres

## 20.2 Use Support Assessment Summary

Use support ratings were assigned for waters in subbasin 03-06-20 in the aquatic life, recreation, fish consumption and water supply categories. All waters are Impaired on an evaluated basis in the fish consumption category because of fish consumption advice that applies to the entire basin. In the water supply category, all WS classified waters (1.1 miles) are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants. Refer to Appendix X for a complete list of monitored waters and more information on Supporting monitored waters.

There were 88.4 stream miles (37.7 percent) and 576 freshwater acres (100 percent) monitored during this assessment period in the aquatic life category. There were no Impaired stream miles identified as Impaired in this category.

## 20.3 Status and Recommendations of Previously and Newly Impaired Waters

The following waters were either identified as Impaired in the previous basin plan (2000) or are newly Impaired based on recent data. If previously identified as Impaired, the water will either remain on the state's 303(d) list or will be delisted based on recent data showing water quality improvements. If the water is newly Impaired, it will likely be placed on the 2006 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an assessment unit number (AU#). Refer to the overview for more information on AUs. Information regarding 303(d) listing and reporting methodology is presented in Appendix VII.

### 20.3.1 Moores Creek [AU# 18-68-18a and b]

#### Current Status

Moores Creek [18-68-18a] from source to Buxton Branch (13 miles) is Supporting aquatic life because of a Moderate benthic community rating at site BB244. This stream has generally good habitat for a swamp stream.

Moores Creek [18-68-18b] from Buxton Branch to the Black River (9.9 miles) is Impaired on a monitored basis in the fish consumption category.

#### 2005 Recommendations

DWQ will continue to monitor Moores Creek. Segment 18-68-18b will be added to the 303(d) list of Impaired waters.

## 20.4 Status and Recommendations for Waters with Noted Impacts

The surface waters discussed in this section are not Impaired. However, notable water quality problems and concerns have been documented for some waters based on this assessment. While these waters are not Impaired, attention and resources should be focused on these waters to prevent additional degradation or facilitate water quality improvement. Waters in the following

section are identified by assessment unit number (AU#). See overview for more information on AU#s.

#### **20.4.1 Black River [AU# 18-68b]**

##### Current Status and 2005 Recommendations

The Black River from the subbasin boundary to Cape Fear River (40.5 miles) is Not Rated for aquatic life because dissolved oxygen was below 4 mg/l in 10 and 28 percent of samples at sites BA636 and BA638. The Black River is classified as C Sw ORW+, which acknowledges natural characteristics of swamps such as low dissolved oxygen as well as outstanding resources. DWQ will continue to monitor the Black River watershed. This segment is Impaired on a monitored basis in the fish consumption category and will be added to the 303(d) list of Impaired waters.

##### Water Quality Initiatives

In 1998, The Nature Conservancy received a \$2,000,000 CWMTF grant to acquire 9,000 acres in this watershed along the Black and South River (Chapter 34).

#### **20.4.2 Colly Creek [AU# 18-68-17]**

##### Current Status and 2005 Recommendations

Colly Creek from source to the Black River (34.9 miles) is Not Rated for aquatic life because pH was below 6 in 88 percent of samples at site BA634. Colly Creek is classified as C Sw, which acknowledges natural characteristics of swamps such as low pH. Colly Creek is Supporting recreation because no criteria were exceeded at site BA634; however, the White Lake WWTP (NC0023353) had significant violations of fecal coliform bacteria permit limits during the assessment period. DWQ will continue to monitor the Colly Creek watershed. The NPDES compliance process will be used to address the significant permit violations noted above.

#### **20.4.3 Lake Drain [AU# 18-68-17-1]**

##### Current Status and 2005 Recommendations

Lake Drain from Black Lake to Colly Creek (2.5 miles) is Not Rated for aquatic life on an evaluated basis because the Bay Tree Lakes WWTP (NC0036404) had significant violations of biological oxygen demand permit limits during the assessment period that could have negatively impacted aquatic life. The NPDES compliance process will be used to address the significant permit violations noted above.

#### **20.4.4 Singletary Lake [AU# 18-68-17-5-1]**

##### Current Status and 2005 Recommendations

Singletary Lake (576 acres) is Not Rated for aquatic life because pH was below the standard during lake monitoring in 2003. Singletary Lake is classified as B Sw, which acknowledges natural characteristics of swamps such as low pH. Chlorophyll *a* was noted to be higher than in previous years as well. DWQ will continue to monitor the lake.