Section B: Chapter 10

Yadkin-Pee Dee River Subbasin 03-07-10

Includes the Pee Dee River below Lake Tillery Dam, Brown Creek, Clarks Creek and Blewett Falls Lake

10.1 Water Quality Overview

Subbasin 03-07-10 at a Glance

Land and Water	
Total area:	407 mi^2
Stream miles:	327.2
Lake acres:	2,583.6
Population Statistics	
1990 Est. Pop.:	15,397 people
Pop. Density:	38 persons / mi^2
Land Cover (%)	
Forest / Wetland:	78.7
Surface Water:	1.7
Urban:	0.4
Cultivated Crop:	11.9
Pasture / Managed Herbaceous:	7.3

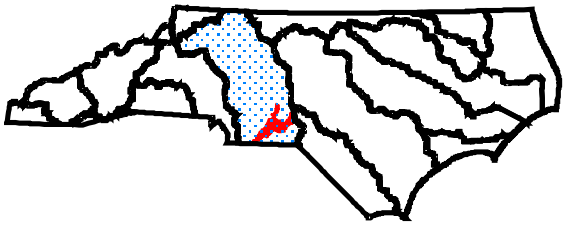
This subbasin contains a portion of the Pee Dee River between Lake Tillery dam and Blewett Falls dam, including Blewett Falls Lake. Major tributaries, which are discussed here, include Clarks Creek, Big Mountain Creek and Brown Creek. The Rocky River (subbasins 03-07-11 through 03-07-14) and the Little River (subbasin 03-07-15) enter the Pee Dee River between Tillery and Blewett Falls. Municipalities within this subbasin are portions of Mount Gilead, Ansonville, Lilesville, Wadesboro and Polkton.

A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure B-11. Table B-20 contains a summary of monitoring data types, locations and results. Use support ratings for waters in this subbasin are summarized in Table B-21. Appendix I provides a key to discharge identification numbers. Refer to Appendix III for a complete listing of monitored waters and more information about use support ratings.

The Pee Dee National Wildlife Refuge is located primarily in the Brown Creek watershed in this subbasin. However, despite the relatively small amount of public land, this subbasin is nearly 80 percent forested. A significant amount of land is cultivated (12 percent) and nearly 2 percent is surface water, reflecting the 2,500-acre Blewett Falls Lake. The estimated population and density of the subbasin are low, and projected population increases for Anson County are less than 10 percent over the next 20 years.

There are only four NPDES permitted discharges and six registered animal operations. The six farms which are large enough to be registered are swine operations. Swine production from all farms (small and large) increased by 79 percent between 1994 and 1998. This capacity is a negligible percent of the state's total capacity for swine production, but indicates a shift in the agricultural community of this area. This subbasin represents more than 5 percent of the state's total capacity for poultry production. There were no significant changes in the poultry production capacity (1994-1998). The Town of Ansonville WWTP is the only facility in significant noncompliance of the most recent review period; it is discussed in following sections.

Figure B-11 Yadkin-Pee Dee River Subbasin 03-07-10



STANLY
UNION
MONTGOMERY
RICHMOND
ANSON

Clarks Creek
Pee Dee River
Brown Creek
Cedar Creek
Big Mountain Creek
Little Mountain Cr
Blewett Falls Lake

Mount Gilead
Norman
Ansonville
Polkton
Peachland
Wadesboro
Lilesville
Ellerbe

NC-73
US-52
NC-731
NC-109
NC-218
NC-742
US-74
US-220

36
35
19
14

F-1
B-1
B-2
F-3
F-2
FT-1
Q9160000
Q9155000

NCDENR

Planning Branch
Basinwide Planning Program Unit
March 21, 2003

Table B-20 DWQ Monitoring Locations, Bioclassifications and Notable Chemical Parameters (1998-2002) for Yadkin-Pee Dee River Subbasin 03-07-10

Site	Stream	County	Road	Bioclassification or Noted Parameter[2]
Benthic Macroinvertebrate Community Monitoring				
B-1	Clarks Creek[1]	Montgomery	SR 1110	Good-Fair
B-2	Mountain Creek[1]	Richmond	SR 1150	Good
Fish Community Monitoring				
F-1	Clarks Creek	Montgomery	SR 1188	Excellent
F-2	Brown Creek[1]	Anson	SR 1230	Good
F-3	Cedar Creek[1]	Anson	SR 1709	Good-Fair
	Big Mountain Creek	Richmond	SR 1319	Good-Fair/Good/ Excellent
	Big Mountain Creek	Richmond	NC 73	Good
	Big Mountain Creek	Richmond	SR 1005	Excellent
Ambient Monitoring				
Q7150000	Pee Dee River	Stanly/ Montgomery	NC 731	Dissolved oxygen
Q9155000	Brown Creek	Anson	SR 1627	None
Q9160000	Pee Dee River	Anson/ Richmond	NC 109	None
Yadkin-Pee Dee River Basin Association Monitoring				
Q7210000	Clarks Creek	Montgomery	SR 1187	Turbidity Fecal coliform
Lakes Assessment				
--	Blewett Falls	Anson/ Richmond	1 station	None

[1] Historical data of this type are available for this waterbody; refer to Appendix II. Sites may vary.

[2] Parameters are noted if in excess of state standards in more than 10 percent of samples collected within the assessment period (9/1996-8/2001).

For more detailed information on sampling and assessment of streams in this subbasin, refer to the *Basinwide Assessment Report - Yadkin-Pee Dee River Basin* (NCDENR-DWQ, June 2002), available from DWQ Environmental Sciences Branch at http://www.esb.enr.state.nc.us/bar.html or by calling (919) 733-9960.

Table B-21 Use Support Ratings Summary (2002) for Monitored and Evaluated Freshwater Streams (miles) and Lakes (acres) in Yadkin-Pee Dee River Subbasin 03-07-10

Use Support Category	Units	Supporting	Impaired	Not Rated	No Data	Total[1]
Aquatic Life/Secondary Recreation	miles	99.4	**15.3**	28.5	184.0	327.2
	acres	0.0	**0.0**	2,570.0	13.6	2,583.6
Fish Consumption[2]	miles	0.0	**327.2**	0.0	0.0	327.2
	acres	0.0	**2,583.6**	0.0	0.0	2,583.6
Primary Recreation	miles	20.0	0.0	8.4	0.0	28.4
	acres	3,152.3	0.0	8.6	0.0	3,160.9
Water Supply	miles	68.2	0.0	0.0	0.0	68.2
	acres	2,169.9	0.0	0.0	0.0	2,169.9

[1] Total stream miles/acres assigned to each use support category in this subbasin. Column is not additive because some stream miles are assigned to more than one category.

[2] These waters are impaired based on fish consumption advice issued for three species of freshwater fish due to mercury contamination. Refer to page 104 of Section A for details.

10.2 Status and Recommendations for Previously Impaired Waters

This section reviews use support and recommendations detailed in the 1998 basinwide plan, reports status of progress, gives recommendations for the next five-year cycle, and outlines current projects aimed at improving water quality for each water. The 1998 Yadkin-Pee Dee River basin plan identified two Impaired waters in this subbasin: Pee Dee River below Lake Tillery and Brown Creek.

10.2.1 **Brown Creek** (28.5 miles from NC 74 to the Pee Dee River)

1998 Recommendations

The 1998 basin plan noted low dissolved oxygen concentrations in this lowest portion of the Brown Creek watershed at the ambient monitoring station. The ambient monitoring station is very close to the Pee Dee National Wildlife Refuge. The recommendation was that no new discharges of oxygen-consuming wastes be permitted in the watershed.

Status of Progress

The fish community in the upper portion of the Brown Creek watershed received a Good bioclassification in 2001 and 1996. The community is very diverse, but some habitat degradation was noted. This portion of stream, from the NC/SC state line to Lick Creek above Polkton, is rated Supporting. Near Polkton, the character of Brown Creek seems to change. The stream slows down and becomes very curvy with oxbow cutoffs and braids in some areas. Currently, there are no more DWQ monitoring stations until the ambient station at SR 1627 near the refuge. At this station, the stream exhibits characteristics of a natural swamp stream, low dissolved oxygen, low pH and slightly elevated nutrient concentrations. There are no permitted NPDES discharges and three registered animal operations in the watershed. Brown Creek from Lick Creek to the Pee Dee River is currently not rated.

2002 Recommendations

A special study is needed to determine whether any portion of Brown Creek stream should receive the supplemental classification of Sw. DWQ is currently working to refine criteria for making this determination. Once these criteria are approved, Brown Creek will be a high priority for assessment. Swamp waters are discussed in more detail on page 113. Additionally, there is some development along US 74 between Peachland, Polkton and Wadesboro, and along US 52 between Wadesboro and Ansonville. Local actions are needed to reduce the effects of nonpoint source pollution from these developing areas, as well as on agricultural lands throughout the watershed.

Water Quality Improvement Initiatives

The US Fish and Wildlife Service, Carolina Power and Light Company, and the NC Wildlife Resources Commission are cost sharing to conduct an aquatic resource inventory in the Brown Creek watershed and in portions of the Pee Dee River between Tillery and Blewett Falls dams and the lower Little River, with priority on the Pee Dee National Wildlife Refuge. The inventory is planned for 2003 and 2004 and will include documentation of diversity, range, distribution and relative abundance of a variety of invertebrate (primarily mussel) and fish species. More information about the Pee Dee National Wildlife Refuge begins on page 274 of Section C.

10.2.2 Pee Dee River (15.3 miles from Lake Tillery dam to Turkey Top Creek)

1998 Recommendations

The 1998 basin plan discusses problems with low dissolved oxygen (DO) levels below the Lake Tillery dam. One recommendation was for DWQ to coordinate efforts to improve water quality with the Division of Water Resources during the hydropower project relicensing process. NPDES permit limits for new or expanding discharges were also outlined.

Current Status

Approximately 11 percent of samples collected between September 1996 and August 2001 contained DO concentrations that were less than 5.0 mg/l; 4 percent were less than 4.0 mg/l. These problems likely result from deep water (hypolimnetic) releases through the hydropower facility at Lake Tillery. Lake Tillery is part of a Carolina Power and Light (CP&L) hydropower project that will be undergoing relicensing between 2002 and 2006.

Further downstream at NC 109, just below the confluence with Brown Creek, DO levels were still depressed. Low DO waters flowing in from Brown Creek likely influence this monitoring station; however, the Town of Ansonville WWTP was also in significant noncompliance for BOD, chloride, fecal coliform and total suspended solids over the most recent review period.

2002 Recommendations

DWQ will work with CP&L to better evaluate water quality in the Pee Dee River below Lake Tillery during the hydropower relicensing process. In addition to the license application, CP&L must also obtain a 401 Water Quality Certification for the project. DWQ will ensure, through the 401 Water Quality Certification review that project operations will not result in violations of water quality standards. DWQ will also continue to work with the Town of Ansonville to regain and maintain compliance with its NPDES permit. DWQ should continue to require NPDES

permit limits no less stringent than 15.0 mg/l BOD_5, 4.0 mg/l NH_3-N and 5.0 mg/l DO for new and expanding discharges into this portion of the Pee Dee River.

10.3 Status and Recommendations for Newly Impaired Waters

No stream segments were rated as Impaired based on recent DWQ monitoring (1998-2001); however, as mentioned previously, some impacts to water quality were observed. Refer to Part 10.5 below, as well as Section A, Chapter 4 for further discussion of potential water quality problems in this portion of the basin.

10.4 Section 303(d) Listed Waters

Currently, portions of two waters in this subbasin are listed on the state's draft 2002 303(d) list. Brown Creek is listed for biological impairment and low dissolved oxygen. Portions of the Pee Dee River are listed for dissolved oxygen and pH. If Brown Creek were to be reclassified with the supplemental classification of Sw attached, it could likely be removed from the 303(d) list in the future. Appendix IV contains more information on the state's 303(d) list and listing requirements.

10.5 Status and Recommendations for Waters with Notable Impacts

Based on DWQ's most recent use support assessment, the surface waters discussed below are not Impaired. However, notable water quality impacts were documented. While these waters are not considered Impaired, attention and resources should be focused on them over the next basinwide planning cycle to prevent additional degradation or facilitate water quality improvement. A discussion of how impairment is determined can be found in Appendix III.

Although no action is required for these streams, voluntary implementation of BMPs is encouraged and continued monitoring is recommended. DWQ will notify local agencies and others of water quality concerns discussed below and work with them to conduct further monitoring and to locate sources of water quality protection funding. Additionally, education on local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. Nonpoint source agency contacts are listed in Appendix VI.

10.5.1 Clarks Creek

Clarks Creek flows generally south near Mount Gilead into the Pee Dee River just below Lake Tillery dam. The Town of Mount Gilead historically had inflow and infiltration problems associated with the old facility and discharge into Clarks Creek. In 2000, Mount Gilead completed work on the WWTP that included ultraviolet disinfection (rather than chlorination) and relocated the discharge to the Pee Dee River. The new NPDES permit contains limits consistent with the strategy recommended in the 1998 basin plan and summarized here in Part 10.2.2 above.

In 2001, Clarks Creek is rated Supporting based on biological surveys of fish and benthic macroinvertebrates. The most upstream site at SR 1188 qualified to be a new reference site for

fish community sampling. Downstream of the old WWTP discharge, water chemistry samples show few problems with low dissolved oxygen. Turbidity was slightly elevated after rain events, which indicates some impacts from nonpoint source pollution in the watershed.

Fecal coliform concentrations were greater than 400 colonies/100ml in nearly 22 percent of samples collected between 1998 and 2001 from Clarks Creek. Current methodology requires additional bacteriological sampling for streams with a geometric mean greater than 200 colonies/100ml or when concentrations exceed 400 col/100ml in more than 20 percent of samples. However, these additional assessments are prioritized such that, as monitoring resources become available, the highest priority is given to those streams where the likelihood of full-body contact recreation is greatest. Clarks Creek is not currently classified for primary recreation (Class B).

10.5.2 Little Mountain Creek

Little Mountain Creek begins near the Town of Norman. Most of the watershed is in agriculture, and many small headwater tributaries are dammed for farm ponds. Most of the habitat degradation observed at the benthic macroinvertebrate sampling site on Mountain Creek is likely a result of nonpoint source pollution from the Little Mountain Creek watershed.

As resources allow, DWQ will sample Little Mountain Creek over the next basinwide planning cycle. However, local actions are needed to reduce the effects of nonpoint source pollution, particularly from agricultural activities, and to restore habitat throughout the watershed.