

Section B: Chapter 14

Yadkin-Pee Dee River Subbasin 03-07-14

Includes a portion of the Rocky River and the Richardson and Lanes Creek Watersheds

14.1 Water Quality Overview

Subbasin 03-07-14 at a Glance

Land and Water

Total area:	420 mi ²
Stream miles:	491.5
Lake acres:	347.0

Population Statistics

1990 Est. Pop.:	50,084 people
Pop. Density:	120 persons/mi ²

Land Cover (%)

Forest/Wetland:	42.0
Surface Water:	0.5
Urban:	1.1
Cultivated Crop:	27.0
Pasture/ Managed Herbaceous:	29.4

The Rocky River cuts across the northeast corner of this subbasin from the confluence of Long Creek (subbasin 03-07-13) to the Pee Dee River. Richardson and Lanes Creeks flow in a northeasterly direction into this lowest segment of the Rocky River. Lanes Creek actually begins in South Carolina. Most of the subbasin lies in Union County, but portions of Anson and Stanly counties are also encompassed. Major municipalities include Unionville and Monroe.

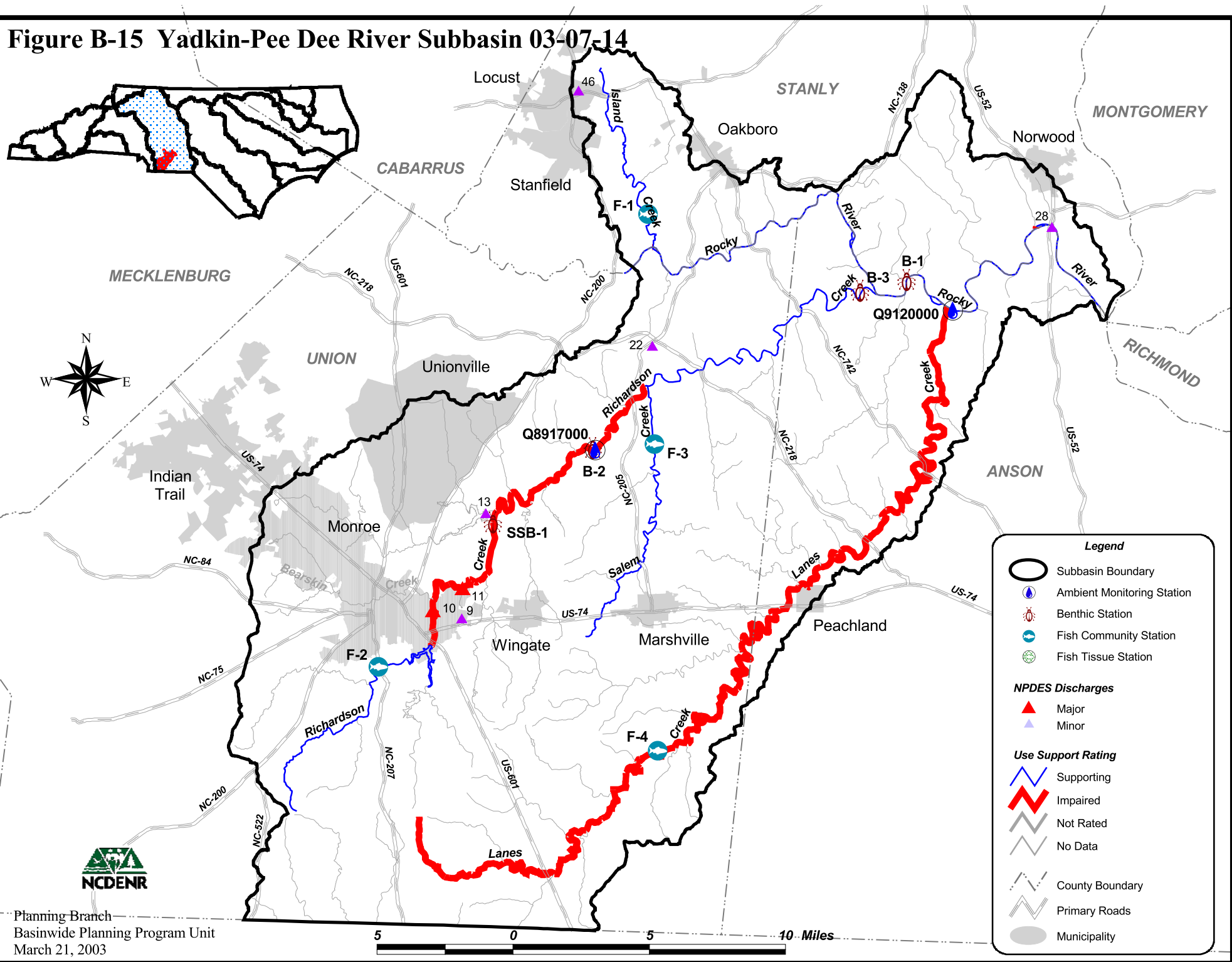
A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure B-15. Table B-28 contains a summary of monitoring data types, locations and results. Use support ratings for waters in this subbasin are summarized in Table B-29. Appendix I provides a key to discharge identification numbers. Refer to Appendix III for a complete listing of monitored waters and more information about use support ratings.

The population of the subbasin in 1990 was estimated to be just over 50,000 people. Estimates of subbasin population have not yet been made for the 2000 census data; however, it is likely that population increases substantially over the ten-year period. Population is expected to increase 70 percent in Union County between 2000 and 2020.

Land cover information compiled between 1993 and 1995 describes nearly 60 percent of the land with agricultural land uses (almost evenly divided between pasture and cultivated cropland). Only a small portion of the land was described as urban. As the Charlotte area continues to grow, this subbasin will likely become more urbanized, particularly along the US 601 Highway corridor. There are eight NPDES permitted discharges and 14 registered animal operations in this subbasin. The number of poultry operations increased 15 percent between 1994 and 1998. Swine production also increased over the four-year period. Facilities with compliance or toxicity problems are discussed in following sections.

Water quality cannot be generalized across this subbasin. In the lower portion of the subbasin, water quality is good, but several streams exhibit a wide range of impacts and impairment in the upper portion. There are no High Quality or Outstanding Resource Waters in this subbasin.

Figure B-15 Yadkin-Pee Dee River Subbasin 03-07-14



Legend

- Subbasin Boundary
- Ambient Monitoring Station
- Benthic Station
- Fish Community Station
- Fish Tissue Station

NPDES Discharges

- Major
- Minor

Use Support Rating

- Supporting
- Impaired
- Not Rated
- No Data

- County Boundary
- Primary Roads
- Municipality

Table B-28 DWQ Monitoring Locations, Bioclassifications and Notable Chemical Parameters (1998-2002) for Yadkin-Pee Dee River Subbasin 03-07-14

Site	Stream	County	Road	Bioclassification or Noted Parameter ²
<i>Benthic Macroinvertebrate Community Monitoring</i>				
B-1	Rocky River ¹	Stanly/Anson	SR 1943	Good
SSB-1	Richardson Creek ¹	Union	SR 1006	Fair
B-2	Richardson Creek	Union	SR 1649	Fair
B-3	Richardson Creek	Anson	SR 1600	Good
<i>Fish Community Monitoring</i>				
F-1	Island Creek	Stanly	SR 1118	Excellent
F-2	Richardson Creek	Union	NC 207	Good-Fair
F-3	Salem Creek ^{1,3}	Union	SR 1006	Good
F-4	Lanes Creek ¹	Union	SR 1929	Fair
<i>Ambient Monitoring</i>				
Q8917000	Richardson Creek	Union	SR 1649	Nutrients
Q9120000	Rocky River	Stanly/Anson	SR 1935	None
<i>Yadkin-Pee Dee River Basin Association Monitoring</i>				
Q8800000	Richardson Creek	Union	SR 1751	Dissolved oxygen
Q8820000	Richardson Creek	Union	SR 1006	None
Q8850000	Richardson Creek	Union	SR 1630	None
Q9021300	Lanes Creek	Union	SR 1005	Dissolved oxygen
<i>Lakes Assessment</i>				
--	Lake Monroe	Union	2 sites	Nutrients
--	Lake Lee	Union	3 sites	Nutrients
--	Lake Twitty	Union	3 sites	Nutrients

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).

³ USGS topographical maps and the DWQ *Classifications and Water Quality Standards Assigned to the Yadkin-Pee Dee River Basin* still label this stream as Negro Head Creek. This publication will use the locally-used name "Salem Creek" to refer to this stream (index number 13-17-36-15).

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-29 Use Support Ratings Summary (2002) for Monitored and Evaluated Freshwater Streams (miles) and Lakes (acres) in Yadkin-Pee Dee River Subbasin 03-07-14

Use Support Category	Units	Supporting	Impaired	Not Rated	No Data	Total ¹
Aquatic Life/Secondary Recreation	miles	162.7	37.3	2.5	289.0	491.5
	acres	0.0	0.0	347.0	0.0	347.0
Fish Consumption²	miles	0.0	491.5	0.0	0.0	491.5
	acres	0.0	347.0	0.0	0.0	347.0
Primary Recreation	miles	0.0	0.0	0.0	6.4	6.4
	acres	0.0	0.0	0.0	0.0	0.0
Water Supply	miles	149.6	0.0	0.0	0.0	149.6
	acres	335.8	0.0	0.0	0.0	335.8

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.

14.2 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. Portions of two streams were Impaired at the time of the 1998 Yadkin-Pee Dee River basin plan. Richardson Creek and Lanes Creek are discussed below.

14.2.1 Richardson Creek (12.5 miles from dam at Lake Lee to SR 1649)

1998 Recommendations

The 1998 basin plan discusses naturally low dissolved oxygen, excess nutrients and sedimentation in Richardson Creek. Recommendations are that no new discharges of oxygen-consuming wastes be permitted above the Monroe WWTP discharge. The plan also states that further investigation into the causes and sources of water quality impacts is needed before more specific recommendations to improve water quality can be made.

Status of Progress

Richardson Creek was sampled at six locations over the most recent basinwide planning period. Biological samples were collected at four sites and water chemistry samples were collected at four sites. Richardson Creek above Lake Lee received a Good-Fair bioclassification, two samples downstream of the Monroe WWTP and Lake Twitty, respectively, received Fair bioclassifications, and the most downstream location near the mouth of the stream received a Good bioclassification. Good instream and riparian habitat were observed at all four biological monitoring stations; however, algae were prolific. Although the stream remains Impaired below the Monroe WWTP, the benthic macroinvertebrate community is steadily improving. Between 1990 and 2001, the EPT abundance increased from 16 to 46, suggesting real change in water quality.

Water chemistry samples revealed low dissolved oxygen concentrations at SR 1751 upstream of the Monroe WWTP discharge and slightly depressed concentrations at SR 1006 downstream of the WWTP discharge. Water chemistry data also show extremely high nutrient levels, nitrate/nitrite nitrogen and total phosphorus.

The headwaters of Richardson Creek are a mix of agricultural and urban land uses. The portions of watershed draining into Lake Monroe and Lake Lee are primarily in agricultural land use and many small tributaries are dammed for farm ponds. The watershed draining into Richardson Creek immediately below Lake Lee and into Lake Twitty is primarily urban, and stormwater from Monroe, Wingate and Unionville likely impacts the stream. Channelization is extensive throughout the urban portions of the watershed. Nutrient concentrations are high in all three lakes, although DWQ does not currently have sufficient data to assign use support ratings for aquatic life at this time. None of the three dams currently has a minimum instream flow requirement (refer to Section A, Chapter 2 for details).

The City of Monroe worked extensively in recent years to upgrade its WWTP. Two violations of the flow limitation in the winter of 2000 were reported over the most recent review period; otherwise, the Monroe WWTP has maintained full compliance with its NPDES permit.

2002 Recommendations

DWQ will work with the Division of Water Resources in order to determine whether a minimum instream flow requirement is feasible and/or necessary for the Lake Lee dam. Local actions are needed to reduce nutrients from all sources (agriculture, wastewater infrastructure and stormwater runoff) in the Richardson Creek watershed above SR 1649 and Salem Creek.

Water Quality Improvement Initiatives

The City of Monroe initiated a project in 1997 to demonstrate the effectiveness of extended detention constructed wetlands as an alternative to simple detention ponds. This project was funded in part through the Clean Water Act – Section 319 Program (page 273).

14.2.2 Lanes Creek (36.8 miles from SR 1929 to Rocky River)

1998 Recommendations

The 1998 basin plan discusses low flow and suggests that Lanes Creek has little capacity to assimilate wastewater. Recommendations are for extensive data collection in the event that a NPDES discharge permit is proposed. The plan also recommends more widespread implementation of BMPs to control nonpoint source pollution in the watershed.

Status of Progress

No discharges have been permitted into Lanes Creek. A fish community sample collected in 2001 in the upper section of stream received a Fair bioclassification, and both fish and benthic macroinvertebrate communities have received Fair or Poor bioclassifications in the past at several locations along the stream. The stream continues to be rated Impaired.

2002 Recommendations

Further investigation into the causes and sources of these water quality impacts is needed before specific recommendations to improve water quality can be made. However, local actions are

needed to reduce the effects of nonpoint source pollution, particularly from agricultural activities, throughout the watershed.

Water Quality Improvement Initiatives

The upper Lanes Creek watersheds (03040105 081010, 081020, and 081030) are three of 55 watersheds in the Yadkin-Pee Dee River basin that have been identified by the Wetlands Restoration Program as an area with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than a nontargeted watershed for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.

14.3 Status and Recommendations for Newly Impaired Waters

No additional waters are Impaired based on recent DWQ monitoring (1998-2001); however, some impacts to water quality were observed. Refer to Part 14.5 below for further discussion of potential water quality problems.

14.4 Section 303(d) Listed Waters

Portions of Richardson Creek and Lanes Creek (discussed above) are currently listed on the state's draft 2002 303(d) list. Appendix IV contains more information on the 303(d) list and listing requirements.

14.5 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.

14.5.1 Bearskin Creek

Bearskin Creek flows east through Monroe into Richardson Creek above the Monroe WWTP discharge. The watershed is almost completely developed with a small amount of agricultural land in the headwaters. DWQ has not sampled Bearskin Creek; however, impacts from stormwater runoff in this watershed likely contribute to impairment of Richardson Creek downstream. Richardson Creek is discussed in more detail on page 246. Local actions are needed to reduce the effects of nonpoint source pollution, particularly from stormwater runoff in Monroe.

14.5.2 Stewarts Creek

The headwaters of Stewarts Creek flow from Monroe and Unionville into Lake Twitty. The watersheds of several streams, including Chinkapin Creek and Stumplick Branch, are almost completely developed with a large amount of channelization. Other land in the watershed is agricultural, primarily cultivated cropland. DWQ has not sampled Stewarts Creek; however, impacts from stormwater runoff in this watershed likely contribute to impairment of Richardson Creek downstream. Richardson Creek is discussed in more detail on page 246. Local actions are needed to reduce the effects of nonpoint source pollution, particularly from stormwater runoff in Monroe and Unionville, and to restore habitat to tributary streams.

The Stewarts Creek watershed (03040105 070050) is one of 55 watersheds in the Yadkin-Pee Dee River basin that has been identified by the NC Wetlands Restoration Program (NCWRP) as an area with the greatest need and opportunity for stream and wetland restoration efforts. This watershed will be given higher priority than a nontargeted watershed for the implementation of NCWRP restoration projects. Refer to page 278 in Section C for details.