Section B - Chapter 7
Neuse River Subbasin 03-04-07
Contentnea Creek, Little Contentnea Creek, Hominy Swamp and Nahunta Swamp

7.1 Subbasin Overview

Subbasin 03-04-07 at a Glance

Land and Water Area

Total area:	1,007 mi^2
Land area:	1,007 mi^2
Water area:	0 mi^2

Population Statistics

2000 Est. Pop.:	136,377 people
Pop. Density:	135 persons / mi^2

Land Cover (percent)

Forest / Wetland:	52.9
Surface Water:	0.6
Urban:	4.1
Cultivated Crop:	39.8
Pasture / Managed Herbaceous:	2.6

Counties

Franklin, Greene, Johnston, Lenoir, Nash, Pitt, Wake, Wayne and Wilson Counties

Municipalities

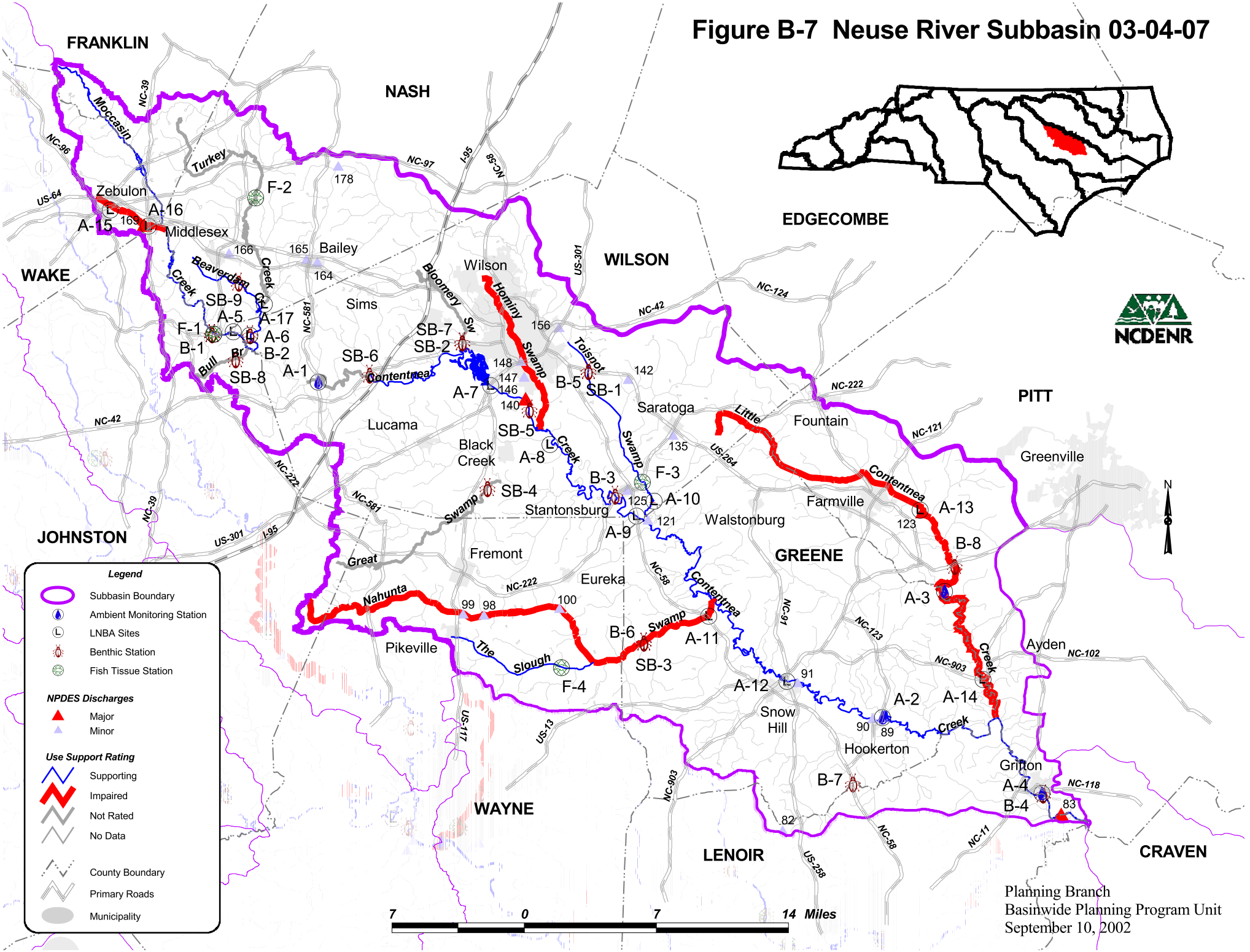
Zebulon, Wilson and Farmville

Population growth in the subbasin is concentrated around Wilson in the middle part of the subbasin and the western portion near Zebulon. Population density is highest around Zebulon (320-1,600 persons/mi^2). There are 766 acres of managed public lands in this subbasin mostly associated with Wilson Parks and Recreation Land on Moccasin Creek above Buckhorn Reservoir.

There are 23 NPDES wastewater discharge permits in this subbasin with a total permitted flow of 21.2 MGD (Figure B-7). The largest are Wilson WWTP (12 MGD, map #140), Contentnea Sewerage District WWTP (2.8 MGD, map #83), Farmville Town WWTP (3.5 MGD, map #123) and Little Creek WWTP (1.8 MGD, map #169). There is also one individual NPDES stormwater permit in the subbasin. Refer to Appendix I for identification and more information on individual NPDES permit holders. Wilson, Nash County and Wayne County will be required to develop a stormwater program under Phase II (page 76). Johnston County has submitted model stormwater ordinances as required by the Neuse NSW strategy stormwater rules (page 64). There are also 146 registered animal operations in this subbasin.

There were eight benthic macroinvertebrate community samples and four fish community samples (Figure B-7 and Table B-19) collected in 2000 as part of basinwide monitoring. Four sites remained the same, and one site increased in bioclassification. Four sites were sampled for the first time. Three of the fish community sites and one benthic community site were not rated, as biocriteria are being developed (page 75) to assess these swampy streams. There were also nine special study samples collected in the subbasin during the assessment period. Data were also collected from four ambient stations. Refer to *2001 Neuse River Basinwide Assessment Report* at http://www.esb.enr.state.nc.us/bar.html and Section A, Chapter 3 for more information on monitoring.

Figure B-7 Neuse River Subbasin 03-04-07



Planning Branch
Basinwide Planning Program Unit
September 10, 2002

Table B-19 DWQ Monitoring Locations in Subbasin 03-04-07

Benthic Macroinvertebrate Community Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**1995**	**2000**
B-1	Moccasin Cr[2]	Johnston	NC 231	Good-Fair	Good-Fair
B-2	Turkey Cr	Nash	SR 1109	---	Fair
B-3	Contentnea Cr[2]	Wilson	NC 222/NC58	Fair	Good-Fair
B-4	Contentnea Cr[2]	Pitt	SR 1800	Good-Fair	Good-Fair
B-5	Toisnot Swp	Wilson	US 264	---	Fair
B-6	Nanhunta Swp[2]	Greene	SR 1058	Fair	Fair
B-7	Wheat Swamp Cr	Lenoir	NC 58	---	Not Rated
B-8	Little Contentnea Cr	Pitt	US 264A	---	Fair
SB-1	Toisnot Swp	Wilson	US 264	---	Fair
SB-2	Bloomery Swp	Wilson	NC 42	---	Poor
SB-3	Nanhunta Swp[2]	Greene	SR 1058	---	Fair
SB-4	Great Swp	Wilson	SR 1634	---	Poor
SB-5	Contentnea Cr[2]	Wilson	SR 1606	---	Fair
SB-6	Contentnea Cr[2]	Wilson	NC 42	---	Good-Fair
SB-7	Bloomery Swp	Wilson	NC 42	---	Good-Fair
SB-8	Bull Br	Johnston	SR 2110	---	Not Rated
SB-9	Beaverdam Cr	Nash	SR 1111	---	Fair
Fish Community Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**1995**	**2000**
F-1	Moccasin Cr[2]	Johnston	NC 231	Excellent	Excellent
F-2	Turkey Cr	Nash	SR 1131	---	Not rated
F-3	Toisnot Swp	Wilson	NC 222	Not rated	Not rated
F-4	The Slough	Wayne	SR 1535	Not rated	Not rated
Ambient Monitoring Sites					
Map #[1]	**Waterbody**	**County**	**Location**	**Station #**	**Noted Parameters[3]**
A-1	Contentnea Cr	Wilson	Near Lucama	J6740000	none
A-2	Contentnea Cr	Greene	NC 123	J7450000	none
A-3	Little Contentnea Cr	Pitt	SR 1125	J7739550	none
A-4	Contentnea Cr	Pitt	SR 1800	J7810000	none
A-5[4]	Moccasin Cr	Wilson	SR 1131	J6500000	none
A-6[4]	Turkey Cr	Wilson	SR 1128	J6700000	DO
A-7[4]	Contentnea Cr	Wilson	US 301	J6764000	none
A-8[4]	Contentnea Cr	Wilson	SR 1622	J6890000	none
A-9[4]	Contentnea Cr	Wilson	NC 58	J7210000	none
A-10[4]	Toisnot Swamp	Wilson	Nr Stantonburg	J7240000	none
A-11[4]	Nahunta Swamp	Greene	NC 58	J7325000	none
A-12[4]	Contentnea Cr	Greene	US 13	J7330000	none
A-13[4]	Little Contentnea Cr	Pitt	SR 1218	J7690000	none
A-14[4]	Little Contentnea Cr	Pitt	SR 1110	J7740000	none
A-15[4]	Little Creek	Wake	NC 97	J6410000	DO
A-16[4]	Little Creek	Wake	NC 39	J6450000	DO
A-17[4]	Turkey Creek	Nash	SR 1101	J6680000	DO

[1] B = benthic macroinvertebrates; F = fish community; A = ambient monitoring station; SB = benthic macroinvertebrates special study site; and SF = fish community special study site.

[2] Historical data available at this site. Refer to Appendix II.

[3] Parameters are noted if in excess of state standards in greater than 10 percent of all samples.

[4] LNBA Sites (page 220). Only dissolved oxygen, chlorophyll *a* and fecal coliform were analyzed.

Use support ratings are summarized in Part 7.2 below. Recommendations, current status and future recommendations for waters that were impaired in 1998 are discussed in Part 7.3 below. Current status and future recommendations for newly impaired waters are discussed in Part 7.4 below. Supporting waters with noted water quality impacts are discussed in Part 7.5 below. Water quality issues related to the entire subbasin are discussed in Part 7.6. Unless otherwise noted, all discussions are for the aquatic life and secondary recreation use support category. Refer to Appendix III for a complete list of monitored waters by use support category and more information on supporting monitored waters.

7.2 Use Support Summary

Use support ratings (page 54) in subbasin 03-04-07 were assigned for aquatic life and secondary recreation, fish consumption and water supply. All waters in the subbasin are considered impaired on an evaluated basis because of fish consumption advisories (page 93). All water supply waters are supporting on an evaluated basis based on reports from DEH regional water treatment consultants.

There were 250 stream miles (38 percent) monitored during this assessment period. Approximately 76 (30 percent) of the monitored stream miles are impaired. Refer to Table B-20 for a summary of use support ratings by use support category for waters in the subbasin. Use support ratings for waters that were monitored and impaired in at least one use support category or were impaired in 1998 are presented in Table B-21.

Table B-20 Summary of Use Support Ratings by Use Support Category in Subbasin 03-04-07

Use Support Rating	Basis	Aquatic Life and Secondary Recreation	Fish Consumption	Primary Recreation	Water Supply
Supporting	Monitored	146.0 mi 510.5 ac	0	0	0
	All Waters	146.0 mi 510.5 ac	0	0	62.6 mi 510.5 ac
Impaired	Monitored	**75.9 mi**	0	0	0
	All Waters	75.9 mi	655.9 mi 549.8 ac	0	0
Not Rated	Monitored	38.3 mi	0	0	0
No Data	N/A	395.3 mi 39.3 ac	0	0.6 mi 39.3 ac	0
Total	Monitored	250.4 mi 510.5 ac	0	0	0
	All Waters	655.9 mi 549.8 ac	655.9 mi 549.8 ac	0.6 mi 39.3 ac	62.6 mi 510.5 ac
	Percent Monitored	38% mi 92.9% ac	0%	0%	0%

Note: All waters include monitored, evaluated and waters that were not assessed.

Table B-21 Previously or Currently Impaired Waters in Subbasin 03-04-07

Name	1998 Status	2002 Status	Use Support Category	Miles
Beaverdam Creek	Impaired	Supporting	Aquatic Life/Secondary Recreation	N/A
Contentnea Creek	Impaired	Supporting/Not Rated	Aquatic Life/Secondary Recreation	N/A
Hominy Swamp	Impaired	Impaired	Aquatic Life/Secondary Recreation	9.9
Little Contentnea Creek	Impaired	Impaired	Aquatic Life/Secondary Recreation	34.9
Nahunta Swamp	Impaired	Impaired	Aquatic Life/Secondary Recreation	27.1
Little Creek	Not Rated	Impaired	Aquatic Life/Secondary Recreation	4.1
			Total 2002 Impaired Miles	**76.0**

7.3 Status and Recommendations of Previously Impaired Waters

7.3.1 Beaverdam Creek

1998 Recommendations
Beaverdam Creek was partially supporting from the source to Turkey Creek. It was recommended that DWQ continue monitoring to identify potential causes and sources of impairment.

Current Status
Beaverdam Creek is currently supporting because of a Good-Fair bioclassification at site SB-9. The stream was resampled in 2001 to confirm the previous bioclassification. The change in bioclassification may be related to low flow.

2002 Recommendations
DWQ will continue to monitor Beaverdam Creek to assess water quality changes.

7.3.2 Contentnea Creek

1998 Recommendations
Contentnea Creek was partially supporting from the Buckhorn Reservoir to the confluence with Toisnot Swamp. There were no specific recommendations made for this segment of Contentnea Creek in the 1998 basin plan.

Current Status
Contentnea Creek is currently supporting from Wiggins Mill dam to the confluence with the Neuse River. A resample just downstream of site SB-5 in 2001 was assigned a Good-Fair bioclassification. The Wilson WWTP, in this segment, had violations of BOD limits in 1999 that may have impacted the sample site. Habitat degradation from de-snagging was noted in the lower portion of Contentnea Creek.

The site between Buckhorn Reservoir and Wiggins Mill was Good-Fair in 1996, but ambient monitoring (A-1) indicated low dissolved oxygen in this segment and it is currently not rated.

2002 Recommendations
DWQ will continue to monitor Contentnea Creek to assess water quality changes and determine the cause of low dissolved oxygen at the ambient monitoring site A-1. DWQ will work with the Wilson WWTP to ensure the discharge minimizes water quality impacts to Contentnea Creek. Because of the water quality impacts noted above and the development in the watershed, Contentnea Creek near Wilson is a NCWRP targeted local watershed (page 203).

Current Water Quality Initiatives
The Hookerton WWTP has received CWMTF grant to make upgrades to the plant (page 215).

7.3.3 Hominy Swamp

1998 Recommendations
Hominy Swamp was not supporting from the source to Contentnea Creek. It was recommended that DWQ continue monitoring to identify potential causes and sources of impairment.

Current Status
Hominy Swamp (9.9 miles) is currently impaired because of Poor bioclassifications at two sites in 2001. The stream drains urban Wilson and, most likely, is impacted by urban nonpoint source runoff.

2002 Recommendations
DWQ will continue to monitor Hominy Swamp to assess water quality impacts from urban and developing areas in Wilson. As part of the 303(d) list approach, DWQ will begin the process of identifying problem parameters that may be causing biological impairment in Hominy Swamp. NCWRP has a restoration project on Hominy Swamp Creek (page 215), as well as a grant focusing on the assessment of water quality problems and the development of a restoration plan for this local watershed. Because of the water quality impairment noted above and the restoration assessment, Hominy Swamp is a NCWRP targeted local watershed (page 203).

Wilson should consider water quality impacts to Hominy Swamp during development. Refer to (page 81) for a description of urban stream problems and recommendations for reducing impacts and restoring water quality.

Current Water Quality Initiatives
The City of Wilson received a CWMTF grant to make upgrades to the WWTP (page 215).

7.3.4 Little Contentnea Creek

1998 Recommendations
Little Contentnea Creek was partially supporting in 1998. There were no specific recommendations made in the 1998 basin plan.

Current Status

Little Contentnea Creek (34.9 miles) is currently impaired based on a Fair bioclassification at site B-8. There were good snag and bank habitats although the stream was channelized and there were no pools. The low bioclassification is reflective of problems in the upper watershed. Low dissolved oxygen may also be contributing to the impairment.

2002 Recommendations

DWQ will continue to monitor Little Contentnea Creek to determine probable causes of impairment. As part of the 303(d) list approach, DWQ will begin the process of identifying problem parameters that may be causing biological impairment in Little Contentnea Creek. NCWRP, through a grant funded by EPA, is developing a methodology for assessing functional values for wetlands restoration projects. Fieldwork for this project is occurring within the Little Contentnea Creek watershed. Because of the water quality impairment noted above and the assessment work, Little Contentnea is a NCWRP targeted local watershed (page 203).

7.3.5 Nahunta Swamp

1998 Recommendations

Nahunta Swamp was partially supporting from the source to Contentnea Creek. It was recommended that DWQ continue monitoring to identify potential causes and sources of impairment.

Current Status

Nahunta Swamp (27.1 miles) is currently impaired because of Fair bioclassifications at sites B-6 and SB-3. Habitat degradation (page 89) is a likely cause of impairment. The sample site had good snag and root habitat, but was channelized with a narrow vegetated riparian zone, and streambank erosion was noted. The benthic macroinvertebrate community did not suggest organic or nutrient loading as a problem, although there are many animal operations upstream of the site.

2002 Recommendations

DWQ will continue to monitor Nahunta Swamp to assess water quality changes. As part of the 303(d) list approach, DWQ will begin the process of identifying problem parameters that may be causing biological impairment in Nahunta Swamp. DWQ will contact the Division of Soil and Water Conservation (DSWC) to evaluate the potential for installation of agricultural BMPs that would protect water quality and aquatic habitat in Nahunta Swamp. Because of the water quality impairment noted above and the Soil and Water Conservation District project (see below), Nahunta Swamp is a NCWRP targeted local watershed (page 203).

Current Water Quality Initiatives

Wayne and Greene Counties Soil and Water Conservation Districts received funding for a Section 319 project to promote conservation tillage methods on land farmed for cotton in this primarily agricultural watershed, with the intention of reducing sediment and nutrient runoff.

7.4 Status and Recommendations of Waters Newly Impaired Waters

7.4.1 Little Creek

Current Status
Little Creek (4.1 miles) is currently impaired because dissolved oxygen (sites A-15 and A-16) was below 4 mg/l in 20.8 and 12.1 percent of samples. These sites are upstream and downstream of the Zebulon WWTP.

2002 Recommendations
DWQ and LNBA (page 220) will continue to monitor the site to detect any water quality changes. DWQ will work with the Zebulon WWTP and the Town of Zebulon to determine the sources of low dissolved oxygen in Little Creek.

7.5 Status and Recommendations for Waters with Noted Impacts

The surface waters discussed in this section are supporting designated uses (unless otherwise noted) based on DWQ's use support assessment and are not considered to be impaired. However, notable water quality problems and concerns have been documented for some waters based on this assessment. While these waters are not considered impaired, attention and resources should be focused on these waters to prevent additional degradation or facilitate water quality improvement.

7.5.1 Toisnot Swamp

Current Status and 2002 Recommendations
Toisnot Swamp is currently supporting based on a Good-Fair bioclassification assigned during 2001 resamples from NC 301 to Contentnea Creek. Habitat degradation (page 89) was noted with infrequent pools and channelized segments. Segments above NC 301 drain urban Wilson and are currently not rated. Nash Rocky Mount Southern High School (map #178) had violations of ammonia limits in 1998 in the upper part of Toisnot Swamp. DWQ will continue to work with the high school discharge to assure minimal water quality impacts.

Because Toisnot is a water supply watershed and has noted water quality impacts, Toisnot Swamp is a NCWRP targeted local watershed (page 203). Refer to page 81 for a description of urban stream problems and recommendations for reducing impacts and restoring water quality.

7.6 Additional Water Quality Issues Within Subbasin 03-04-07

This section discusses issues that may threaten water quality in the subbasin that are not specific to particular streams, lakes or reservoirs. The issues discussed may be related to waters near certain land use activities or within proximity to different pollution sources.

7.6.1 Impacts of Post-Hurricane De-Snagging on Instream Habitats

Many streams in the subbasin have noted impacts from the recent hurricanes. The biological community in the streams can recover rapidly if instream habitat is maintained. De-snagging operations should carefully remove debris from stream channels to restore natural flow and leave enough instream habitats so the biological community can recover. For more information on this issue, refer to page 86.