

Section B - Chapter 3

Neuse River Subbasin 03-04-03

Middle Creek



3.1 Subbasin Overview

<i>Subbasin 03-04-03 at a Glance</i>	
<u>Land and Water Area</u>	
Total area:	131 mi ²
Land area:	131 mi ²
Water area:	0 mi ²
<u>Population Statistics</u>	
2000 Est. Pop.:	50,991 people
Pop. Density:	persons/mi ²
<u>Land Cover (percent)</u>	
Forest/Wetland:	57.3
Surface Water:	1.1
Urban:	22.0
Cultivated Crop:	17.6
Pasture/ Managed Herbaceous:	1.9
<u>Counties</u>	
Johnston and Wake	
<u>Municipalities</u>	
Holly Springs, Apex and Fuquay-Varina	

Population growth in the subbasin is concentrated around the rapidly growing communities of Apex and Holly Springs in the northern portions of the subbasin. Population density is highest (320-1,600 persons/mi²) in the northern portions of the subbasin. Growth is also high between Fuquay-Varina and Smithfield. Most of the development is occurring on land previously in agriculture land use.

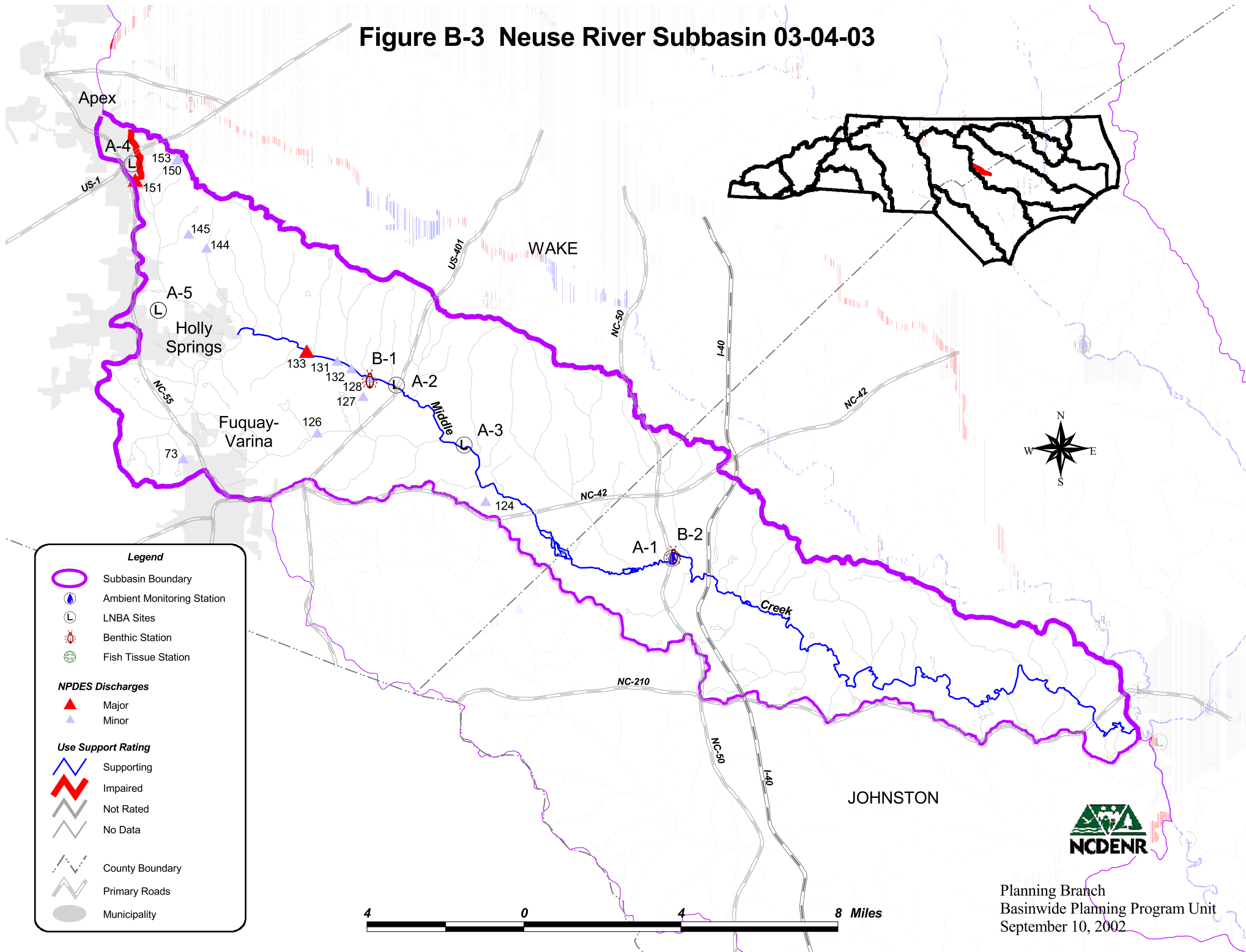
There are 469 acres of managed public lands in this subbasin. The largest is a farm easement owned by the Triangle Land Conservancy (page 219).

There are eight NPDES wastewater discharge permits in this subbasin with a total permitted flow of 17 MGD (Figure B-3). The largest are Apex WWTP (3.6 MGD, map #151) and Cary South WWTP (12.8 MGD, map #133). There is also one individual NPDES stormwater permit in the subbasin. Refer to Appendix I for identification and more information on NPDES permit holders. Wake County will be required to develop a stormwater program under Phase II (page 76). Johnston and Wake counties have submitted model stormwater ordinances as required by the Neuse NSW strategy

stormwater rules (page 64). There are also four registered animal operations in this subbasin.

There were two benthic macroinvertebrate community samples (Figure B-3 and Table B-7) collected in 2000 as part of basinwide monitoring. One site improved and one site had the same bioclassification. Data were collected from one ambient monitoring station as well. 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-3 Neuse River Subbasin 03-04-03



Legend

- Subbasin Boundary
- Ambient Monitoring Station
- LNBA Sites
- Benthic Station
- Fish Tissue Station

NPDES Discharges

- Major
- Minor

Use Support Rating

- Supporting
- Impaired
- Not Rated
- No Data

Other Symbols

- County Boundary
- Primary Roads
- Municipality



Table B-7 DWQ Monitoring Locations in Subbasin 03-04-03

Benthic Macroinvertebrate Community Monitoring Sites					
Map # ¹	Waterbody	County	Location	1995	2000
B-1	Middle Cr ²	Wake	SR 1375	Fair	Good-Fair
B-2	Middle Cr ²	Wake	NC 50	Good-Fair	Good-Fair
Ambient Monitoring Sites					
Map # ¹	Waterbody	County	Location	Station #	Noted Parameters ³
A-1	Middle Cr	Johnston	NC 50	J5000000	none
A-2 ⁴	Middle Cr	Wake	US 401	J4870000	none
A-3 ⁴	Middle Cr	Wake	SR 1006	J4980000	none
A-4 ⁴	Middle Cr	Wake	Nr Apex	J4610000	DO
A-5 ⁴	Middle Cr	Wake	Sunset Lake	J4690000	none

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 3.2 below. Recommendations, current status and future recommendations for waters that were impaired in 1998 are discussed in Part 3.3 below. Current status and future recommendations for newly impaired waters are discussed in Part 3.4 below. Supporting waters with noted water quality impacts are discussed in Part 3.5 below. Water quality issues related to the entire subbasin are discussed in Part 3.6. 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 for more information on supporting monitored waters.

3.2 Use Support Summary

Use support ratings (page 54) in subbasin 03-04-03 were assigned for aquatic life and secondary recreation and fish consumption. All waters in the subbasin are considered impaired on an evaluated basis because of fish consumption advisories (page 93).

There were 50 stream miles (43 percent) monitored during this assessment period. All but 1.4 miles of monitored waters are supporting. Refer to Table B-8 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-9.

Table B-8 Summary of Use Support Ratings by Use Support Category in Subbasin 03-04-03

Use Support Rating	Basis	Aquatic Life and Secondary Recreation	Fish Consumption	Primary Recreation
Supporting	Monitored	49.0 mi	0	0
	All Waters	49.0 mi	0	0
Impaired	Monitored	1.4 mi	0	0
	All Waters	1.4 mi	117.7 mi 98.0 ac	0
Not Rated	Monitored	0	0	0
No Data	N/A	67.3 mi 98.0 ac	0	5.5 mi 98.0 ac
Total	Monitored	50.4 mi	0	0
	All Waters	117.7 mi 98.0 ac	117.7 mi 98.0 ac	5.5 mi 98.0 ac
	Percent Monitored	43% mi	0%	0%

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

Table B-9 Previously or Currently Impaired Waters in Subbasin 03-04-03

Name	1998 Status	2002 Status	Use Support Category	Miles
Middle Creek	Supporting	Impaired	Aquatic Life/Secondary Recreation	1.4
			Total 2002 Impaired Miles	1.4

3.3 Status and Recommendations of Previously Impaired Waters

There were no impaired streams identified in the 1998 basin plan in this subbasin.

3.4 Status and Recommendations of Waters Newly Impaired Waters

3.4.1 Middle Creek

Current Status

Middle Creek is currently supporting with Good-Fair bioclassifications at sites B-1 and B-2 (Figure B-3). Upper Middle Creek (1.4 miles) is currently impaired because dissolved oxygen (site A-4) was below 4 mg/l in 16 percent of samples. Increasing development with streambank

erosion was noted, as well as indications of nutrient enrichment. Cary WWTP (map #133) and Apex WWTP (map #151) have had past aquatic toxicity failures. Cary WWTP had two aquatic toxicity fails in 2000.

2002 Recommendations

DWQ will work with the discharges to remedy toxicity problems. Refer to page 81 for a description of urban stream problems and recommendations for reducing impacts and restoring water quality. DWQ will also attempt to determine the source of the low dissolved oxygen levels in the upper watershed. Apex received a CWMTF grant to make WWTP upgrades. Because of the water quality impacts noted above and the increasing development pressure, Middle Creek is a NCWRP targeted local watershed (page 203).

3.5 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.

3.5.1 Terrible Creek

Current Status and 2002 Recommendations

Terrible Creek is currently not rated. The Fuquay-Varina WWTP (map #126) has had past aquatic toxicity failures. DWQ will work with the town to remedy the toxicity problems.

3.6 Additional Water Quality Issues Within Subbasin 03-04-03

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.

3.6.1 Water Quality Threats to Streams in Urbanizing Watersheds

Most of the streams in the Wake County portion of the subbasin will be increasingly threatened by development pressure. In order to prevent aquatic habitat degradation and impaired biological communities, protection measures must be put in place immediately. Refer to page 81 for a description of urban stream water quality problems and recommendations for reducing impacts to and restoring water quality in these waters.