

## 12.1 Subbasin Overview

### *Subbasin 03-04-12 at a Glance*

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

Forest/Wetland:	51.7
Surface Water:	1.1
Urban:	4.1
Cultivated Crop:	41.0
Pasture/ Managed Herbaceous:	2.1

#### **Counties**

Johnston and Wayne

#### **Municipalities**

Goldsboro, Selma, Pine Level, Mount  
Olive and Princeton

#### **Stream Statistics**

Total Streams:	152.4 mi
Total Supporting:	20.0 mi
Total Impaired:	5.8 mi
Total Not Rated:	7.9 mi
Total No Data:	118.7 mi

Population growth in the subbasin is concentrated around Selma, Princeton, Pine Level and Goldsboro. Land use in this area is agriculture, animal operations and scattered tracts of forest.

There are 1 major and 1 minor NPDES wastewater discharge permits in this subbasin. There are also 8 individual NPDES stormwater permit in the subbasin. Refer to Appendix III for identification and more information on individual NPDES permit holders. There are also 68 permitted animal operations in this subbasin.

This watershed is not well assessed. There was no ambient monitoring and only a single benthic sample assessed which improved to a good benthic bioclassification, up from good-fair in 2000. Water quality in this subbasin is likely affected by the large number of animal operations. Agricultural BMPs should be utilized to protect the water quality in these streams. It is also be important to incorporate urban BMPs in the areas of higher urban growth.

A map including the locations of the NPDES facilities and water quality monitoring stations is presented in Figure 34. Table 38 contains a list of assessment unit numbers (AU#) and length, streams monitored, monitoring data types, locations and results, along with use support ratings for waters in the subbasin. Refer to [http://h2o.enr.state.nc.us/tmdl/General\\_303d.htm](http://h2o.enr.state.nc.us/tmdl/General_303d.htm) for more information about use support methodology.

Waters in the following sections and in Table 38 are identified by an assessment unit number (AU#). This number is used to track defined segments in the water quality assessment database, list 303(d) Impaired waters and identify waters throughout the basin plan. The AU# 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 AU# and the DWQ index segment are the same.

**Figure 34 Neuse River Subbasin 03-04-12**

**Legend**

- Subbasin Boundary
- County Boundary
- Municipality
- Primary Roads

**Monitoring Stations**

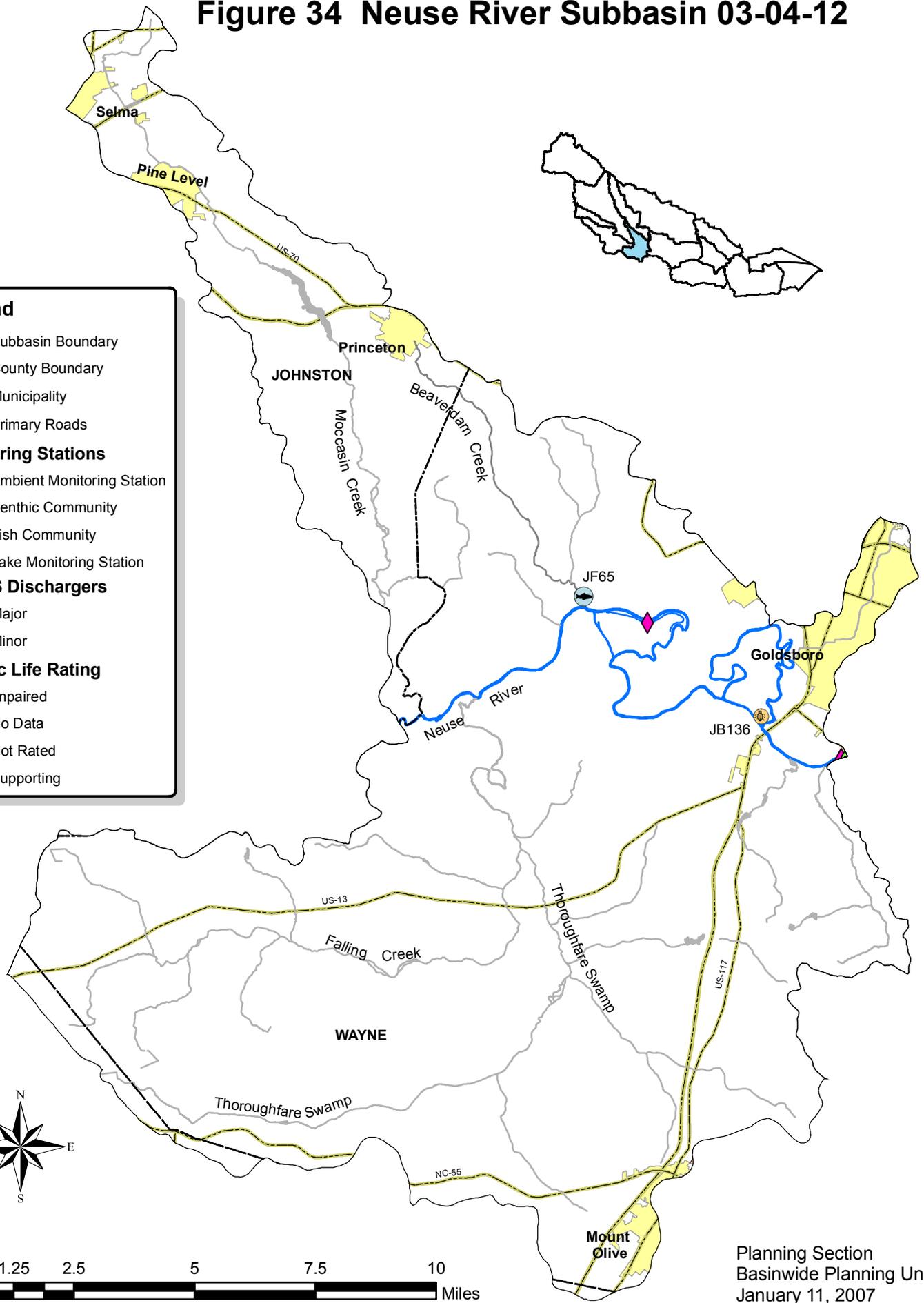
- Ambient Monitoring Station
- Benthic Community
- Fish Community
- Lake Monitoring Station

**NPDES Dischargers**

- Major
- Minor

**Aquatic Life Rating**

- Impaired
- No Data
- Not Rated
- Supporting



**Table 38 Neuse River Basin**

**Subbasin (WBD-8 Number) 03020201**

**DWQ Subbasin**

**03-04-12**

Assessment Unit Number	Name		Overall Category	Potential Stressors	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
Description	DWQ Subbasin	Miles/Acres	Category	Potential Sources	Category	Rating	Rating	Interest	Year	Year	Category
<b>Watershed (WBD-10 Number) 0302020117</b>				<b>Moccasin Creek-Neuse River</b>							
				<b>Subwatershed (WBD-12 Number) 030202011704</b>				<b>Charles Branch-Beaverdam Creek</b>			
<b>27-55</b>	<b>Beaverdam Creek</b>		<b>3a</b>		Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2005		3a
From source to Neuse River											
WS-IV;NSW	03-04-12	7.9	FW Miles								
				<b>Subwatershed (WBD-12 Number) 030202011705</b>				<b>Quaker Neck Lake-Neuse River</b>			
<b>27-(49.5)b</b>	<b>NEUSE RIVER</b>		<b>2</b>		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From subbasin 030402-030412 boundary to a point 0.8 mile upstream of Little River											
WS-IV;NSW	03-04-12	18.5	FW Miles								
<b>27-(55.5)</b>	<b>NEUSE RIVER</b>		<b>2</b>		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From a point 0.8 mile upstream of Little River to City of Goldsboro water supply intake (located 0.4 mile upstream of Little River)											
WS-IV;NSW,CA	03-04-12	0.5	FW Miles								
<b>27-(56)a</b>	<b>NEUSE RIVER</b>		<b>5</b>	<b>Mercury</b>	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From City of Goldsboro water supply intake to subbasin 030405-030412 boundary											
C;NSW	03-04-12	5.8	FW Miles		Fish Consumption	Impaired	Standard Violation	Mercury	2004	2004	5
<b>27-59</b>	<b>Neuse River Cut-Off</b>		<b>2</b>		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From source to Neuse River											
C;NSW	03-04-12	1.0	FW Miles								

**Note:**

See Section 23.3 for Overall and IR Category explanation.

Supporting waters are listed in Categories 1-3.

Impaired waters are listed in Categories 4 or 5.

## 12.2 Use Support Assessment Summary

All surface waters in the state are assigned a classification appropriate to the best-intended use of that water. Waters are regularly assessed by DWQ to determine how well they are meeting their best-intended use. For aquatic life, an Excellent, Good, Good-Fair, Fair, or Poor bioclassification is assigned to a stream based on the biological data collected by DWQ. For more information about bioclassification and use support assessment, refer to [http://h2o.enr.state.nc.us/tmdl/General\\_303d.htm](http://h2o.enr.state.nc.us/tmdl/General_303d.htm). Appendix X provides definitions of the terms used throughout this basin plan.

Refer to Table 39 for a summary of use support for waters in subbasin 03-04-12 (see Chapter 23, Section 23.3 for description of the IR category (for each parameter of interest) and Overall (river segment) category).

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

The following waters were either identified as Impaired in the previous basin plan (2002) 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 2008 303(d) list. The current status and recommendations for addressing these waters are presented below, and each is identified by an AU#. Information regarding 303(d) listing and reporting methodology can be found at [http://h2o.enr.state.nc.us/tmdl/General\\_303d.htm](http://h2o.enr.state.nc.us/tmdl/General_303d.htm).

Table 39 Summary of Use Support Ratings in Subbasin 03-04-12

Units	Total Monitored Waters		Total Impaired Waters		Total Supporting Waters		Total Not Rated Waters		Total No Data		Total
	Miles/ Acres		Miles/ Acres	%	Miles/ Acres	%	Miles/ Acres		Miles/ Acres		Miles/ Acres
Freshwater miles (streams)	34		6	4	20	13	8		119		152

% - Percent of total miles/acres.

There are no newly or previously impaired waters in the subbasin. Very few streams in this subbasin were evaluated during this assessment period. It is likely that the water quality in this subbasin is affected by the large number of animal operations.

### Recommendations

DWQ would recommend sampling Moccasin Creek, Falling Creek and Thoroughfare Swamp during the next assessment period.

Local resource agencies are encouraged to install appropriate BMPs in this watershed to protect water quality.

Further recommendations on how to protect and reduce water quality impacts from agricultural practices in the watershed can be found in Chapter 6 of the *Supplemental Guide to North*

## 12.4 Status and Recommendations for Waters with Noted Impacts

The surface waters discussed below are not Impaired. However, notable water quality problems and concerns were documented for these waters during this assessment. Attention and resources should be focused on these waters to prevent additional degradation and facilitate water quality improvements. DWQ will notify local agencies of these water quality concerns and work with them to conduct further assessments and to locate sources of water quality protection funding. Additionally, education on local water quality issues and voluntary actions are useful tools to prevent water quality problems and to promote restoration efforts. The current status and recommendations for addressing these waters are presented below, and each is identified by an AU#. Nonpoint source program agency contacts are listed in Appendix IV.

### 12.4.1 Neuse River [AU# 27-(49.5)b, 27-(55.5), 27-(56)a & 27-59 (Cut-Off)]

#### Current Status

The entire length of the Neuse River in this subbasin including the Neuse River Cut-Off [AU#27-(49.5)b(WS-IV; NSW); 27-(55.5) (WS-IV; NSW; CA); 27-(56)a (C; NSW); 27-59 (C; NSW)] from subbasin 030402 boundary to subbasin 03-04-05 boundary (25.8 miles total) is Supporting for aquatic life due to a Good benthic bioclassification at JB136. This site has been sampled on three previous occasions with one sample (1991) receiving a Good bioclassification while samples in 1995 and 2000 resulted in Good-Fair bioclassifications. Land use in the immediate catchment includes urban and suburban areas of Goldsboro. Further upstream of this site, the catchment is mostly agricultural with scattered areas of forest. The primary habitat deficiencies noted were areas of streambank erosion and breaks in the riparian zone. The conductivity was elevated (160  $\mu$ mhos/cm) reflecting this segment's proximity to Goldsboro. A rare mayfly (*Leptohyphes robacki*) was also collected at this site in 2005 and represents only the fifteenth total collection statewide of this taxon by DWQ biologists and is only the fourth record from the Neuse basin.

The improvement at this site could possibly be the result of lower flows in 2005 and perhaps throughout most of this assessment period. In catchments where non-point pollution is the primary stressor, lower flows tend to improve water quality as fewer pollutants are washed from the land into waterbodies. The six-month average stream discharge from May 2005 through October 2005 was 856 cubic feet per second (cfs) at the Neuse River (US 117) near Goldsboro. This average was significantly less than the six-month average stream discharge (2,073 cfs) from March 2000 through August 2000. The attenuated six month average discharge preceding the October 2005 sampling event relative to the greater flow preceding the August 2000 collection possibly explains the improved community metrics and bioclassification observed at the Neuse River (JB136) sampling site in 2005.

#### Neuse River - Fish Tissue Monitoring

All waters in the Neuse River basin are Impaired on an evaluated basis in the Fish Consumption category for mercury contamination. This is based on a fish consumption advice from the NC Department of Health and Human Services (NC DHHS). For more information on fish consumption advisories and advice, contact NC DHHS (<http://www.schs.state.nc.us/epi/fish/current.html>).

Largemouth bass, striped bass, sunfish, and catfish samples were collected from the Neuse River near Goldsboro and Kinston during 2000 and analyzed for mercury and heavy metal contaminants. The samples were collected as part of an eastern North Carolina mercury assessment.

Near Goldsboro, three largemouth bass, and one striped bass (4 of 21 total samples) contained mercury concentrations exceeding the state criteria of 0.4 ppm. Mercury levels in all samples ranged from 0.10 to 0.52 ppm. Results for other metals were non-detectable or below EPA and North Carolina screening values. Two additional largemouth bass samples were collected from the Goldsboro station during 2003 and analyzed for organics and PCB contaminants. The samples contained trace amounts of DDE, a DDT metabolite, and dieldrin but concentrations were well below US EPA, US FDA, and State of North Carolina criteria. PCB contaminants were not detected. For more information on fish tissue monitoring see the Environmental Sciences Section, Basinwide Assessment Report Neuse River Basin, 2006 (<http://h2o.enr.state.nc.us/esb/Basinwide/Neuse06BasinReportFinal.pdf>).

The Neuse River AU# 27-(56)a and AU# 27-(56)b (in subbasin 03-04-05) were added to the 2004 303(d) due to site specific fish tissue samples collected in 2000. DWQ is no longer assessing mercury impairments on a site specific basis. The entire basin is impaired on an evaluated basin and a state or regional/ecoregional TMDL approach will be taken to correct the high mercury levels in some of the states fish population. See section 12.5.1 below for more information.

### Recommendations

In this highly agricultural subbasin, DWQ recommend that the local resources agencies implement appropriate BMPs to reduce nutrient and sediment loading in this watershed.

Further recommendations on how to protect and reduce water quality impacts from agricultural practices in the watershed can be found in Chapter 6 of the *Supplemental Guide to North Carolina's Basinwide Planning* document (<http://h2o.enr.state.nc.us/basinwide/SupplementalGuide.htm>).

## **12.5 Additional Water Quality Issues within Subbasin 03-04-12**

The previous sections discussed water quality concerns for specific stream segments. The following 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.

### **12.5.1 Mercury Contamination – Fish Tissue Assessment**

The Division conducted fish tissue surveys at four stations within the Neuse River Basin from 1999 to 2004. These surveys were conducted as part of the mercury contaminant assessments in the eastern part of the state and during statewide pesticide assessments.

Tissue samples collected from the Neuse River at Goldsboro contained organic contaminants at undetectable levels or at levels less than the US EPA, US FDA, and State of North Carolina criteria. The Goldsboro samples consisted of composites of largemouth bass.

Elevated mercury concentrations (greater than the EPA and NC level of 0.4 ppm) were detected in fish samples collected from all four stations within the Neuse Basin. These included the Eno River near Durham, Neuse River at Goldsboro, Neuse River at Kinston, and Contentnea Creek at Snow Hill. Elevated levels were most often detected in largemouth bass, a species at the top of the food chain and most often associated with mercury bioaccumulation in North Carolina. Presently, there are no site-specific fish consumption advisories for mercury in the Neuse River basin; however, an advisory for the consumption of bowfin, and chain pickerel east of Interstate 85 was issued by NCDHHS in 2002 and a statewide advisory for the consumption of largemouth bass in 2006.

Because fish spend their entire lives in the aquatic environment, they incorporate chemicals from this environment into their body tissues. Contamination of aquatic resources has been documented for heavy metals, pesticides, and other complex organic compounds. Once these contaminants reach surface waters, they may be available for bioaccumulation, either directly or through aquatic food webs, and may accumulate in fish and shellfish tissues. Results from fish tissue monitoring can serve as an important indicator of further contamination of sediments and surface water.