Chapter 9
Neuse River Subbasin 03-04-09
Including the: Swift Creek, Clayroot Swamp and Creeping Swamp

9.1 Subbasin Overview

Subbasin 03-04-09 at a Glance

Land Cover (percent)

Forest/Wetland:	72.9
Surface Water:	0.3
Urban:	3.1
Cultivated Crop:	22.7
Pasture/ Managed Herbaceous:	1.0

Counties
Beaufort, Craven and Pitt

Municipalities
Greenville, Winterville, Vanceboro and Ayden

Stream Statistics

Total Streams:	
Freshwater	148.8 mi
Saltwater	8.0 ac
Total Supporting:	
Freshwater	25.4 mi
Saltwater	0.0 ac
Total Impaired:	
Freshwater	43.2 mi
Saltwater	8.0 ac
Total Not Rated:	
Freshwater	5.3 mi
Saltwater	0.0 ac
Total No Data:	
Freshwater	72.3 mi
Saltwater	0.0 ac

This coastal plain subbasin contains Swift Creek and its tributaries. Much of Swift Creek has been channelized. Due to the naturally slow subsurface drainage in this area, artificial drainage is common to allow the production of corn, peanuts and cotton. There are a few small towns located in this subbasin.

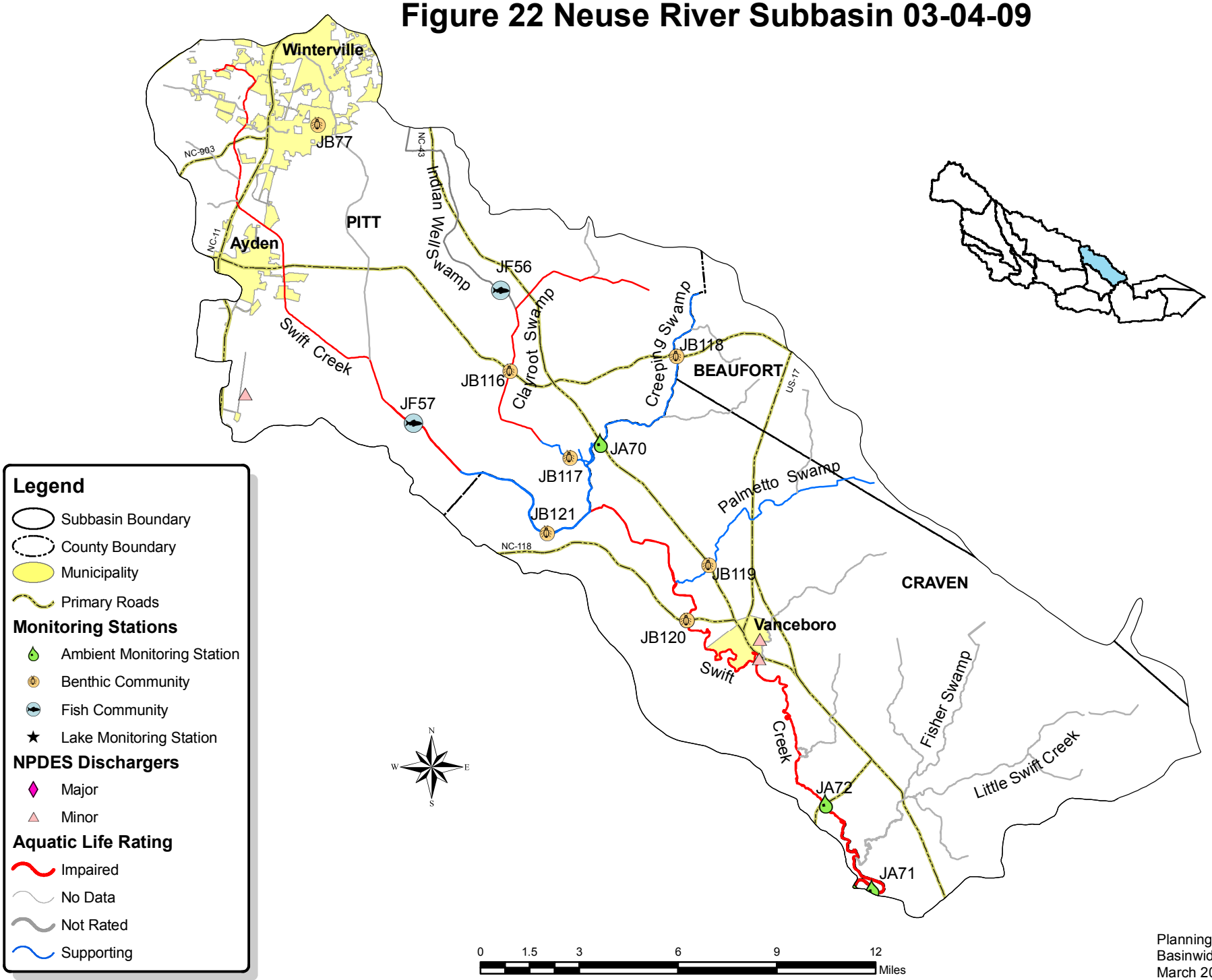
Most of the population in this subbasin is focused around Greenville. Within the past decade Greenville's population increased by 24.3 percent (14,904). The primary land use is agriculture (25 percent) and patchy forests (73 percent). There are many hog farms, mainly located in the northwest potion of this subbasin. Additional information regarding population and land use changes throughout the entire basin can be found in Chapter 16.

There are 3 minor NPDES wastewater discharge permits in this subbasin with a total permitted flow of 0.3 MGD. There are also 7 individual NPDES stormwater permit in the subbasin. Refer to Appendix III for identification and more information on individual NPDES permit holders. There are also 31 permitted animal operations in this subbasin.

There are no new water quality impairments in this subbasin. Water quality declined in several areas while the lower end of Clayroot Swamp improved from a poor to a good-fair benthic bioclassification. Clayroot Swamp like most of the other streams in this watershed has been altered to function as an agricultural drainage system. This was a common practice in certain areas of the coastal plain in order to grow crops as well as build homes and businesses in these areas. The structure and character of these swamps have been forever altered. It appears that the lack of available instream habitat may be the main stressor to this system. However, there are also possible water quality issues that may be adding to the stress on this system as seen by the high nutrient and conductivity levels as well as the excessive algal growth throughout this watershed.

A map including the locations of the NPDES facilities and water quality monitoring stations is presented in Figure 22. Table 26 contains a list of assessment unit numbers (AU#), length, streams monitored, monitoring data types, locations and use support ratings for waters in the subbasin. Refer to http://h2o.enr.state.nc.us/tmdl/General_303d.htm for more information about use support methodology.

Figure 22 Neuse River Subbasin 03-04-09



Planning Section
Basinwide Planning Unit
March 2008

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Overall Category	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
Watershed (WBD-10 Number) 0302020204	**Clayroot Swamp-Swift Creek**										
Subwatershed (WBD-12 Number) 030202020401	**Headwaters Swift Creek**										
27-97-(0.5)a1	**Swift Creek**		5	**Habitat Degradation** General Agriculture/Pasture	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	1995	1998	5
From source to 5.3 miles upstream of Clayroot Swamp				**Nutrient Impacts** General Agriculture/Pasture	Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2005		3a
C;Sw,NSW	03-04-09	19.3 FW Miles									
Subwatershed (WBD-12 Number) 030202020403	**Creeping Swamp**										
27-97-5-3	**Creeping Swamp**		2		Aquatic Life	Not Rated	Data Inconclusive	Iron	2006		3m
From source to Clayroot Swamp					Aquatic Life	Not Rated	Data Inconclusive	Chlorophyll a	1998	1998	5
C;Sw,NSW	03-04-09	8.1 FW Miles			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
					Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
					Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
Subwatershed (WBD-12 Number) 030202020404	**Clayroot Swamp**										
27-97-5-2	**Indian Well Swamp**		3a		Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2005		3a
From source to Clayroot Swamp											
C;Sw,NSW	03-04-09	7.9 FW Miles									
27-97-5a	**Clayroot Swamp**		5	**Habitat Degradation** Row Crop Agriculture, Stormwater Runoff; **Nutrient Impacts** Row Crop Agriculture, Stormwater Runoff	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2001	1998	5
From source to SR 1925											
C;Sw,NSW	03-04-09	9.5 FW Miles									
27-97-5b	**Clayroot Swamp**		2		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From SR 1925 to Swift Creek											
C;Sw,NSW	03-04-09	3.4 FW Miles									
Subwatershed (WBD-12 Number) 030202020405	**Clayroot Swamp-Swift Creek**										
27-97-(0.5)a2	**Swift Creek**		2		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From 5.3 miles upstream of Clayroot Swamp to Clayroot Swamp											
C;Sw,NSW	03-04-09	5.3 FW Miles									
Watershed (WBD-10 Number) 0302020205	**Swift Creek**										
Subwatershed (WBD-12 Number) 030202020501	**Palmetto Swamp**										

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Overall Category	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
27-97-5.3	**Palmetto Swamp**		**2**		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2005		1
From source to Swift Creek											
C;Sw,NSW	03-04-09	8.6 FW Miles									
				Subwatershed (WBD-12 Number) 030202020503				**Town of Vanceboro-Swift Creek**			
27-97-(0.5)b	**Swift Creek**		**5**	**Habitat Degradation**	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2005	1998	5
From Clayroot Swamp to mouth of Bear Branch				Forest Harvesting							
C;Sw,NSW	03-04-09	14.4 FW Miles		General Agriculture/Pasture							
				Low Dissolved Oxygen							
				Subwatershed (WBD-12 Number) 030202020506				**Swift Creek**			
27-97-(6)	**Swift Creek**		**5**	**Habitat Degradation**	Aquatic Life	Not Rated	Data Inconclusive	Iron	2006		3m
From mouth of Bear Branch to Neuse River				General Agriculture/Pasture	Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	2005	1998	5
SC;Sw,NSW	03-04-09	8.0 S Miles		Stormwater Runoff							
				Low Dissolved Oxygen	Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
				Nutrient Impacts	Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
				General Agriculture/Pasture							
				Stormwater Runoff							

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.

Waters in the following sections and in Table 26 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.

9.2 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. Appendix X provides definitions of the terms used throughout this basin plan.

Refer to Table 27 for a summary of use support for waters in subbasin 03-04-09 (see Chapter 23, Section 23.3 for description of the IR category (for each parameter of interest) and Overall (river segment) category).

9.3 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.

Table 27 Summary of Use Support Ratings in Subbasin 03-04-09

Units	Total Monitored Waters	Total Impaired Waters		Total Supporting Waters		Total Not Rated Waters	Total No Data	Total
	Miles	Miles	%	Miles	%	Miles	Miles	Miles
Freshwater (streams) Miles	77	43	29	25	17	8	72	149
Estuarine Miles	8	8	100	0	0.0	0	0	8

% - Percent of total miles/acres.

9.3.1 Clayroot Swamp Watershed [AU# 27-97-5a & 27-97-5b]

2002 Recommendations
DWQ will continue to monitor Clayroot Swamp. As part of the 303(d) list approach, DWQ will begin the process of identifying problem parameters that may be causing biological impairment in Clayroot Swamp. Because most of the Clayroot Swamp watershed is in agricultural land use, it is recommended that the Division of Soil and Water Conservation evaluate the potential for implementation of appropriate BMPs to reduce nutrient and sediment loading.

Current Status
Clayroot Swamp [AU# 27-97-5a]
Clayroot Swamp [AU# 27-97-5a; C; Sw; NSW] from source to SR1925 (9.5 miles) is currently Impaired for aquatic life due to a Fair benthic bioclassification at site JB116. The TMDL Unit of DWQ requested a sample in this reach of Clayroot Swamp as part of a 2001 CAWS project (Collaborative Assessment of Watersheds and Streams) for impaired streams. The goal was to identify the sources of impairment.

The Clayroot Swamp watershed is essentially a system of agricultural drainage ditches. The entire watershed is channelized. The predominate agricultural crop grown in this watershed is cotton with some soybean and corn as well. During both the reconnaissance survey and the sampling trip the water appeared turbid and nutrient-enriched, with the bottom substrate heavily covered with algae at most sites. The lower reaches of Clayroot Swamp are suffering from severe erosion of the sandy banks and seem to have higher flow velocities. As a result, sedimentation from the highly erodible sandy soils is a major concern. Significant sediment loading was observed.

During sampling, very little flow was observed at JB116. As a result of channelization, there is very little colonizable instream habitat present as well as high conductivities (122 µmhos/cm) and the abundance of algae growth suggesting nutrient enrichment.

This segment will remain on the 303(d) impaired waters list for impaired biological integrity.

Clayroot Swamp [AU# 27-97-5b]
Clayroot Swamp [AU# 27-97-5b; C; Sw; NSW] from SR1925 to Swift Creek (3.4 miles) is currently Supporting aquatic life due to a Good-Fair benthic bioclassification at site JB117. This is the normal basinwide site that has been assessed since 1991. This is the first time this site has received a supporting bioclassification. It last received a Poor rating in 2000. This site received a low habitat rating during this assessment period due to channel modifications, lack of colonizable habitat and stream cover as well as the left riparian area was replaced with a road. The conductivity was high (182 µmhos/cm) and filamentous algae was common, indicating nutrient enrichment. However, the big difference during this assessment period was the overall change in taxa richness. The total ETP taxa increased from 3 to 16 taxa, which accounted for the increase in the benthic bioclassification to Good-Fair. This site could easily slip back to an impaired status if improvements to the instream habitat are not obtained.

This segment will be removed from the 303(d) impaired waters list. However, this segment will be included in a TMDL management strategy for the upper portion of Clayroot Swamp.

Clayroot Swamp has been altered to function as an agricultural drainage system. This was a common practice in certain areas of the coastal plain in order to grow crops as well as build homes and businesses in these areas. The structure and character of this swamp has been forever altered. It appears that the lack of available instream habitat may be the main stressor to this system. However, there are also possible water quality issues that may be adding to the stress on this system as seen by the high conductivities and the excessive algal growth throughout this watershed.

Recommendations
DWQ continues to recommend that the Division of Soil and Water Conservation evaluate the potential for implementation of appropriate BMPs to reduce nutrient and sediment loading in this watershed.

Water Quality Initiatives
From September 2000 – December 2006, over $42,000 of the Agriculture Cost Share Program funds were spent on BMP implementation in this watershed. Practices included 196 acres of 3 year conservation tillage, 89 acres of long term no-till, 8 acres of cropland conversion to grass, 44 acres of cropland conversion to trees, 1,038 acres of nutrient scavenger crop, 13 acres of riparian buffer, and 21 acres of nutrient management. Cumulatively, these practices affect 1,683 acres, saved 4,078 Tons of soil, 4,411 pounds of nitrogen, 1,280 pounds of phosphorus, 704 pounds of Waste-N managed, and 501 pounds of Waste-P managed.

9.3.2 Creeping Swamp [AU# 27-97-5-3]

2002 Recommendations
DWQ will continue monitoring Creeping Swamp. Creeping Swamp is one of the few large non-channelized areas in the eastern part of the state and may serve as a reference reach. Because of the undisturbed nature and potential restoration sites, Creeping Swamp is a NCWRP targeted local watershed.

Current Status
Creeping Swamp [AU# 27-97-5-3; C; Sw; NSW] from source to Clayfoot Swamp (8.1 miles) is Supporting aquatic life and recreational uses due to a Moderate benthic swamp bioclassification at site JB118 and because No Criteria were Exceeded at ambient monitoring station JA70. This site was Not Rated during the last assessment period because no swamp benthic criteria were established at the time. A reassessment of the data indicated that this site was rated Natural during the 2000 sampling period. Four fewer taxa were collected in 2005, indicating a slight decrease in biological integrity. Creeping Swamp is currently on the 303(d) list for a chlorophyll *a* standard violation (noted as a historical listing decision). Currently, there were only 2 of 51 samples assessed that exceeded the state chlorophyll *a* standard of 40 µg/l (84 and 140 µg/l). The recoded DO levels ranged between 0.9 and 14.8 mg/l. Fifty percent of the readings were below 5.4 mg/l. Low DO levels are possibly caused by natural swamp conditions and may or may not affect the benthic organisms. The nutrient levels were also elevated within this watershed, with ammonia and phosphorus levels ranging between 0.01-3.8 and 0.38-4.2 mg/l respectively.

Fecal coliform bacteria levels were not above the state standard, however, they were elevated in 16 percent of the samples collected.

Creeping Swamp will be removed from the 2008 impaired waters list for chlorophyll *a* standard violation.

Recommendations
DWQ continues to recommend that the Division of Soil and Water Conservation evaluate the potential for implementation of appropriate BMPs to reduce nutrient and sediment loading in this watershed.

9.3.3 Swift Creek Watershed [AU# 27-97-(0.5)a1, 27-97-(0.5)a2, 27-97-(0.5)b, & 27-97-(6)]

Swift Creek (22.4 miles) was previously impaired from Clayroot Swamp to the Neuse River [27-97-(0.5)b, & 27-97-(6)] because of a Fair bioclassification. There was no data available above the confluence with Clayroot Swamp in order to make a use support decision during the last assessment period (1995-2000).

2002 Recommendations
As part of the 303(d) list approach, DWQ will begin the process of identifying problem parameters that may be causing biological impairment in Swift Creek. Because upper Swift Creek watershed is in agricultural land use, it is recommended that the Division of Soil and Water Conservation (DSWC) evaluate the potential for implementation of appropriate BMPs to reduce nutrient and sediment loading.

Current Status
Swift Creek [AU# 27-97-(0.5)a1]
Swift Creek [AU# 27-97-(0.5)a1; C; Sw; NSW] from source to 5.3 miles upstream of Clayroot Swamp (19.3 miles) remains impaired for aquatic life due to a historic poor benthic assessment at station JB241. Fish site JF57 was sampled for the first time about 8 miles downstream from the historic JB241 station (NC 102). Fish could not be sampled at that NC 102 because the macrophytic growth was historically too dense to sample. The site could not be rated due to the fact that the criteria for Coastal Plain streams have not been completed. This segment of the stream was also channelized and received the second lowest habitat score of any fish community site in the Coastal Plain in 2005. Despite the habitat alterations, the fauna collected included many typical species found in Coastal Plain streams, however, no intolerant species were collected during this assessment period. This site should be ratable during the next assessment period.

Swift Creek [AU# 27-97-(0.5)a2]
Swift Creek [AU# 27-97-(0.5)a2; C; Sw; NSW] from 5.3 miles upstream of Clayroot Swamp to Clayroot Swamp (5.3 miles) is Supporting aquatic life due to a Good benthic bioclassification at site JB121. This was the first benthic sample collected at this site. This site (JB121) was requested by the Washington regional office to fill in a data gap above the normal basinwide benthic site (JB120). This section of the stream had been channelized in the past. The visible land use was mostly agriculture and forest. There was minimal instream habitat and the right streambank was lacking a riparian buffer. The DO level at the time of collection was 8.7 mg/l, the conductivity was elevated (117 µmhos/cm) and *Hydrilla* sp. was abundant. There were several intolerant taxa present that have not been seen at other locations on Swift Creek. This middle section seems to have the highest biological integrity of all sites sampled on Swift Creek.

The Good rating at this site is in contrast to historical samples collected on Swift Creek. At the historical benthic site (JB241) about 14 miles upstream of JB121 a rating of Fair and Poor were reported in 1991 and 1995 respectively.

Swift Creek segment AU# 27-97-(0.5)a2 will be removed from the 2008 303(d) list of impaired waters for impaired biological integrity due to a Good benthic rating at site JB121.

Swift Creek [AU# 27-97-(0.5)b]

Swift Creek [AU# 27-97-(0.5)b; C; Sw; NSW] from Clayroot Swamp to the mouth near Bear Branch (14.4 miles) is currently Impaired for aquatic life due to a Fair benthic bioclassification at site JB120. This site received a Fair rating in 1995 and in 2000 as well. There was an active clear-cut logging operation occurring on the right bank during the sampling period in 2005. Logging was occurring right up to the floodplain line. Immediately above this reach, Swift Creek has been channelized. Floating items tend to get caught up at the sample location, creating large mats of floating material resulting in a substrate made up of predominantly detritus and silt. The recorded DO at the time of sampling was extremely low (1.6 mg/l) the conductivity was high (184 µmhos/cm). The overall rating at this site essentially remained unchanged between 2000 and 2005. Two intolerant taxa were present, however the most abundant taxa indicate that Swift Creek may periodically have low DO, low flow and organic enrichment issues.

This segment will remain on the 303(d) impaired waters list for impaired biological integrity.

Swift Creek [AU# 27-97-(6)]

Swift Creek [AU# 27-97-(6); SC; Sw; NSW] from mouth near Bear Branch to Neuse River (8.0 miles) is currently Supporting aquatic life and recreational uses due to No Criteria Exceeded at ambient monitoring stations JA71 and JA72. The DO levels ranged from 0.7 to 15.7 mg/l. Waters with swamp classification often have naturally occurring low DO levels. High levels of macrophytic growth throughout Swift Creek can potentially cause large swings in DO levels. It is apparent from the algal growth that nutrient enrichment is an issue in this watershed. This could be seen by the excessive growth throughout the watershed as well a by the benthic species found at the macroinvertebrate sites and from the ambient monitoring data in the lower Swift Creek watershed. There was only a single chlorophyll *a* reading elevated at JA71 (furthest downstream ambient station) above the state standard of 40 µg/l. The maximum level recorded was 46 µg/l. Also, 3 percent of the samples exceeded the turbidity standard of 25 NTUs for SC waters with a maximum level recorded at 70 NTU.

This segment of Swift Creek will also remain on the impaired waters list for impaired biological integrity. No benthic or fish community assessment was completed in this segment during this data window.

Recommendations

A TMDL management strategy will be developed for the entire Swift Creek watershed.

DWQ continues to recommend that the Division of Soil and Water Conservation evaluate the potential for implementation of appropriate BMPs to reduce nutrient and sediment loading in this watershed.

Water Quality Initiatives

Swift Creek [AU#27-97-(0.5)a1 and 27-97-(0.5)a2]

From September 2000 – December 2006, over $224,000 of the Agriculture Cost Share Program funds were spent on BMP implementation in this watershed. Practices included 912 acres of three-year conservation tillage, 216 acres of long term no-till, 59 acres of cropland conversion to trees, 7,454 acres of land smoothing, 1,668 acres of nutrient scavenger crop, 60 acres of conservation tillage, 3 acres of grassed waterways, 17 acres of field borders, 10 acres of filter strip, 196 acres of riparian buffer, 1 water control structure, 10 rock-lined outlets, 12 grade stabilization structures, 2 incinerators, 1 hydrant, and 1 waste impoundment closure. Cumulatively, these practices affect 4,055 acres, saved 10,699 Tons of soil, 33,117 pounds of nitrogen, 2,954 pounds of phosphorus, 14,576 pounds of Waste-N managed, and 14,634 pounds of Waste-P managed.

Swift Creek [AU#27-97-(0.5)b and 27-97- (6)]

From September 2000 – December 2006, over $23,000 of the Agriculture Cost Share Program funds were spent on BMP implementation in this watershed. Practices included 169 acres of three-year conservation tillage, 45 acres of riparian buffers, 6 water control structures, and 2 incinerators. Cumulatively, these practices affect 492 acres, saved 621 Tons of soil, 9,313 pounds of nitrogen, 54 pounds of phosphorus, 12,050 pounds of Waste-N managed, and 6,552 pounds of Waste-P managed.

9.4 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.

Nothing noted in this segment.

Recommendations

Many of the streams within this subbasin are likely influenced by agricultural practices that occur within this watershed. DWQ would recommend sampling Little Swift Creek or Fisher Swamp during the next assessment period.

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).

9.5 Additional Water Quality Issues within Subbasin 03-04-09

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.

9.5.1 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.