

Chapter 10

Roanoke River Subbasin 03-02-10

Including: Cashie River, Roquist Creek and Hoggard Mill Creek

10.1 Subbasin Overview

Subbasin 03-02-10 at a Glance

Land and Water Area

Total area:	307 mi ²
Land area:	290 mi ²
Water area:	17 mi ²

Population Statistics

2000 Est. Pop.:	8,192 people
Pop. Density:	27 persons/mi ²

Land Cover (percent)

Forest/Wetland:	79.2%
Surface Water:	0.6%
Urban:	0.3%
Cultivated Crop:	19.4%
Pasture/ Managed Herbaceous:	0.6%

Counties

Bertie and Northampton

Municipalities

Roxobel, Kelford, Askewville
and Windsor

Monitored Stream Statistics

Aquatic Life

Total Streams:	79.0 mi
Total Supporting:	79.0 mi

Recreation

Total Streams:	15.2 mi
Total Supporting:	15.2 mi

This subbasin is located entirely within the lower coastal plain. Most of the streams are slow moving and often stop flowing in the summer months. This subbasin is the least densely populated and has the lowest estimated population projection in the entire river basin. Most of this subbasin is located in Bertie County, which is expected to decrease by 8 percent in population by 2020. For more information regarding population growth and trends, refer to Appendix I.

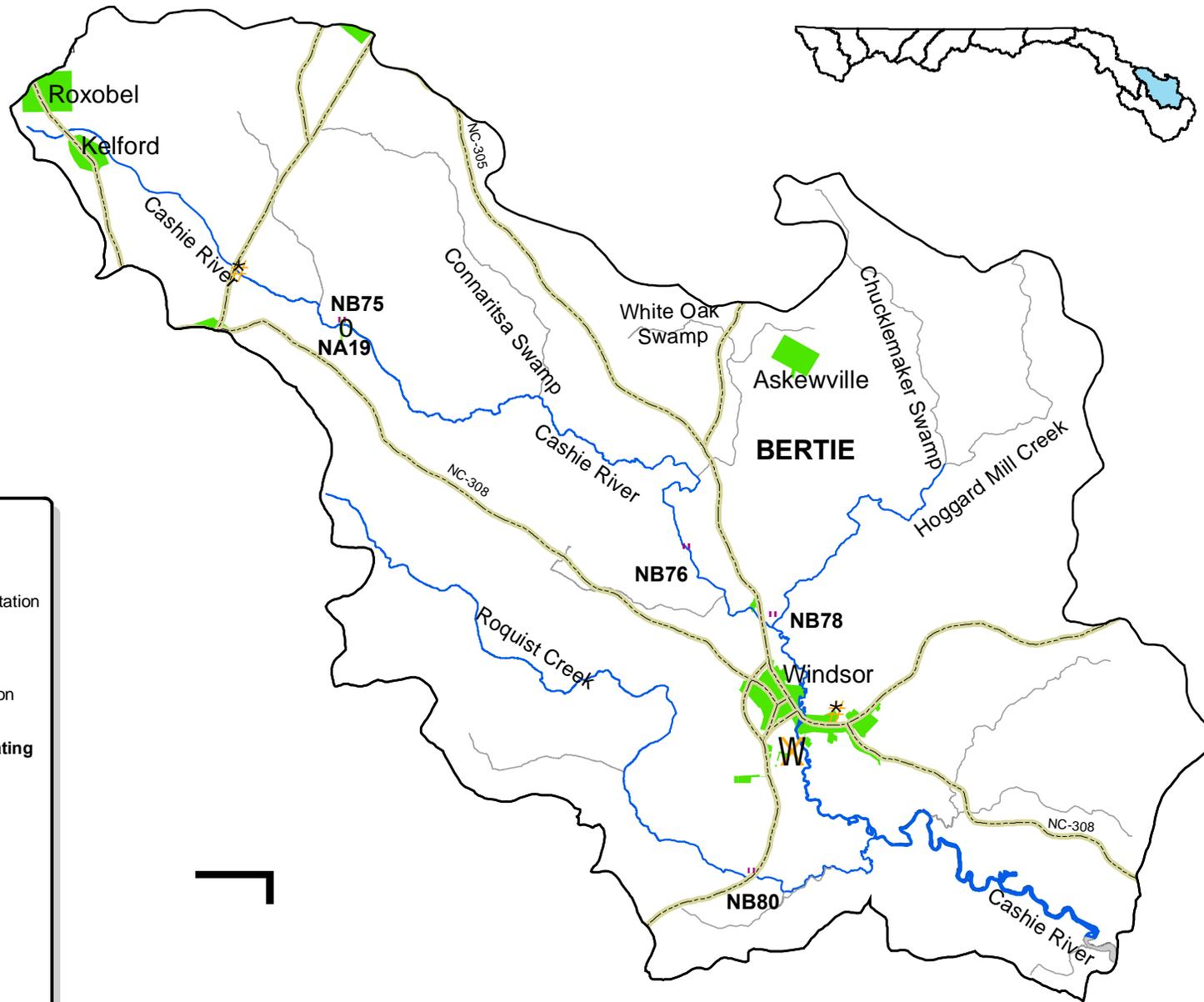
Several water quality improvement programs have been implemented in this subbasin. The NC Agriculture Cost Share Program (NCACSP), which helps reduce agricultural runoff by helping farmers implement best management practices, is one of these programs. The NCACSP provided \$199,373 towards implementing sediment and nutrient reduction practices, and animal waste management. For more information on this and other programs, refer to watershed discussion throughout this chapter as well as in Chapters 16 and 20.

Three individual NPDES discharge permits are issued in this subbasin with a total permitted flow of 1.3 MGD. Windsor WWTP is required to conduct whole effluent toxicity testing per their NPDES permit and have been in compliance during this assessment period. Refer to Appendix VI for identification and more information on individual NPDES permit holders. Three registered animal operations are located in this subbasin. Refer to Chapter 16 for more information regarding animal operations within this basin.

A map including the locations of NPDES discharges and water quality monitoring stations is presented in Figure 15. Table 12 contains a summary of assessment units and lengths, streams monitored, monitoring data types, locations and results, along with use support ratings for waters in this subbasin. Refer to Appendix IX for more information about use support ratings.

Benthic community biocriteria for swamp streams have been developed since the previous basinwide plan (2001) for the Roanoke River basin. Where appropriate, those criteria were applied to sites Not Rated in the 2001 basin plan (Cashie River, Roquist Creek and Hoggard Mill Creek). Four benthic macroinvertebrate community samples (Figure 15 and Table 12) were collected during this assessment period. Data were collected from one ambient monitoring

Figure 15 Roanoke River Subbasin 03-02-10



Legend

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

Aquatic Life Use Support Rating

- Impaired
- No Data
- Not Rated
- Supporting

NPDES Dischargers

- Major
- Minor

- Primary Roads
- Municipality
- County Boundary



Table 12 ROANOKE Subbasin 03-02-10

AU Number	Classification	Length/Area	Aquatic Life Assessment				Recreation Assessment				
			AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors	Sources
Cashie River											
24-2-(1a)	C;Sw	15.2 FW Miles	S	NA19	NCE						
	From source to Bertie County SR 1225			NB75	M	2004					
				NB75	M	2004					
24-2-(1b)	C;Sw	30.1 FW Miles	S								
	From Bertie County SR 1225 to a point 1 mile upstream from Bertie Co. SR 1500			NB76	N	2004					
				NB76	N	2004					
24-2-(11)	C;Sw	5.8 FW Miles	ND								
	From the Thoroughfare (The Gut between Cashie and Roanoke Rivers) to N.C. Hwy. 45										
24-2-(15)	B;Sw	1.2 FW Miles	ND								
	From N.C. Hwy. 45 to Albemarle Sound (Batchelor Bay)										
24-2-(9)	B;Sw	2.3 FW Miles	ND								
	From a point 1.0 mile upstream from Bertie County SR 1500 to the Thoroughfare (The Gut between Cashie and Roanoke Rivers)										
Hoggard Mill Creek											
24-2-6	C;Sw	7.4 FW Miles	S								
	From source to Cashie River			NB78	M	2004					
				NB78	M	2004					
Roquist Creek											
24-2-7	C;Sw	26.3 FW Miles	S								
	From source to Cashie River			NB80	N	2004					

Table 12 ROANOKE Subbasin 03-02-10

AU Number	Classification	Length/Area	Aquatic Life Assessment				Recreation Assessment			
			AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors
Use Categories:		Monitoring data type:		Results:		Use Support Ratings 2005:				
AL - Aquatic Life		NF - Fish Community Survey		E - Excellent		S - Supporting	I - Impaired			
REC - Recreation		NB - Benthic Community Survey		G - Good		NR - Not Rated				
		NA - Ambient Monitoring Site		GF - Good-Fair		NR*- Not Rated for Recreation (screening criteria exceeded)				
		NL- Lake Monitoring		F - Fair		ND-No Data Collected to make assessment				
				P - Poor						
				NI - Not Impaired						
Miles/Acres		m- Monitored		N- Natural		Results				
FW- Fresh Water		e- Evaluated		M - Moderate		CE-Criteria Exceeded > 10% and more than 10 samples				
				S-Severe		NCE-No Criteria Exceeded				
						ID- Insufficeint Data Available				

Aquatic Life Rating Summary

Recreation Rating Summary

Fish Consumption Rating Summary

S m 79.0 FW Miles
ND 77.1 FW Miles

S m 15.2 FW Miles
ND 140.9 FW Miles

I e 156.1 FW Miles

station and one fish tissue site. Refer to the *2005 Roanoke River Basinwide Assessment Report* at <http://www.esb.enr.state.nc.us/bar.html> and Appendix IV for more information on monitoring.

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

10.2 Use Support Assessment Summary

Use support ratings were assigned for waters in subbasin 03-02-10 in the aquatic life, recreation, fish consumption and water supply categories. All waters are Impaired on an evaluated basis in the fish consumption category because of fish consumption advice that applies to the entire basin. In the water supply category, all waters are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants.

All 79 stream miles (50.6 percent) monitored in the aquatic life category and 15.2 stream miles (9.7 percent) monitored in the recreation category are rated as Supporting. All other surface waters within this basin are Impaired on an evaluated basis for mercury based on an advice by NC Department of Health and Human Services. Refer to Table 12 for a summary of use support ratings by category for waters in the subbasin 03-02-10.

10.3 Status and Recommendations of Previously and Newly Impaired Waters

The following waters were either identified as Impaired in the previous basin plan (2001) 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 assessment unit number (AU#). Information regarding 303(d) listing and reporting methodology is presented in Appendix VII.

10.3.1 Cashie River [AU# 24-2-(1)a, 24-2-(1)b, 24-2-(9), 24-2-(11), & 24-2-(15)]

2001 Recommendations

DWQ will continue to monitor fish tissue in the Cashie River and will work to identify sources of mercury. Given the global scale of mercury cycling, it may be difficult for DWQ to recognize significant reductions of mercury in fish over the short-term.

Current Status and 2006 Recommendations

Cashie River [AU# 24-2-(1)a], from source to Bertie County SR 1225 (15.2 miles), is Supporting aquatic life based on a Moderate Stress benthic community bioclassification at site NB75. The habitat scores differed considerably from 94 in 1999 versus 78 in 2004. The habitat score

decreased due to both a homogeneous benthic substrate of detritus and to the lack of favorable reach available for colonization. Low water depths in 1999 versus high levels in 2004 may account for some of the differences. Beaver activity was also observed at this site. This decline appeared to result in the lower number of macroinvertebrate taxa, with 29 collected in 2004 versus 41 in 1999. The biotic index of both samples was identical in both years (7.5) suggesting that water quality may not have decreased as much as the loss of nearly 30 percent of the taxa may suggest. Although a 50 percent reduction in EPT taxa, from six in 1999 to three in 2004, was observed, there was only a decrease of three (from 10 to seven) in EPT abundance. This site has been sampled four times (1983 and 1984 in summer; 1999 and 2004 in winter) with the 2004 results showing the lowest number of total taxa thus far. This is a concern since swamp site diversity is nearly always greater in the winter when flow is sustained than in summer, when they are stagnant. However, high water may have limited the collection effort. One species, *Tvetenia* sp NC (Epler), which is not commonly encountered in North Carolina was collected in 2004. A tolerant species of heavily polluted conditions, *Procladius* sp., was collected in 2004 and not collected in 1999. But, as in 1999, the overall benthic macroinvertebrate fauna does not signal a specific nutrient-loading problem from the upstream Lewiston/Woodville WWTP.

This section of the Cashie River is Supporting the recreation category because the fecal coliform bacteria screening criteria was not exceeded at site NA19.

The Cashie River [AU# 24-2-(1)b], from Bertie County SR 1225 to a point 1 mile upstream from Bertie Co. SR 1500 (30.1 miles), is Supporting aquatic life based on a Natural benthic community bioclassification at site NB76.

All waters within the Roanoke River basin are Impaired on an evaluated basis in the fish consumption category. This is based on a fish consumption advise from the NC Department of Health and Human Services. For more information on fish consumption advisories and advice, contact NC DHHS. Largemouth bass, sunfish, yellow perch, and catfish samples were collected from the Cashie River near Windsor during 2003 and analyzed for mercury contamination. The samples were collected as part of an eastern North Carolina mercury assessment. Largemouth bass, yellow perch and redear sunfish (10 of 23 samples) contained mercury concentrations exceeding the state criteria of 0.4 ppm. Mercury levels in all samples ranged from 0.09 to 1.5 ppm. This data is used to support the NC DHHS mercury advice for this region. In 2004, DWQ developed a *draft* Mercury TMDL for the Cashie River. The *draft* TMDL has been submitted to the USEPA for final approval. To view the *draft* TMDL visit: http://h2o.enr.state.nc.us/tmdl/TMDL_list.htm. DWQ will continue to monitor Cashie River.

10.4 Status and Recommendations for Waters with Noted Impacts

The surface waters discussed in this section 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. Nonpoint source program agency contacts are listed in Appendix VIII.

10.4.1 Hoggard Mill Creek [AU# 24-2-6]

Current Status and 2006 Recommendations

Hoggard Mill Creek, from source to Cashie River (7.4 miles), is Supporting aquatic life due to a Moderate Stress bioclassification at site NB78. The effects of Hurricane Isabel were very apparent at this site, especially the considerable blow down of the riparian area. A more pollution tolerant benthic community and fewer total taxa were found in 2004 (30) than 1999 (46). Only three of the seven EPT taxa collected in 1999 were found in 2004. DWQ will continue to monitor Hoggard Mill Creek.

10.5 Additional Water Quality Issues within Subbasin 03-02-10

10.5.1 Roquist Creek [AU# 24-2-7] and Indian Creek [AU# 23-47]

Current Status

Roquist Creek [AU# 24-2-7] from source to Cashie River (26.3 miles) is supporting for aquatic life based on a Natural swamp bioclassification at site NB80. This swamp appears to be stable with no change in the biotic index from 1999 to 2004.

Water Quality Initiatives

The NCEEP is facilitating the transfer of the Roquist Pocosin tract from the NC Department of Transportation to the Wildlife Resource Commission. The tract provides water quality protection to Indian Creek [AU# 23-47 (in subbasin 03-02-09)] and Roquist Creek [AU# 24-2-7]. The Roquist Pocosin is not actually a pocosin but rather a large area of nonriverine swamp forest and nonriverine wet hardwood forest, both of which are significantly rare wetland communities. The tract contains 3,776 acres of these wetland types in various stages of succession. At least several hundred acres of nonriverine wet hardwood forest is entirely intact, not having been timbered in over 90 years. In addition, the EEP is carrying out restoration of 52 acres of nonriverine wet hardwood forest in the Roquist Pocosin, which drain to Indian Creek and Roquist Creek. The restoration involves removal of roads to restore hydrology and replanting of native wetland species.

