

# Chapter 7

## Roanoke River Subbasin 03-02-07

Including: Smith Creek, Sixpound Creek and Lake Gaston

### 7.1 Subbasin Overview

#### *Subbasin 03-02-07 at a Glance*

##### **Land and Water Area**

Total area:	195 mi <sup>2</sup>
Land area:	174 mi <sup>2</sup>
Water area:	21 mi <sup>2</sup>

##### **Population Statistics**

2000 Est. Pop.:	9,252 people
Pop. Density:	48 persons/mi <sup>2</sup>

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

Forest/Wetland:	75.1%
Surface Water:	10.9%
Urban:	0.1%
Cultivated Crop:	7.4%
Pasture/ Managed Herbaceous:	6.4%

##### **Counties**

Warren, Northampton and Halifax

##### **Municipalities**

Portions of Norlina, Macon and Littleton

##### **Monitored Stream Statistics**

###### **Aquatic Life**

Total Streams:	23.1 mi/11939.2 ac
Total Supporting:	7.9 mi
Total Impaired:	15.2 mi
Total Not Rated:	11939.2 ac

###### **Recreation**

Total Streams:	3.0 mi
Total Supporting:	3.0 mi

This subbasin consists mainly of Lake Gaston (Reservoir) and many small tributaries that flow to the reservoir. Urbanized land represents the least amount of land cover in the entire basin at only 0.1 percent. The majority of the subbasin lies within Warren County. Warren County is predicted to grow by 17 percent by the year 2020. Refer to Appendix I for more information regarding population growth and trends.

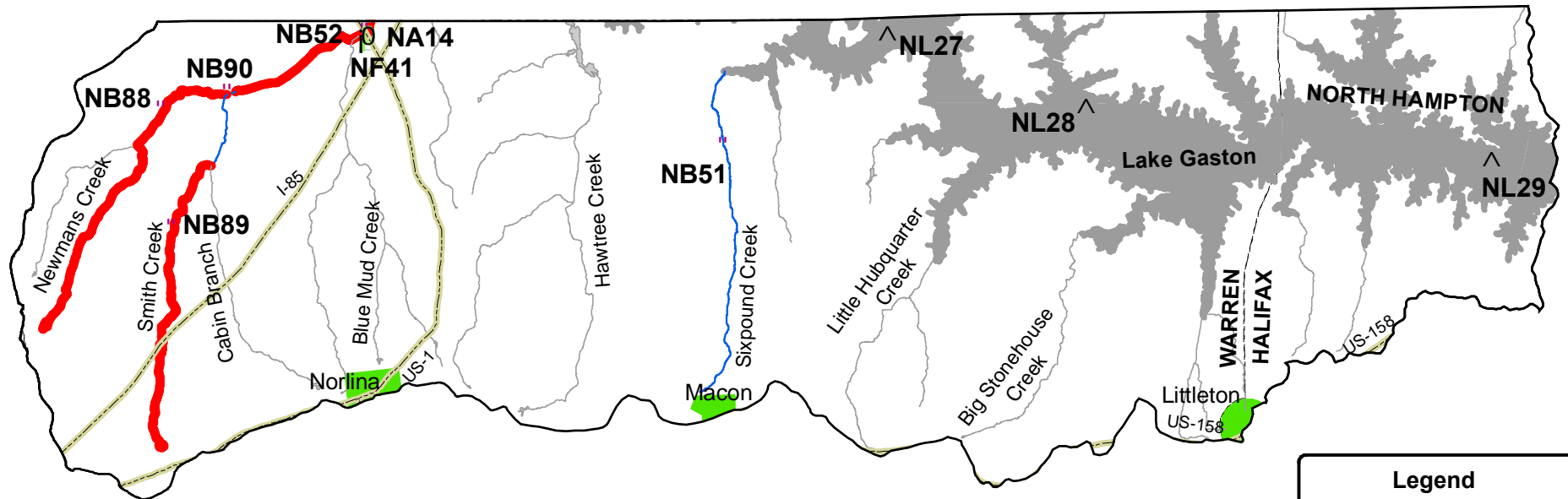
Several water quality improvement programs have been implemented in this subbasin. The NC Agriculture Cost Share Program (NCACSP), which helps reduce agricultural runoff by helping farmers implement best management practices, is one of these programs. Within this subbasin, the NCACSP provided \$144,924 towards the application of sediment and nutrient reduction practices and elimination of livestock stream access. For more information on this and other programs, refer to recommendations throughout this chapter as well as in Chapters 16 and 20.

There are no NPDES wastewater discharge permits issued in this subbasin. Refer to Appendix VI for identification and more information on individual NPDES permit holders. Seven registered animal operations (3 cattle and 4 swine) are located in this subbasin. Refer to Chapter 16 for more information regarding animal operations within this basin.

A map including the locations of the water quality monitoring stations is presented in Figure 11. Table 9 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.

Five benthic macroinvertebrate community samples and one fish community sample (Figure 11 and Table 9) were collected during this assessment period. Data were also collected from one ambient monitoring station and one lake (3 monitoring stations). 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.

# Figure 11 Roanoke River Subbasin 03-02-07



**Legend**

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

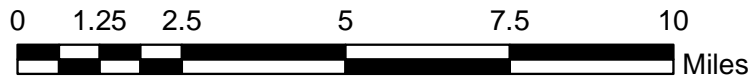
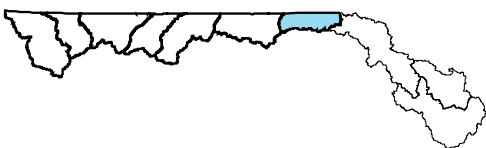
**Aquatic Life Use Support Rating**

- Impaired
- No Data
- Not Rated
- Supporting

**NPDES Dischargers**

- Major
- Minor

- Primary Roads
- Municipality
- County Boundary



**Table 9 ROANOKE Subbasin 03-02-07**

AU Number	Classification	Length/Area	Aquatic Life Assessment				Recreation Assessment				
			AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors	Sources
<b>Newmans Creek (Little Deep Creek)</b>											
23-10-2	C	6.1 FW Miles	<b>I</b>								
	From source to Smith Creek				NB88	F	2004				Habitat Degradation Unknown
<b>ROANOKE RIVER (Lake Gaston below normal full power pool elevation 200 MSL)</b>											
23-(12)	WS-V,B	7,964.8 FW Acres	<b>NR</b>		NL28	ID					
	From North Carolina-Virginia State Line to a line across Lake Gaston following the Warren-Northampton County Line				NL27	ID					
23-(20.2)	WS-IV,B	3,974.4 FW Acres	<b>NR</b>		NL29	ID					
	From a line across Lake Gaston following the Warren-Northampton County Line to a line across Lake Gaston 0.5 mile upstream of Lake Gaston Dam										
<b>Sixpound Creek</b>											
23-13	C	6.3 FW Miles	<b>S</b>								
	From source to Lake Gaston, Roanoke River				NB51	GF	2004				Habitat Degradation Unknown
<b>Smith Creek</b>											
23-10a	C	6.1 FW Miles	<b>I</b>								
	From source to Cabin Branch				NB89	F	2004				Habitat Degradation Unknown
23-10b	C	1.6 FW Miles	<b>S</b>								
	From Cabin Branch to SR1208				NB90	GF	2004				
23-10c	C	3.0 FW Miles	<b>I</b>		NA14	CE	Low DO 12.5	<b>S</b>	NA14	NCE	Habitat Degradation Impoundment
	From SR1208 to North Carolina-Virginia State Line				NB52	F	2004				Low Dissolved Oxygen Unknown
					NF41	F	2004				

**Table 9 ROANOKE Subbasin 03-02-07**

AU Number	Classification	Length/Area	Aquatic Life Assessment				Recreation Assessment			
			AL Rating	Station	Result	Year/ Parameter % Exc	REC Rating	Station	Result	Stressors
<b>Use Categories:</b>		<b>Monitoring data type:</b>		<b>Results:</b>		<b>Use Support Ratings 2005:</b>				
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						
<b>Miles/Acres</b>		m- Monitored		N- Natural		<b>Results</b>				
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 7.9 FW Miles  
 I m 15.2 FW Miles  
 NR m 11,939.2 FW Acres  
 ND 73.3 FW Miles

S m 3.0 FW Miles  
 ND 93.4 FW Miles  
 ND 11,939.2 FW Acres

I e 96.4 FW Miles  
 I e 11,939.2 FW Acres

The following sections identify waters by their 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 DWQ index number indicates that the assessment unit is smaller than the DWQ index segment. No letter indicates that the assessment unit and the DWQ index segment are the same.

## **7.2 Use Support Assessment Summary**

Use support ratings were assigned for waters in subbasin 03-02-07 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 basin wide fish consumption advice. In the water supply category, all waters are Supporting on an evaluated basis based on reports from DEH regional water treatment plant consultants.

There were 23.1 stream miles (24 percent) and 11,939.2 freshwater acres (100 percent) monitored during this assessment period in the aquatic life category. Of these, 15.2 stream miles (15.8 percent) are Impaired. In the recreation category, 3.0 stream miles (3.1 percent) were monitored and classified as Supporting. Refer to Table 9 for a summary of use support ratings for waters in subbasin 03-02-07.

## **7.3 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. Each is identified by an assessment unit number (AU#). Information regarding 303(d) listing and reporting methodology is presented in Appendix VII.

### **7.3.1 Smith Creek [AU#23-10a, b & c] watershed, Newmans Creek [AU#23-10-2]**

#### *2001 Recommendations*

Smith Creek was Impaired in the 2001 basin plan. There are no NPDES permitted dischargers in the Smith Creek watershed; therefore most, if not all, impacts to this stream are from nonpoint sources of pollution. DWQ will continue to work cooperatively with agencies that administer sediment control programs in order to maximize effectiveness of these programs and to take appropriate enforcement action to protect or restore water quality. However, more voluntary implementation of BMPs on agricultural lands is needed in order to substantially improve water quality in this watershed. Funding is available through numerous federal and state agencies for farmers to restore and/or protect water quality on their land.

Current Status

Smith Creek [AU#23-10a], from source to Cabin Branch (6.1 miles) is Impaired for aquatic life due to a Fair benthic community bioclassification at site NB89. Smith Creek [AU#23-10b], from

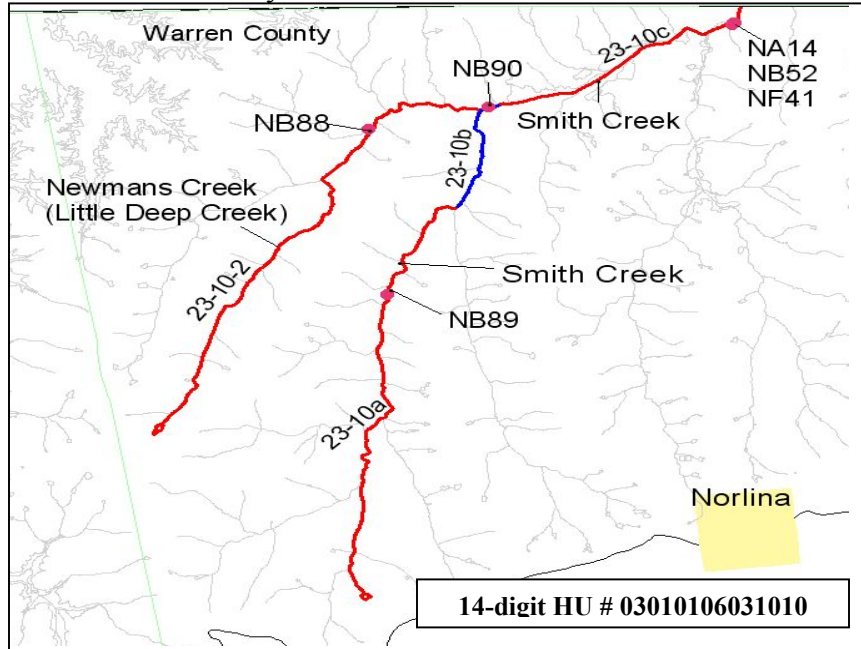


Figure 12 - Map of Smith Creek Watershed

Cabin Branch to SR 1208 (1.6 miles) is Supporting aquatic life due to a Good-Fair benthic community bioclassification at site NB90. Smith Creek [AU#23-10c], from SR 1208 to North Carolina-Virginia State Line (3.0 miles) is Impaired for aquatic life due to Fair fish and benthic community bioclassifications at sites NF41 and NB52 and at site NA14 where 12.5 percent of the samples were below the dissolved oxygen criteria. See Figure 12 for Smith Creek watershed map.

Newmans Creek (Little Deep Creek) [AU#23-10-2], from source to Smith Creek (6.1 miles) is Impaired for aquatic life due to a Fair benthic community bioclassification at site NB88 (Figure 12).

The Smith Creek watershed was evaluated for a 303(d) related stressor study in 2004 that involved a more intensive sampling regime. Physical, chemical and biological (benthos) parameters were assessed within the watershed. The study indicated low dissolved oxygen values, sedimentation, nutrient enrichment, lack of flow or no flow and reduced habitat. However, it was noted that site NB90 (AU# 23-10b) had the highest habitat score, suggesting that the riparian and instream habitats of the other sites may be limiting the benthic communities at those sites since land use is similar among all sites. In addition, this site had a high species richness, thus showing signs of possible water quality improvement. Newmans Creek will be added to the 2008 303(d) list.

### 2006 Recommendations and Water Quality Initiatives

DWQ will continue to monitor Smith Creek and Newmans Creek. With the many efforts from the Warren County Soil and Water Conservation District (SWCD) projects in this watershed, water quality is expected to improve by the end of the next assessment period (August 2009). In March 2005, Warren County SWCD received an EPA Section 319 grant totaling over \$48,000 to restore Smith Creek by targeting nonpoint source pollution and implementing BMPs. Such practices include livestock exclusion, heavy use protection and erosion control. In addition, Warren County SWCD was granted approximately \$150,000 to carry out their projects in the Smith Creek watershed over the next three years. For more information on the Smith Creek project contact the Warren County SWCD.

## **7.4 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 to facilitate water quality improvements. DWQ will notify local agencies (Chapter 20) 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 contacts are listed in Appendix VIII.

### **7.4.1 Sixpound Creek (AU# 23-13)**

#### Current Status and 2006 Recommendations

Sixpound Creek, from source to Lake Gaston, Roanoke River (6.3 miles), is Supporting based on a Good-Fair benthic community bioclassification at site NB51. Poor habitat with very few pools and riffles as well as eroding banks was noted at this site. Water quality and habitat conditions are likely influenced by nonpoint source runoff from agriculture and large amounts of (not forested) land. BMPs are needed to improve water quality. DWQ will continue to monitor Sixpound Creek.

### **7.4.2 Roanoke River (Lake Gaston below normal full power pool elevation 200 MSL) [AU# 23-(12) & 23-(20.2)]**

#### Current Status and 2006 Recommendation

Lake Gaston [AU# 23-(12)], from North Carolina-Virginia State Line to a line across Lake Gaston following the Warren-Northampton County Line (7,964.8 acres), is Not Rated for aquatic life due to insufficient number of samples taken at sites NL27 and NL28. Lake Gaston [AU# 23-(20.2)] from a line across Lake Gaston following the Warren-Northampton County Line to a line across Lake Gaston 0.5 mile upstream of Lake Gaston Dam (3,974.4 acres) is Not Rated for aquatic life due to insufficient number of samples taken at site NL29.

Lake Gaston was monitored by DWQ in June, July and August of 2004. Moderate nutrient and chlorophyll *a* levels were found. Assessment of parameters related to biological productivity indicated mesotrophic conditions and moderate biological productivity. This lake has generally rated as mesotrophic since sampling was first performed in 1981. The aquatic weed *Hydrilla*

was observed in the lake in 2004, especially near the shoreline in the upstream part of the lake. Aquatic weed control measures have been conducted in recent years. These measures included the stocking of grass carp and chemical spraying (Rob Emens, N.C. Division of Water Resources, personal communication). The spraying is funded by the Lake Gaston Association and is being conducted in the coves. For more information on Lake Gaston Association's weed control projects, visit their website at: <http://www.lakegastonassoc.com/>. The aquatic weeds are problematic; and a more comprehensive survey of the coverage is recommended.