

Chapter 2 - Savannah River Subbasin 03-13-02 Includes the Horsepasture and Toxaway River Watersheds

2.1 Water Quality Overview

Subbasin 03-13-02 at a Glance

Land and Water

Land area:	98 mi ²
Stream miles:	99.6
Lake acres:	1,345

Population Statistics

1990 Est. pop.:	2,310 people
Pop. density:	24 persons/mi ²

Land Cover (%)

Forest/Wetland:	95.6
Surface Water:	2.1
Urban:	0.3
Cultivated Crop:	0.1
Pasture/ Managed Herbaceous:	1.9

The Horsepasture and Toxaway Rivers originate in Jackson and Transylvania counties and flow in a southeastern direction toward South Carolina's Lake Jocassee. The Horsepasture falls more than 2,000 feet in the North Carolina portion of the watershed and contains several spectacular waterfalls. Other tributaries in this subbasin include the Whitewater and Thompson Rivers. A map of this subbasin including water quality sampling locations is presented as Figure B-3.

Bioclassifications for sample locations are presented in Table B-4. Use support ratings for each applicable category in this subbasin are summarized in Table B-5. Refer to Appendix III for a complete listing of monitored waters and further information about use support ratings.

Most of the land within this subbasin is forested (96 percent). Although only a small portion of primarily the

Whitewater River watershed lies within the Nantahala National Forest, the new Gorges State Park and Toxaway Game Lands encompass 10,000 acres in this subbasin (mostly the Toxaway River watershed). There are no municipalities; however, several residential and resort communities exist near Sapphire and Lake Toxaway.

Water quality in this subbasin is generally good to excellent. Nearly all waters are classified trout waters. Several streams including Bearwallow Creek and a portion of the Whitewater River are High Quality Waters. Additionally, 4.5 miles of the Horsepasture River are both a State Natural and Scenic River and a National Wild and Scenic River.

There are 12 permitted dischargers in this subbasin; all but one were in compliance with permit limits over the most recent review period. Carolina Mountain Spring Water Company experienced chronic problems meeting BOD permit limits in 1999. The facility changed detergents used in the bottle washing operation and the problem appears to have been corrected. The discharge is currently in compliance. Two facilities are required to monitor the toxicity of their discharge: Carolina Mountain Spring Water Company and the Wade Hampton Club. There were no indications of toxicity problems during the most recent review period.

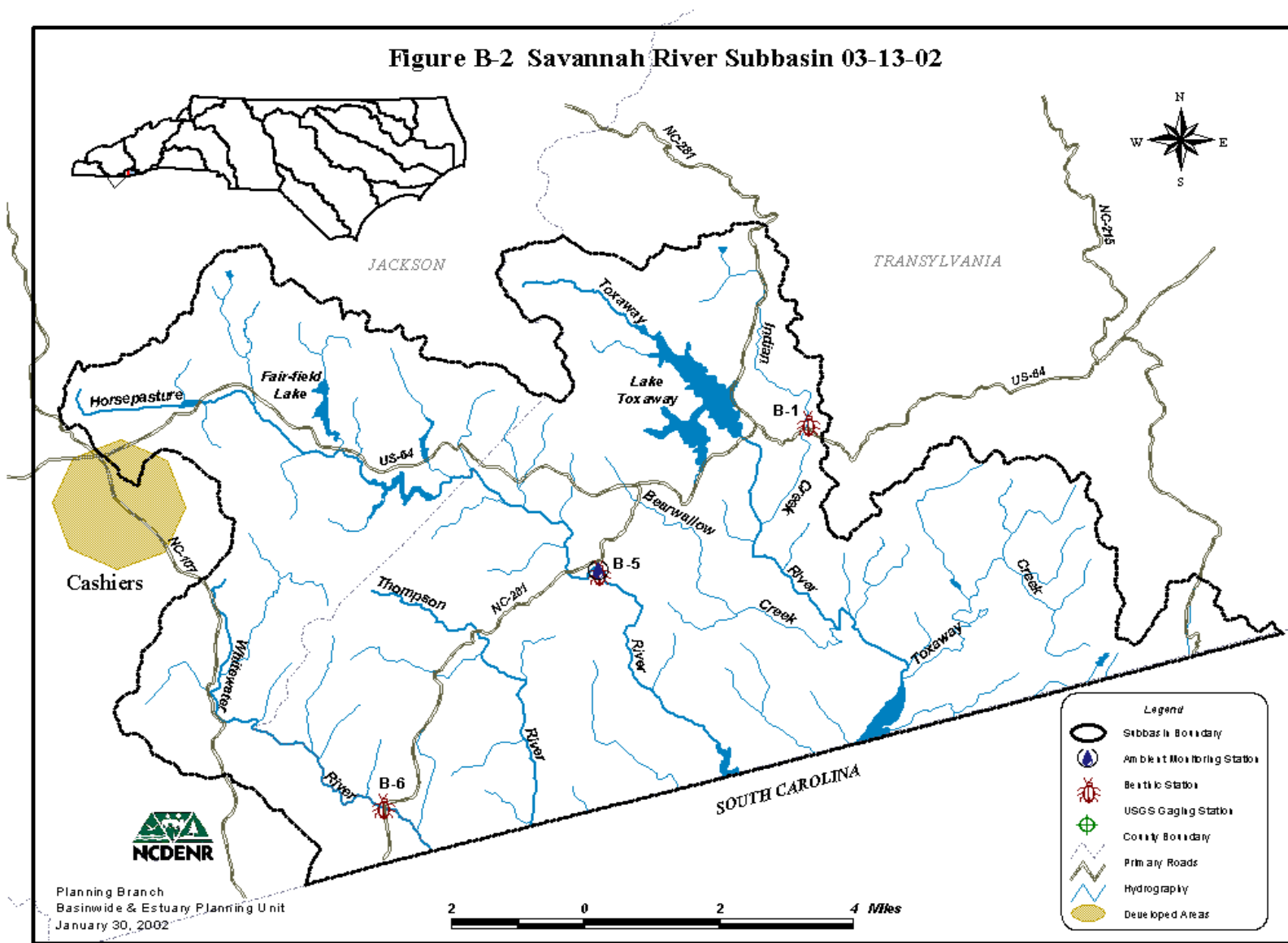


Figure B-3 Sampling Locations within Subbasin 03-13-02

Table B-4 DWQ Monitoring Locations and Benthic Macroinvertebrate Bioclassifications (1999) for Savannah River Subbasin 03-13-02

Site	Stream	County	Location	Bioclassification
<i>Benthic Macroinvertebrates</i>				
B-1*	Indian Creek	Transylvania	US 64	Good
B-5*	Horsepasture River	Transylvania	NC 281	Excellent
B-6*	Whitewater River	Transylvania	NC 281	Excellent
<i>Ambient Monitoring</i>				
H6000000	Horsepasture River	Transylvania	NC 281 near Union	N/A

* Historical data are available; refer to Appendix II.

The benthic macroinvertebrate bioclassification for Horsepasture River improved to Excellent under lower flow conditions in 1999, compared with the Good bioclassification the river received under high flow conditions in 1994. These data suggest that what impacts to water quality do exist are primarily from nonpoint source pollution. There has been a fairly wide fluctuation in bioclassifications for the river since sampling began in 1984. Impacts to aquatic life in the Horsepasture River watershed are discussed further on page 67.

An Excellent bioclassification was again assigned for the Whitewater River. Indian Creek, a major tributary to the Toxaway River, again received a Good bioclassification. Access to the Toxaway River is limited and difficult. As a result, few data are available and DWQ did not sample it in 1999. However, tributary data are Excellent to Good. Further discussion of instream flow issues below the Lake Toxaway dam is presented on page 68.

Monthly water chemistry samples are collected from one location in this subbasin on the Horsepasture River. These data have indicated good water quality with few violations of water quality standards.

For more detailed information on sampling and assessment of streams and lakes in this subbasin, refer to the *Basinwide Assessment Report – Savannah River Basin* (NCDENR-DWQ, March 2000), available from DWQ Environmental Sciences Branch at <http://www.esb.enr.state.nc.us/bar.html> or by calling (919) 733-9960.

Table B-5 Use Support Ratings Summary (2000) for Monitored and Evaluated Waters in Savannah River Subbasin 03-13-02

Use Support Category	FS	PS	NS	NR	Total ¹
Aquatic Life/ Secondary Recreation	39.1 mi 0.0 ac	0.0 mi 0.0 ac	0.0 mi 0.0 ac	60.5 mi 1,345 ac	99.6 mi 1,345 ac
Fish Consumption	99.6 mi 1,345 ac	0.0 mi 0.0 ac	0.0 mi 0.0 ac	0.0 mi 0.0 ac	99.6 mi 1,345 ac
Primary Recreation	4.6 mi 0.0 ac	0.0 mi 0.0 ac	0.0 mi 0.0 ac	6.7 mi 1,345 ac	11.3 mi 1,345 ac

¹ Total stream miles/acres assigned to each use support category in this subbasin. Column is not additive because some stream miles are assigned to more than one category.

2.2 Status and Recommendations for Previously Impaired Waters

This section reviews use support and recommendations detailed in the 1997 basinwide plan, reports status of progress, gives recommendations for the next five-year cycle, and outlines current projects aimed at improving water quality for each water. The 1997 Savannah River Basinwide Plan did not identify any impaired stream segments in this subbasin.

2.3 Status and Recommendations for Newly Impaired Waters

No additional stream segments in this subbasin were rated as impaired based on recent DWQ monitoring (1994-1999). Part 2.5 below discusses specific streams where water quality impacts have been observed.

2.4 303(d) Listed Waters

There are currently no impaired waters in this subbasin on the state's year 2000 303(d) list. Refer to Appendix IV for more information on the state's 303(d) list and listing requirements.

2.5 Other Water Quality Concerns and Recommendations

Based on DWQ's most recent use support assessment, the surface waters discussed in this section are not impaired. However, notable water quality impacts were documented during this process. While these waters are not considered impaired, attention and resources should be focused on these waters over the next basinwide planning cycle to prevent additional degradation or facilitate water quality improvement. A discussion of how impairment is determined can be found on page 35.

Although no action is required for these streams, voluntary implementation of BMPs is encouraged and continued monitoring is recommended. DWQ will notify local agencies and others of water quality concerns discussed below and work with them to conduct further monitoring and to locate sources of water quality protection funding. Additionally, education on

local water quality issues is always a useful tool to prevent water quality problems and to promote restoration efforts. Nonpoint source program agency contacts are listed in Appendix VI.

2.5.1 Horsepasture River Headwaters

Although the Horsepasture River received an Excellent bioclassification in 1999, benthic macroinvertebrate data show a fairly wide fluctuation over the past fifteen years (Table B-6). The Horsepasture River watershed is still largely forested; however, impacts from development were observed in the 1980s, and impacts from nonpoint source pollution are still somewhat evident in years of higher flow.

Table B-6 Flow and Bioclassifications for the Horsepasture River at NC 281

Year	Flow	Bioclassification
1984	Normal	Good-Fair
1985	Normal	Fair
1986	Low	Good
1987	Low	Good
1989	High	Good-Fair
1994	High	Good
1999	Low	Excellent

Development is still occurring in the watershed, especially on tributaries. Although no water quality data have been collected by DWQ for smaller streams, further development in this area presents the potential for habitat degradation. Land use activities have contributed to lower bioclassifications in the Horsepasture River in the past; therefore, smaller tributaries could be more heavily impacted. If water quality in these smaller tributary streams deteriorates, eventually the Horsepasture River will be impacted.

Hogback and Little Hogback Creeks

Citizens at the public forum held in July 2001 expressed concerns about well drilling causing turbidity as well as other sedimentation problems in the Hogback and Little Hogback Creek watersheds. Turbidity problems, such as those brought forward at the public forum, should be immediately reported to the Asheville Regional Office of DWQ. Erosion and sedimentation problems should be reported to the Jackson County Erosion Control Officer or to the Asheville Regional Office of the Division of Land Resources (outside of Jackson County). Appendix VI lists contact information for these offices.

Recommendations

Growth management in this area within the next five years will be imperative in order to maintain good water quality in the Chattooga River headwaters. Growth management can be defined as the application of strategies and practices that help achieve sustainable development in harmony with the conservation of environmental qualities and features of an area. On a local

level, growth management often involves planning and development review requirements that are designed to maintain or improve water quality. For general recommendations on habitat degradation and best management practices, please refer to page 46.

Additional sampling is also recommended. During the next period of intensive biological sampling in the basin (2003), DWQ will attempt to sample the Horsepasture River above Sapphire/Lupton Lake in addition to the regular station at NC 281, in order to better evaluate potential impacts from the developed areas in and around the Sapphire community and Highway 64.

There are several parts of the upper Horsepasture River and its tributaries, including Hogback and Little Hogback Creeks, that could benefit greatly from riparian area restoration and protection. An organized group of dedicated citizens can be one of the most effective tools for affecting water quality improvement and protection in a watershed.

2.5.2 Toxaway River

Several years prior to this basinwide plan, a group of citizens expressed concerns about the Toxaway River downstream of Lake Toxaway. An instream flow study was requested under the Dam Safety Act, and the Division of Water Resources subsequently conducted the study and provided recommendations for a minimum release below the dam. Results of the study indicated that there were both quantity and temperature concerns below the dam during the summer months. DWR recommended a deep water withdrawal (33 feet below the lake's surface based on a temperature profile) between April 1 and October 31 annually. The minimum release must be 12.5 cfs or equal to inflow to the lake (based on a flow gage on the Toxaway River, which was adjusted based on the entire watershed size above the lake), whichever is less. The recommendations of the instream flow study were implemented in 2001.

Lack of sufficient flow, especially in light of elevated water temperatures, has likely impacted aquatic life in the Toxaway River historically. Because access to the river has been limited and difficult, DWQ has never sampled this stream and it is currently not rated. However, much of the lower Toxaway River watershed is now part of Gorges State Park and access will likely improve over time.

Recommendations

During the next period of intensive biological sampling in the basin (2003), DWQ will attempt to sample the Toxaway River. DWQ will also work with NC Parks and Recreation staff to provide more detailed water quality information and recommendations in the 2007 Savannah River basin plan.

2.5.3 Thompson River

Impacts to water quality in the Thompson River were observed downstream of a trout farm in 1994. The trout farm managers began working with the Natural Resources Conservation Service to improve the waste management system, and the 1997 basin plan recommendation was to resample Thompson River below the facility to reflect any water quality improvements.

DWQ was not able to sample Thompson River during the 1999 basinwide sampling due to above average flows and difficulties with access. Therefore, the stream is currently not rated. DWQ will work to resolve access problems and attempt to sample Thompson River below the trout farm operation during the next basinwide planning cycle.