Chapter 3 -
Summary of Water Quality Information for the Watauga River Basin

3.1 General Sources of Pollution

Human activities can negatively impact surface water quality, even when the activity is far removed from the waterbody. With proper management of wastes and land use activities, these impacts can be minimized. Pollutants that enter waters can be grouped into two general categories: *point sources* and *nonpoint sources*.

Point Sources

Piped discharges from:

- Municipal wastewater treatment plants
- Industrial facilities
- Small package treatment plants
- Large urban and industrial stormwater systems

Point sources are typically piped discharges and are controlled through regulatory programs administered by the state. All regulated point source discharges in North Carolina must apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit from the state.

Nonpoint Sources

- Construction activities
- Roads, parking lots and rooftops
- Agriculture
- Failing septic systems and straight pipes
- Timber harvesting
- Hydrologic modifications

Nonpoint sources are from a broad range of land use activities. Nonpoint source pollutants are typically carried to waters by rainfall, runoff or snowmelt. Sediment and nutrients are most often associated with nonpoint source pollution. Other pollutants associated with nonpoint source pollution include fecal coliform bacteria, oil and grease, pesticides and any other substance that may be washed off the ground or deposited from the atmosphere into surface waters.

Unlike point sources of pollution, nonpoint pollution sources are diffuse in nature and occur intermittently, depending on rainfall events and land disturbance. Given the diffuse nature of nonpoint source pollution, it is difficult and resource intensive to quantify nonpoint contributions to water quality degradation in a given watershed. While nonpoint source pollution control often relies on voluntary actions, the state has many programs designed to reduce nonpoint source pollution.

Every person living in or visiting a watershed contributes to impacts on water quality. Therefore, each individual should be aware of these contributions and take actions to reduce them.

Cumulative Effects

While any one activity may not have a dramatic effect on water quality, the cumulative effect of land use activities in a watershed can have a severe and long-lasting impact.

3.2 Description of Surface Water Classifications and Standards

3.2.1 Program Overview

North Carolina's Water Quality Standards program adopted classifications and water quality standards for all the state's river basins by 1963. The program remains consistent with the Federal Clean Water Act and its amendments. Water quality classifications and standards have also been modified to promote protection of surface water supply watersheds, high quality waters, and the protection of unique and special pristine waters with outstanding resource values.

3.2.2 Surface Water Classifications

All surface waters in the state are assigned a *primary* classification that is appropriate to the best uses of that water. In addition to primary classifications, surface waters may be assigned a *supplemental* classification. Most supplemental classifications have been developed to provide special protection to sensitive or highly valued resource waters. Table A-19 briefly describes the best uses of each classification. A full description is available in the document titled: *Classifications and Water Quality Standards Applicable to Surface Waters of North Carolina*. Information on this subject is also available at DWQ's website: http://h2o.enr.state.nc.us/wqhome.html.

Table A-16 Primary and Supplemental Surface Water Classifications

PRIMARY FRESHWATER AND SALTWATER CLASSIFICATIONS	
Class	**Best Uses**
C and SC	Aquatic life propagation/protection and secondary recreation.
B and SB	Primary recreation and Class C uses.
SA	Waters classified for commercial shellfish harvesting.
WS	*Water Supply watershed*. There are five WS classes ranging from WS-I through WS-V. WS classifications are assigned to watersheds based on land use characteristics of the area. Each water supply classification has a set of management strategies to protect the surface water supply. WS-I provides the highest level of protection and WS-IV provides the least protection. A Critical Area (CA) designation is also listed for watershed areas within a half-mile and draining to the water supply intake or reservoir where an intake is located.
SUPPLEMENTAL CLASSIFICATIONS	
Class	**Best Uses**
Sw	*Swamp Waters*: Recognizes waters that will naturally be more acidic (have lower pH values) and have lower levels of dissolved oxygen.
Tr	*Trout Waters*: Provides protection to freshwaters for natural trout propagation and survival of stocked trout.
HQW	*High Quality Waters*: Waters possessing special qualities including excellent water quality, Native or Special Native Trout Waters, Critical Habitat areas, or WS-I and WS-II water supplies.
ORW	*Outstanding Resource Waters*: Unique and special surface waters which are unimpacted by pollution and have some outstanding resource values.
NSW	*Nutrient Sensitive Waters*: Areas with water quality problems associated with excessive plant growth resulting from nutrient enrichment.

* Primary classifications beginning with "S" are assigned to saltwaters.

Statewide Water Quality Standards

Each primary and supplemental classification is assigned a set of water quality *standards* that establish the level of water quality that must be maintained in a waterbody to support the uses associated with each classification. Some of the standards, particularly for HQW and ORW waters, outline protective management strategies aimed at controlling point and nonpoint source pollution. These strategies are discussed briefly below. The standards for C waters establish the basic protection level for all state surface waters. All of the other primary and supplemental classifications have more stringent standards than for C, and therefore, require higher levels of protection.

Some of North Carolina's surface waters are relatively unaffected by pollution sources and have water quality higher than the standards that are applied to the majority of the waters of the state. In addition, some waters provide habitat for sensitive biota such as trout, juvenile fish, or rare and endangered aquatic species. These waters may be designated as HQW or ORW.

Trout Waters

Different water quality standards for some parameters, such as dissolved oxygen, temperature and turbidity, have been developed to protect freshwaters for natural trout propagation and survival of stocked trout. These water quality standards result in more restrictive limits for wastewater discharges to trout waters (Tr). There are no watershed development restrictions associated with the Tr classification. However, the NC Division of Land Resources does require a 25-foot vegetated buffer between Tr waters and graded construction sites.

A state fishery management classification, Designated Public Mountain Trout Waters, is administered by the NC Wildlife Resources Commission. It provides for public access to streams for fishing and regulates fishing activities (seasons, size limits, creel limits, and bait and lure restrictions). Although many of these waters are also classified Tr by DWQ, this is not the same classification.

High Quality Waters

Special HQW protection management strategies are intended to prevent degradation of water quality below present levels from both point and nonpoint sources. HQW requirements for new wastewater discharge facilities and facilities which expand beyond their currently permitted loadings address oxygen-consuming wastes, total suspended solids, disinfection, emergency requirements, volume, nutrients (in nutrient sensitive waters) and toxic substances.

For nonpoint source pollution, development activities which require a Sedimentation and Erosion Control Plan in accordance with rules

Criteria for HQW Classification

- Waters rated as Excellent based on DWQ's chemical and biological sampling.
- Streams designated as native and special native trout waters or primary nursery areas by the Wildlife Resources Commission (WRC).
- Waters designated as primary nursery areas by the Division of Marine Fisheries.
- Critical habitat areas designated by the Wildlife Resources Commission or the Department of Agriculture.
- Waters classified by DWQ as WS-I, WS-II and SA are HQW by definition, but these waters are not specifically assigned the HQW classification because the standards for WS-I, WS-II and SA waters are at least as stringent as those for waters classified HQW.

established by the NC Sedimentation Control Commission or an approved local erosion and sedimentation control program, and which drain to and are within one mile of HQWs, are required to control runoff from the development using either a low density or high density option. The low density option requires a 30-foot vegetated buffer between development activities and the stream; whereas, the high density option requires structural stormwater controls. In addition, the Division of Land Resources requires more stringent erosion controls for land-disturbing projects within one mile and draining to HQWs.

Outstanding Resource Waters

A small percentage of North Carolina's surface waters have excellent water quality (based on biological and chemical sampling as with HQWs) and an associated outstanding resource.

The ORW rule defines outstanding resource values as including one or more of the following:

- outstanding fisheries resource;
- a high level of water-based recreation;
- a special designation such as National Wild and Scenic River or a National Wildlife Refuge;
- being within a state or national park or forest; or
- having special ecological or scientific significance.

The requirements for ORW waters are more stringent than those for HQWs. Special protection measures that apply to North Carolina ORWs are set forth in 15A NCAC 2B .0225. At a minimum, no new discharges or expansions are permitted, and a 30-foot buffer or stormwater controls for new developments are required. In some circumstances, the unique characteristics of the waters and resources that are to be protected require that a specialized (or customized) ORW management strategy be developed.

Water Supply Watersheds

The purpose of the Water Supply Watershed Protection Program is to provide an opportunity for communities to work with the state to strengthen protection of their water supplies. There are five water supply classifications (WS-I to WS-V) that are defined according to the amount and types of permitted point source discharges, as well as requirements to control nonpoint sources of pollution (Table A-20). Watersheds draining to waters classified WS carry some restrictions on point source discharges and on many land use activities including urban development, agriculture, forestry and highway sediment control. Minimum requirements for WS-I to WS-IV include a 30-foot undisturbed vegetated buffer. The WS-I and WS-II classifications are HQW by definition because requirements for these levels of water supply protection are at least as stringent as for HQWs.

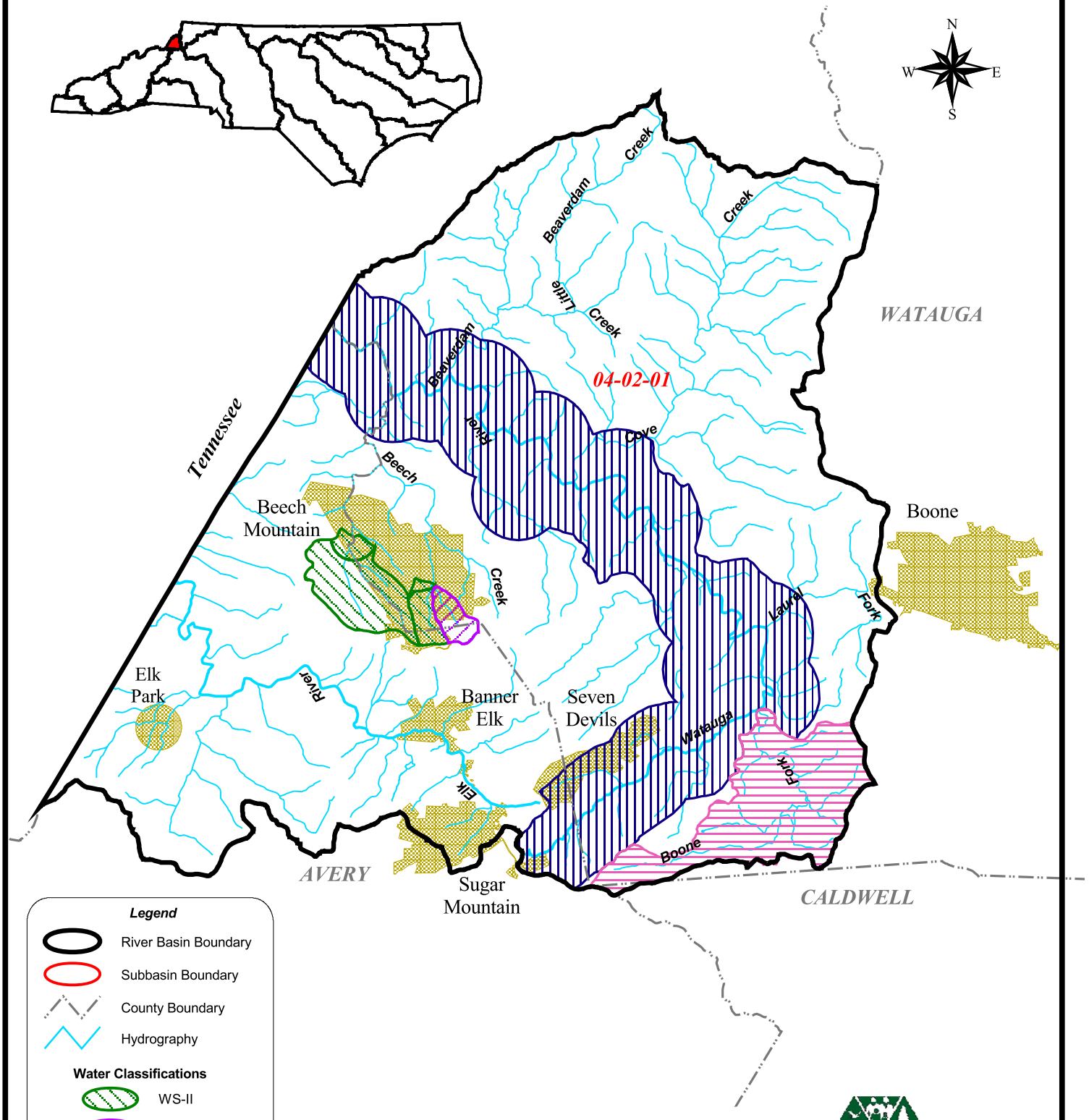
3.2.3 Classifications and Standards in the Watauga River Basin

The waters of the Watauga River basin have a variety of surface water quality classifications applied to them. Water supply watersheds, Outstanding Resource Waters and High Quality Waters are shown on Figure A-11. Water supply watersheds range from WS-II to WS-III and occur in Buckeye Creek and Pond Creek (both water supply headwaters draining to Beech Mountain).

There are currently eight waters in the Watauga River basin supplementally classified as Outstanding Resource Waters (ORW), primarily located in Boone Fork and its tributaries. The entire length of the Watauga River is classified as a High Quality Water (HQW). Water supply watersheds WS-I and WS-II are also, by definition, HQWs. The supplemental classification of Trout Waters (Tr) is applied to many waters in the basin. The upper portion of the Watauga River supports a good trout fishery. Most tributaries are also trout streams, although sedimentation may reduce the quality of the fisheries in some of these streams (TVA, 1996).

Classification and standards for the entire basin can be found in a separate document entitled *Classifications and Water Quality Standards Assigned to the Waters of the Watauga River Basin*. This document may be obtained by calling the Planning Branch of DWQ at (919) 733-5083, extension 558. It can also be accessed through the DWQ Water Quality Section website at http://h2o.enr.state.nc.us/wqhome.html.

Figure A-11 Water Supply Watersheds, High Quality Waters and Outstanding Resource Waters in the Watauga River Basin



Planning Branch
Basinwide & Estuary Planning Unit
January 14, 2002

Pending Reclassifications in the Watauga River Basin

Currently, there is one proposed reclassification for the Watauga River basin. This reclassification covers approximately 2.3 miles of the Watauga River from the confluence of Boone Fork to Shulls Mill which was found to meet ORW classification criteria. This stretch is proposed to be reclassifed from B Tr HQW to B Tr ORW. The tributaries flowing into this portion of the Watauga River are not proposed to be reclassified to ORW but would receive a management strategies associated with an ORW classification.

In addition, DWQ received a reclassification request for the portion of an unnamed tributary from the dam at Seven Devils Resort Lake to the Watauga River. This tributary portion was requested to be reclassified from C Tr to C Tr HQW. However, it has not yet been determined if the portion of this tributary qualifies for the reclassification. Due to several factors, including budgetary restraints, DWQ cannot further address this request nor the above reclassification at this time and must consider them low priorities.

Excellent water quality was observed again at the Beech Creek benthic sampling site at US 321. This sampling site is located on a stream that has not been designated High Quality Waters and was not included in the requests for the above mentioned reclassifications. These data indicate that a portion of the Beech Creek watershed could qualify for the HQW supplemental classification.

3.3 DWQ Water Quality Monitoring Programs in the Watauga River Basin

Staff in the Environmental Sciences Branch and regional offices of DWQ collect a variety of biological, chemical and physical data. The following discussion contains a brief introduction to each program, followed by a summary of water quality data in the Watauga River basin for that program. For more detailed information on sampling and assessment of streams in this basin, refer to the *Watauga River Basinwide Assessment Report* (NCDENR-DWQ, April 2000), available from the Environmental Sciences Branch website at http://www.esb.enr.state.nc.us/bar.html or by calling (919) 733-9960.

DWQ monitoring programs for the Watauga River Basin include:

- Benthic Macroinvertebrates (Section 3.3.1)
- Fish Assessments (Section 3.3.2)
- Aquatic Toxicity Monitoring (Section 3.3.3)
- Lake Assessment (Section 3.3.4)
- Ambient Monitoring System (Section 3.3.5)

3.3.1 Benthic Macroinvertebrates

Benthic macroinvertebrates are organisms that live in and on the bottom substrates of rivers and streams. These organisms are primarily aquatic insect larvae. The use of benthic macroinvertebrate data has proven to be a reliable monitoring tool, as benthic macroinvertebrates are sensitive to subtle changes in water quality. Since macroinvertebrates have life cycles of six months to over one year, the effects of short-term pollution (such as a spill) will generally not be

overcome until the following generation appears. The benthic community also integrates the effects of a wide array of potential pollutant mixtures.

Criteria have been developed to assign a bioclassification to each benthic sample based on the number of different species present in the pollution intolerant groups of Ephemeroptera (Mayflies), Plecoptera (Stoneflies) and Trichoptera (Caddisflies), commonly referred to as EPTs; and a Biotic Index value, which gives an indication of overall community pollution tolerance. Different benthic macroinvertebrate criteria have been developed for different ecoregions (mountains, piedmont and coastal plain) within North Carolina. Bioclassifications fall into five categories ranging from Poor to Excellent.

Overview of Benthic Macroinvertebrate Data

Appendix II lists all of the benthic macroinvertebrate collections in the Watauga River basin between 1983 and 1999, giving site location, collection date, taxa richness, biotic index values and bioclassifications. Benthic macroinvertebrates have been collected at 29 sites in the Watauga River basin since 1983; 14 of these sites were sampled during 1999 basinwide surveys or special studies. For the 1999 collections, the following bioclassifications were found: Excellent – 5 (38%), Good – 6 (47%), Good-Fair – 2 (15%), Fair – 0 (0%), and Poor – 0 (0%). One additional site was designated Not Impaired as it is too small to give a bioclassification, but it met the criteria for a Good-Fair or higher bioclassification using standard qualitative and EPT criteria. The distribution of water quality ratings is similar for both the 1999 collection and all collections since 1983, suggesting little overall change in water quality within the Watauga River basin. Table A-17 lists the most recent ratings since 1983 for all benthic macroinvertebrate sites in the Watauga River basin.

Table A-17 Summary of Benthic Macroinvertebrate Ratings for All Freshwater Benthic Macroinvertebrate Sites (using the most recent bioclassification for each site) in the Watauga River Basin

Subbasin 04-02-01	Excellent	Good	Good-Fair	Fair	Poor	Total
Total (#)	**9**	**17**	**3**	**0**	**0**	**29**
Total (%)	**31%**	**59%**	**10%**	**0**	**0**	**100**

Trends in water quality over the past five years were evaluated at 12 sites in the Watauga River basin, with the majority of sites showing no change in water quality (Table A-18). The only exception to this is the upper Watauga River at Foscoe. Here, the bioclassification decreased from Excellent to Good-Fair. The decline is attributed to unknown nonpoint source runoff, rather than to point sources. There are eight sites in the Watauga River basin for which long-term trends have been evaluated. Negative changes in water quality are noted at two of the eight sites. These data indicate a decline in water quality in the upper Watauga River and in Boone Fork below Price Lake. The lower Watauga, however, increased from Good in 1988 to Excellent in 1994 and 1999.

Table A-18 Summary of Trends Over Time in Benthic Macroinvertebrate Ratings Assigned in the Watauga River Basin

Subbasin 04-02-01	# Trend Sites	5-Year Change			Long-Term (>5 Years) Change		
		None	+	-	None	+	-
Total	12	11	0	1	5	1	2

3.3.2 Fish Assessments

Twenty-nine fish species have been collected from the Watauga River basin in North Carolina (Menhinick, 1991; TVA, 1996). Game species included rainbow trout, brown trout, brook trout, rock bass and smallmouth bass. While some streams are stocked with trout by the NC Wildlife Resource Commission, wild trout are common throughout the basin.

The North Carolina Index of Biotic Integrity (NCIBI) is one of the tools that DWQ uses to summarize all classes of factors such as water and habitat quality, flow regime and energy sources which influence the freshwater fish communities across the state. The NCIBI is currently applicable only to coolwater and warmwater streams that are wadeable from one shoreline across to the other and for a distance of 600 feet. The fish community in coldwater trout streams of the Watauga River basin cannot be accurately evaluated at the present time with this index. A review of the present metrics is being conducted, and the metrics will be modified to allow mountain reference sites to reflect a NCIBI for these coldwater fish communities. Therefore, no stream fish community basinwide monitoring was conducted during 1999 in the Watauga River basin.

No fish tissue contaminant monitoring was conducted between 1995 and 1999 in the Watauga River basin because of the lack of any significant contaminant issues in the basin.

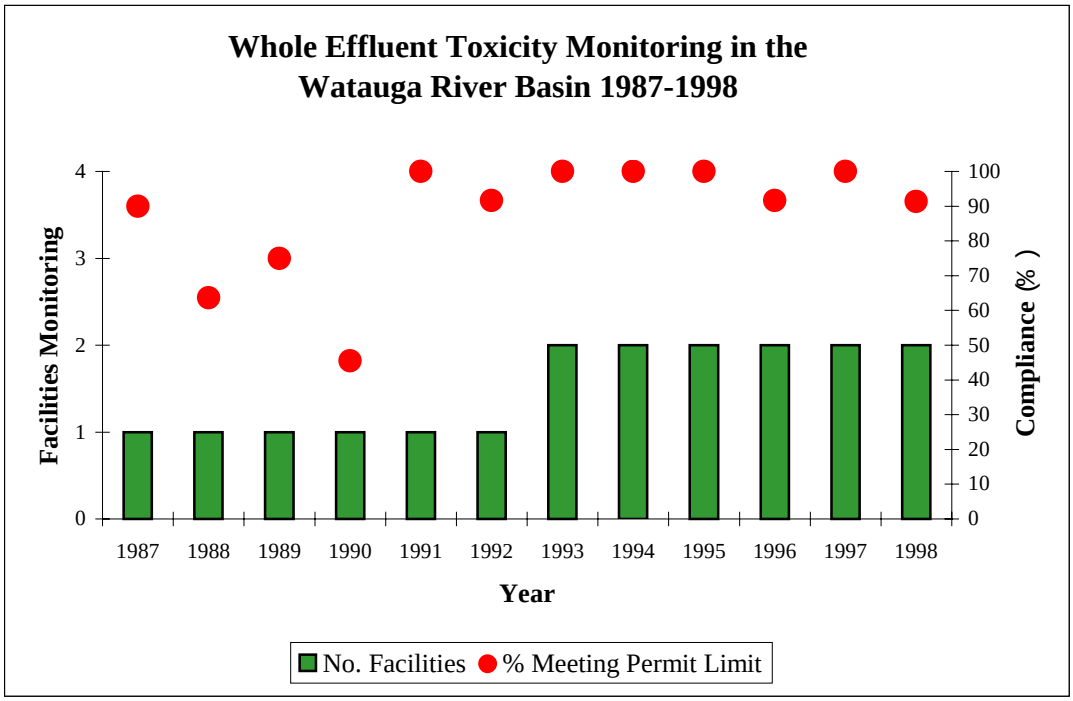
3.3.3 Aquatic Toxicity Monitoring

Acute and/or chronic toxicity tests are used to determine toxicity of discharges to sensitive aquatic species (usually fathead minnows or the water flea, *Ceriodaphnia dubia*). Results of these tests have been shown by several researchers to be predictive of discharge effects on receiving stream populations. Many facilities are required to monitor whole effluent toxicity by their NPDES permit or by administrative letter. Other facilities may be tested by DWQ's Aquatic Toxicology Laboratory.

The Aquatic Toxicology Unit maintains a compliance summary for all facilities required to perform tests and provides a monthly update of this information to regional offices and DWQ administration. Ambient toxicity tests can be used to evaluate stream water quality relative to other stream sites and/or a point source discharge. A summary of compliance for the Watauga River basin from 1987 through 1998 is presented in Figure A-12 below.

Two NPDES permits in the Watauga River basin currently require whole effluent toxicity (WET) testing. Both the Beech Mountain/Pond Creek and Sugar Mountain Utilities permits have a WET limit. The number of facilities required to monitor whole effluent toxicity has increased

steadily since 1987, the first year that whole effluent toxicity limits were written into permits in North Carolina. The compliance rate has risen as well. Since 1993, the compliance rate has stabilized at approximately 90-95 percent. Facilities with toxicity problems during the most recent two-year review period are discussed in the subbasin chapter in Section B.



* This number was calculated by determining whether a facility was meeting its ultimate permit limit during the given time period, regardless of any SOCs in force.

Figure A-12 Compliance Record of Facilities in the Watauga River Basin Required to Perform Whole Effluent Toxicity Testing, 1987-1998

3.3.4 Ambient Monitoring System Program

The Ambient Monitoring System (AMS) is a network of stream, lake and estuarine sample stations strategically located for the collection of physical and chemical water quality data. North Carolina has more than 400 monitoring stations statewide, including three stations in the Watauga River basin (Table A-19).

Table A-19 Ambient Monitoring System Stations within the Watauga River Basin

Subbasin/ Station code	Station	County	Classification*
04-02-01			
L2000000	Watauga River at NC Hwy 105 near Shulls Mill, NC	Watauga	B Tr HQW
L2350000	Watauga River at SR 1114 near Valle Crucis, NC	Watauga	B Tr HQW
L4700000	Watauga River at SR 1121 near Sugar Grove, NC	Watauga	B Tr HQW

* An index for DWQ freshwater classifications can be found in Part 3.2 of this section (Table A-20).

Data summarized in this section are less than five years old; most were collected between August 1995 and August 1999. Each station was sampled at least 49 times during this period of record. Overall, water quality data from ambient stations in the Watauga River basin are good. Discussion of the more significant findings obtained from these data follow.

Sediment

Land-disturbing activities such as the construction of roads and buildings, crop production, livestock grazing and logging can all lead to accelerated erosion rates by causing more soil than usual to be detached and moved by water, especially after periods of rain. In the Watauga River basin, turbidity measurements were in excess of the state standard for trout waters (10 NTU) four times (6.9%) over the five-year review period at the Sugar Grove station. Three of these excesses occurred during periods of higher than normal flows resulting from recent precipitation.

Pathogens

Fecal coliform bacteria are widely used as an indicator of the potential presence of pathogens typically associated with the intestinal tract of warm-blooded animals. Sources of bacteria in surface waters include improperly treated discharges of domestic wastewater, waste directly deposited by wildlife or livestock, leaking or failing septic systems, pet waste, and leaking sewer lines or pump station overflows. Because of the nature of these pollution sources, levels can be elevated considerably after rainfall.

The water quality standard for fecal coliform bacteria is based on a geometric mean of 200 colonies per 100 milliliters of solution. The geometric means of fecal coliform samples were well below the standard at all ambient stations in the Watauga River basin. These means ranged from 27.4 colonies/100ml at the Watauga River near Shulls Mill to 44.4 colonies/100ml at the Watauga River near Sugar Grove.

The geometric means of fecal coliform bacteria showed a substantial decrease over time for the station near Sugar Grove. The geometric mean for the Shulls Mill site has remained relatively stable. Wastewater treatment plant upgrades at The Ponds and Mill Ridge in 1996 and 1992, respectively, including shifts from tablet chlorination to ultraviolet disinfection, likely influenced downward trends in fecal coliform concentrations. Both facilities are upstream of the Sugar Creek Grove and Shulls Mills sites; yet, the closer Shulls Mills reduction was not as evident as the further downstream site at Sugar Grove. No other significant land use changes are known in the area that may have influenced this trend. Too few data have been collected from the Valle Crucis site to determine trends.

3.4 Other Water Quality Research

North Carolina actively solicits "existing and readily available" data and information for each basin as part of the basinwide planning process. Data meeting DWQ quality assurance objectives are used in making use support determinations. Data and information indicating possible water quality problems are investigated further. Both quantitative and qualitative information are accepted during the solicitation period. High levels of confidence must be

present in order for outside quantitative information to carry the same weight as information collected from within DWQ. This is particularly the case when considering waters for the 303(d) list. Methodology for soliciting and evaluating outside data is presented in *North Carolina's Draft 2000 § 303(d) List* (NCDENR-DWQ, May 2001). The next data solicitation period for the Watuaga River is planned for fall 2003.

DWQ data solicitation includes the following:

- Information, letters and photographs regarding the uses of surface waters for boating, drinking water, swimming, aesthetics and fishing.
- Raw data submitted electronically and accompanied by documentation of quality assurance methods used to collect and analyze the samples. Maps showing sampling locations must also be included.
- Summary reports and memos, including distribution statistics and accompanied by documentation of quality assurance methods used to collect and analyze the data.
- Contact information must accompany all data and information submitted.

During April 1999, Tennessee Valley Authority (TVA) biologists collected information on fish, macroinvertebrates and habitat characteristics at three sites in the Watauga basin (unpublished data). Overall, results are similar to those from the DWQ studies. Habitat problems were observed at Cove Creek and the upper Watauga River, with a reduction in the numbers of species of fish and EPT taxa richness. Substantial recovery was observed in the lower Watauga River. Current use support information for these streams is detailed in Section B, Chapter 1.

3.5 Use Support Summary

3.5.1 Introduction to Use Support

Waters are classified according to their best intended uses. Determining how well a water supports its uses (*use support* status) is an important method of interpreting water quality data and assessing water quality. Surface waters are rated *fully supporting* (FS), *partially supporting* (PS) or *not supporting* (NS). The ratings refer to whether the classified uses of the water (i.e., aquatic life protection, primary recreation and water supply) are being met.

Use support ratings for surface waters:

- *fully supporting (FS)*
- *partially supporting (PS)*
- *not supporting (NS)*
- *not rated (NR)*

For example, waters classified for fishing, aquatic life protection and secondary recreation (Class C for freshwater or SC for saltwater) are rated FS if data used to determine use support meet certain criteria. However, if these criteria were not met, then the waters would be rated as PS or NS, depending on the degree of degradation. Waters rated PS or NS are considered to be impaired. Waters lacking data, or having inconclusive data, are listed as not rated (NR).

Impaired waters categories:

- Partially Supporting
- Not Supporting

Historically, the non-impaired category was subdivided into fully supporting and fully supporting but threatened (ST). ST was used to identify waters that were fully supporting but had some notable water quality concerns and could represent constant, degrading or improving conditions. North

Carolina's past use of ST was very different from that of the US Environmental Protection Agency (EPA), which uses it to identify waters that demonstrate declining water quality (EPA Guidelines for Preparation of the Comprehensive State Water Quality Assessments [305(b) Reports] and Electronic Updates, 1997). Given the difference between the EPA and North Carolina definitions of ST and the resulting confusion that arises from this difference, North Carolina no longer subdivides the non-impaired category. However, these waters and the specific water quality concerns remain identified in the subbasin chapters in Section B so that data, management and the need to address the identified concerns are not lost.

Beginning in 2000 with the *Roanoke River Basinwide Water Quality Plan*, DWQ assesses ecosystem health and human health risk through the development of use support ratings for six categories: aquatic life and secondary recreation, fish consumption, shellfish harvesting, primary recreation, water supply and "other" uses. These categories are tied to the uses associated with the primary classifications applied to NC rivers and streams. A single water could have more than one use support rating corresponding to one or more of the six use support categories, as shown in the Table A-28. For many waters, a use support category will not be applicable (N/A) to the use classification of that water (e.g., drinking water supply is not the best use of a Class C water). This method of determining use support differs from that done prior to 2000; in that, there is no longer an *overall* use support rating for a water. For more detailed information regarding use support methodology, refer to Appendix III.

3.5.2 Comparison of Use Support Ratings to Streams on the 303(d) List

Section 303(d) of the Clean Water Act requires states to identify waters not meeting standards. EPA must then provide review and approval of the listed waters. A list of waters not meeting standards is submitted to EPA biennially. Waters placed on this list, termed the 303(d) list, require the establishment of total maximum daily loads (TMDLs) intended to guide the restoration of water quality. See Appendix IV for a description of 303(d) listing methodology.

Waters are placed on North Carolina's 303(d) list primarily due to a partially or not supporting use support rating. These use support ratings are based on biological and chemical data. When the state water quality standard is exceeded, then this constituent is listed as the problem parameter. TMDLs must be developed for problem parameters on the 303(d) list. Other strategies may be implemented to restore water quality; however, the waterbody must remain on the 303(d) list until improvement has been realized based on either biological ratings or water quality standards.

The 303(d) list and accompanying data are updated as the basinwide plans are revised. In some cases, the new data will demonstrate water quality improvement and waters may receive a better use support rating. These waters may be removed from the 303(d) list since water quality improvement has been attained. In other cases, new data may show a stable or decreasing trend in overall water quality resulting in the same, or lower, use support rating. Attention remains focused on these waters until water quality standards are being met.

3.5.3 Use Support Ratings for the Watauga River Basin

AquaticLife/Secondary Recreation

The aquatic life/secondary recreation use support category is applied to all waters in North Carolina. Therefore, this category is applied to the total number of stream miles (270.1) in the North Carolina portion of the Watauga River basin. Table A-20 presents a basinwide summary for the use support ratings for both monitored and evaluated streams in the aquatic life/secondary recreation category.

Approximately 27 percent of total stream miles (74.1 miles) in the Watauga River basin were monitored for the protection of aquatic life and secondary recreation by DWQ during this basinwide cycle. Overall, water quality in the basin is good and there are no impaired waters.

Table A-20 Aquatic Life/Secondary Recreation Use Support Summary Information for Waters in the Watauga River Basin (1999)

Aquatic Life/Secondary Recreation Use Support Ratings	Monitored and Evaluated Streams*			Monitored Streams Only**	
	Miles	Percent		Miles	Percent
Fully Supporting	**224.2**	**83%**		**74.1**	**100%**
Impaired					
Partially Supporting	*0.0*			*0.0*	
Not Supporting	*0.0*			*0.0*	
Not Rated	**45.9**	**17%**		**0.0**	**0%**
TOTAL	**270.1**			**74.1**	

* = Percent based on total of all streams, both monitored and evaluated. ** = Percent based on total of all monitored streams.

Fish Consumption

Like the aquatic life/secondary recreation use support category, the fish consumption use support category is also applied to all waters in the state. No streams were monitored for the fish consumption category during this basinwide cycle because of the lack of any significant contaminant issues in the basin. Fish consumption use support ratings are based on fish consumption advisories issued by the NC Department of Health and Human Services (DHHS). Currently, there are no fish consumption advisories specific to the NC portion of the Watauga River basin, and all waters are fully supporting the fish consumption use.

Primary Recreation

There are 44 stream miles currently classified for primary recreation (Class B) in the Watauga River basin. Approximately 44 percent were monitored by DWQ over the past five years, and all are fully supporting the primary recreation use. A basinwide summary of current primary recreation use support ratings is presented in Table A-21.

Table A-21 Primary Recreation Use Support Summary Information for Waters in the Watauga River Basin (1999)

Primary Recreation Use Support Ratings	Monitored and Evaluated Streams*			Monitored Streams Only**	
	Miles	%		Miles	%
Fully Supporting	**19.5**	**44.3%**		**19.5**	**100%**
Impaired	**0.0**			**0.0**	
Not Rated	**24.5**	**55.7%**		**0.0**	
TOTAL	**44.0**			**19.5**	

* = Percent based on total of all streams, both monitored and evaluated. ** = Percent based on total of all monitored streams.

Drinking Water Supply

Approximately 8 stream miles are currently classified for water supply (WS-II through WS-III) in the Watauga River basin. All were evaluated within the past five years and all are fully supporting the water supply use. A basinwide summary of current water supply use support ratings is presented in Table A-22.

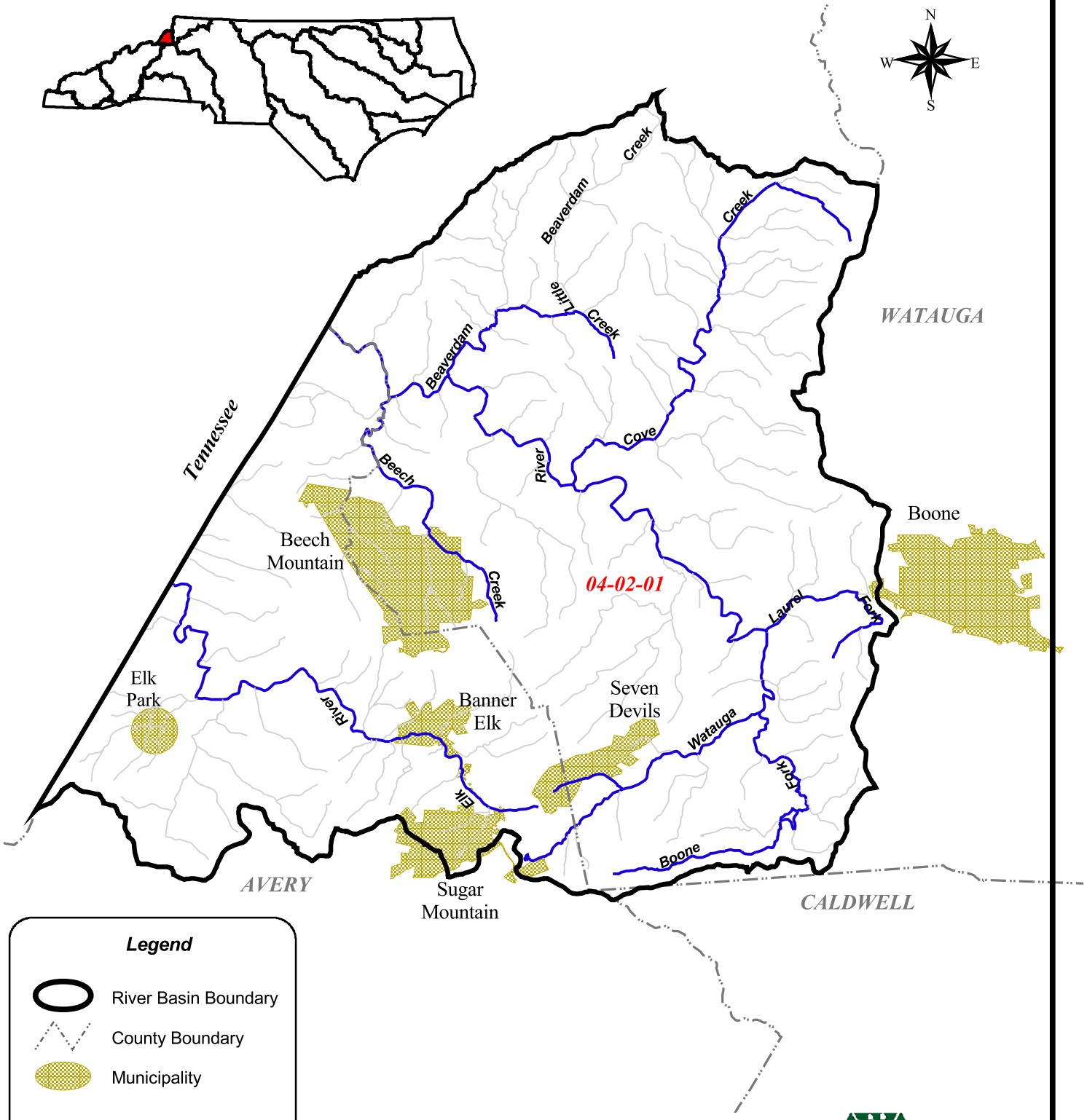
Table A-22 Water Supply Use Support Summary Information for Waters in the Watauga River Basin (1999)

Water Supply Use Support Ratings	Evaluated Streams	
	Miles	%
Fully Supporting	**8.1**	**100%**
Impaired	**0.0**	
Not Rated	**0.0**	
TOTAL	**8.1**	

Use Support Summary

A color map showing current use support ratings for monitored waters in the Watauga River basin is presented in Figure A-13. There are currently no impaired waters in the North Carolina portion of the Watauga River basin. While there are no impaired waters in the Watauga River basin, there are waters that show notable water quality problems and concerns. These waters showing notable water quality impacts are discussed individually in the subbasin chapter in Section B.

Figure A-13 Use Support Ratings for the Watauga River Basin



Planning Branch
Basinwide & Estuary Planning Unit
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