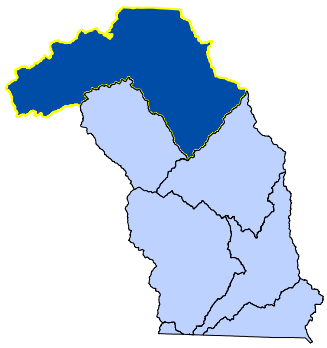
Yadkin River Headwaters



Subbasin HUC: 03040101
Yadkin River Headwaters to the Confluence with South Yadkin River

Water Quality Overview

Water quality in this HUC is relatively good compared to other subbasins in the greater Yadkin-Pee Dee River basin. This is based, in part, on the relatively undeveloped nature of the watershed and low population density. Seventy four percent of the monitored streams support aquatic life, while 24 percent are impaired. Most water quality impairments and impacts are associated with imperious surfaces and stormwater systems, along with agriculture, NPDES permits and mining.

General Description

The Yadkin River Headwaters contains the Yadkin River from its mountainous headwaters to the confluence with the South Yadkin River. Streams and rivers on its western boundary drain the high elevation areas of the Blue Ridge Mountains, where elevations are generally 1200-4500 feet, stream gradients are high, and landuse is predominantly forest. The major mountain tributaries include Buffalo, Elk, and Stony Creeks, North and South Prong Lewis Forks, Reddies River, Mulberry Creek, and Roaring River, most of which flow south into the Northern Inner Piedmont ecoregion before reaching the Yadkin River. Many of the mountain streams are classified as trout streams, and in terms of their fish communities, are considered mountain cold water, and foothills cool water systems. The mountainous section of the Mitchell River watershed above its confluence with the South Fork Mitchell River in western Surry County is classified as an Outstanding Resource Watershed (ORW).

Flowing out of the mountains in a northeast direction, the Yadkin River then flows through the Town of Elkin along the Surry and Yadkin County line, before changing direction to the south at the intersection of Surry, Stokes, Forsyth, and Yadkin Counties. Watersheds to the east of the Blue Ridge are primarily located within the Piedmont and usually have rocky substrates. Streams in the southeast portion of the hydrologic unit (around Winston-Salem) have sandier substrates. W. Kerr Scott Reservoir is the first of the Yadkin River chain of lakes, and is the only major impoundment located in this hydrologic unit. The Yadkin River Headwaters is the largest watershed draining to High Rock Lake.

The southeastern portion of this hydrologic unit includes the urban and suburban area in and around the City of Winston-Salem, one of the largest cities in North Carolina. The Muddy Creek watershed is the largest Yadkin River tributary in this area, and receives runoff from most of the Winston-Salem metro area. Many streams in Winston-Salem are affected by urban runoff and/or by the city's numerous permitted dischargers, many of which are small residential (i.e. package) plants. Large dischargers in the Muddy Creek drainage include the Winston-Salem Archie Elledge WWTP (Salem Creek, 30 MGD), and Winston-Salem Muddy Creek WWTP (Yadkin River, 21 MGD). The major tributaries to Muddy Creek in Winston-Salem include Salem, and South Fork Muddy Creeks. Salem Creek drains a heavily urbanized portion of Winston-Salem.

Watershed at a Glance

Counties

Alexander, Alleghany, Ashe, Caldwell, Davidson, Davie, Forsyth, Iredell, Stokes, Surry, Watauga, Wilkes, Yadkin

Municipalities

Arlington, Bethania, Blowing Rock, Boonville, Clemmons, Dobson, East Bend, Elkin, Jonesville, Kernersville, King, Lewisville, Mocksville, Mount Airy, North Wilkesboro, Pilot Mountain, Ronda, Rural Hall, Tobaccoville, Wilkesboro, Winston-Salem, Yadkinville

Permitted Facilities

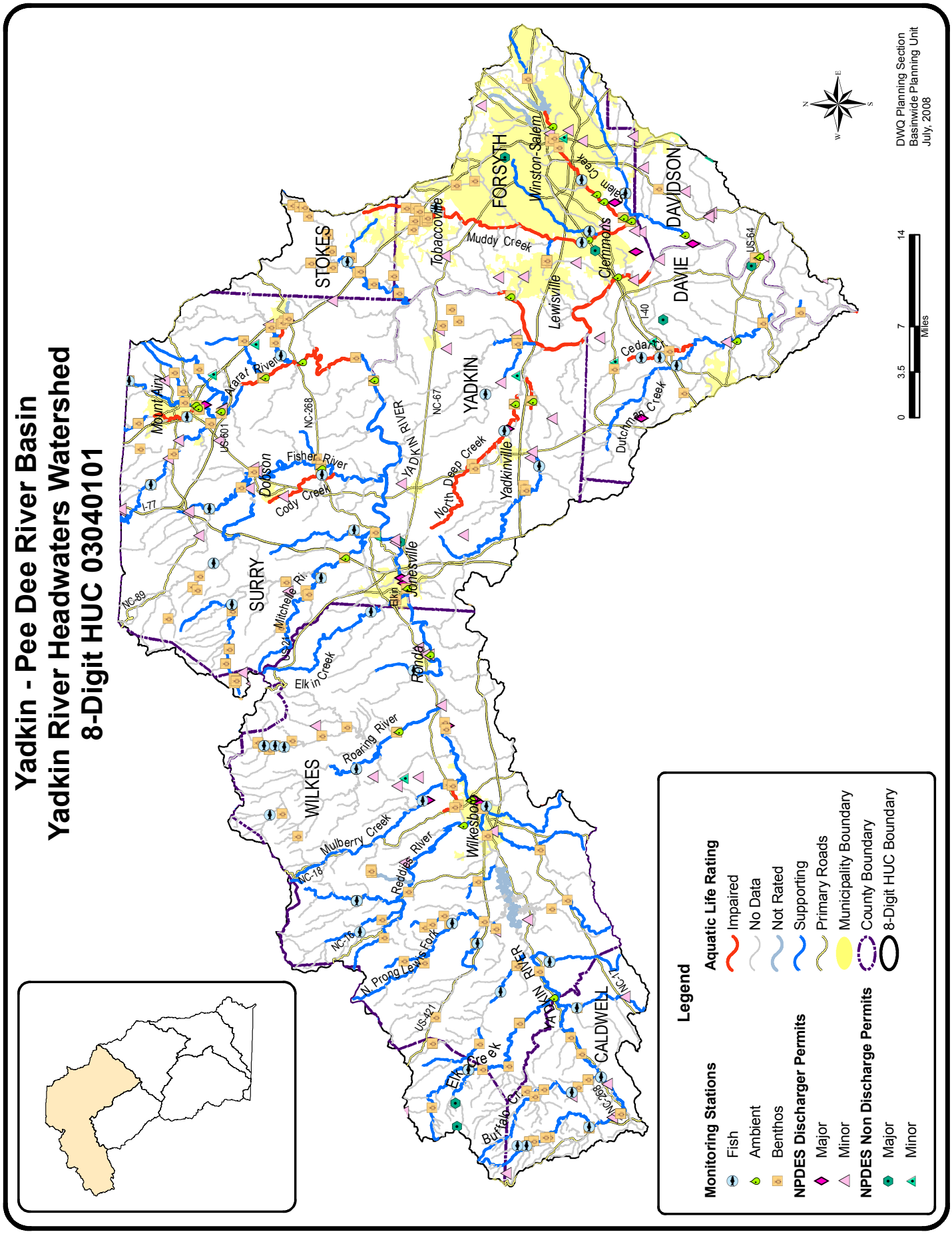
NPDES WWTP:	
Major	10
Minor	76
NPDES Nondischarge:	17
NPDES Stormwater:	
General	181
Individual	10
Phase II	5
Animal Operations:	97

Waterbody summary

Total Streams:.....2,183.1 mi
.....1,157.4 ac

Total No Data:.....1,474.6 mi
Total Monitored:.....707.9 mi
Total Supporting:.....524 mi
Total Impaired:.....166.5 mi
Total Not Rated:.....17.4 mi
.....1,157.4 ac

Figure 1-1. Yadkin River Headwaters HUC 03040101



Current Status and Significant Issues

Impaired streams are those streams not meeting their associated water quality standards in more than 10 percent of the samples taken within the assessment period (January 1, 2002 through December 31, 2006) and impacted streams are those not meeting water quality standards in 7 to 9 percent of the samples. The ***Use Support*** report provides information on how and why water quality ratings are determined and DWQ's "***Redbook***" describes in detail water quality standards for each waterbody ***classification***. For a general discussion of water quality parameters, potential issues, and rules please see "***Supplemental Guide to North Carolina's Basinwide Planning***: Support Document for Basinwide Water Quality Plans"

Figure 1-1. shows monitoring station locations and impaired streams for the Yadkin River Headwaters subbasin.
Appendix A provides descriptions of all monitored waterbodies in the subbasin.
Appendix B. provides a summary of each ambient data monitoring station.
Appendix C provides summaries of biological and fish assessment monitoring sites.

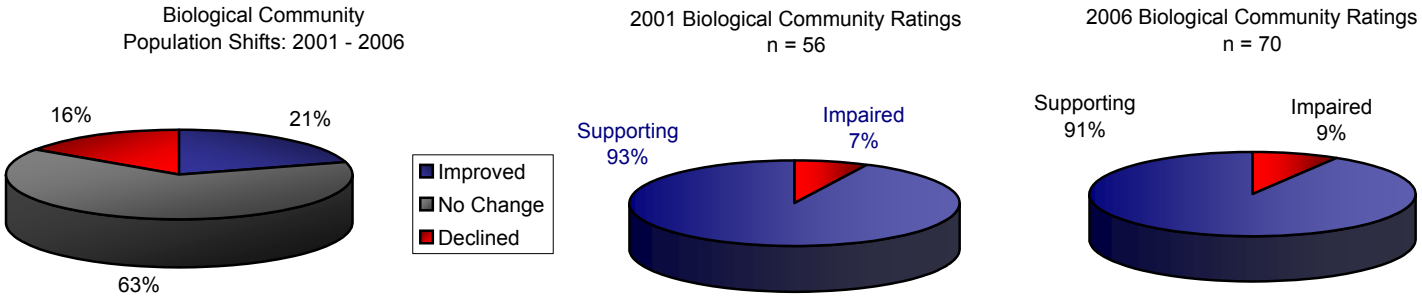
General Biological Health

Overall, the basinwide sampling effort in the Yadkin River Headwaters increased by 20 percent. Despite this substantial increase in effort the ratio of Supporting and Impaired stream segments remains roughly the same.

There were 40 benthic macroinvertebrate sites sampled in the Yadkin River Headwater hydrologic unit. Seven of the 36 benthic macroinvertebrate sites previously sampled in the last basinwide cycle had an improvement in bioclassification. Seven of the 36 benthic basinwide sites declined by one bioclassification.

In addition, there were 30 fish community sites sampled in the Yadkin River Headwaters. Four of the 20 fish community sites previously sampled in the last basinwide cycle improved by one bioclassification and two declined by one bioclassification.

Figure 1-2. Biological Health Summary



The Yadkin River basin was experiencing moderate to severe drought conditions in 2001, which had the potential to reduce the impacts from nonpoint sources and magnify the impacts from point source discharges. This below average flow regime in the basin should be considered when looking at changes in the 2006 monitoring cycle.

Habitat Degradation

Approximately 240 miles of streams in the Yadkin River Headwaters are impaired or impacted by habitat degradation. In most cases habitat is degraded by the cumulative effect of several stressors acting in concert. These stressors often originate in the upland portions of the watershed and may include impervious surfaces, sedimentation and erosion from construction, general agriculture, and other land disturbing activities. Naturally erodible soils in the Yadkin River Headwaters make streams highly vulnerable to these stressors.

Many tools are available to address habitat degradation including; ***urban stormwater BMPs, agricultural BMP***s, ordinance/rule changes at the local, state, and federal levels, volunteer activism, and education programs. Figure 1-3 illustrates a general process for ***developing watershed restoration plans***. This process can and should be applied to streams suffering from habitat degradation. Organizations have begun this process in a few watersheds in the Yadkin River Headwaters. Similar efforts on all streams listed in Table 1-1 are necessary. Interested parties should contact the ***Basinwide Planning Program*** to discuss opportunities to begin the planning and restoration process in their chosen watershed.

Figure 1-3. Watershed Planning

Figure 1-4. Habitat Degradation Potential Sources

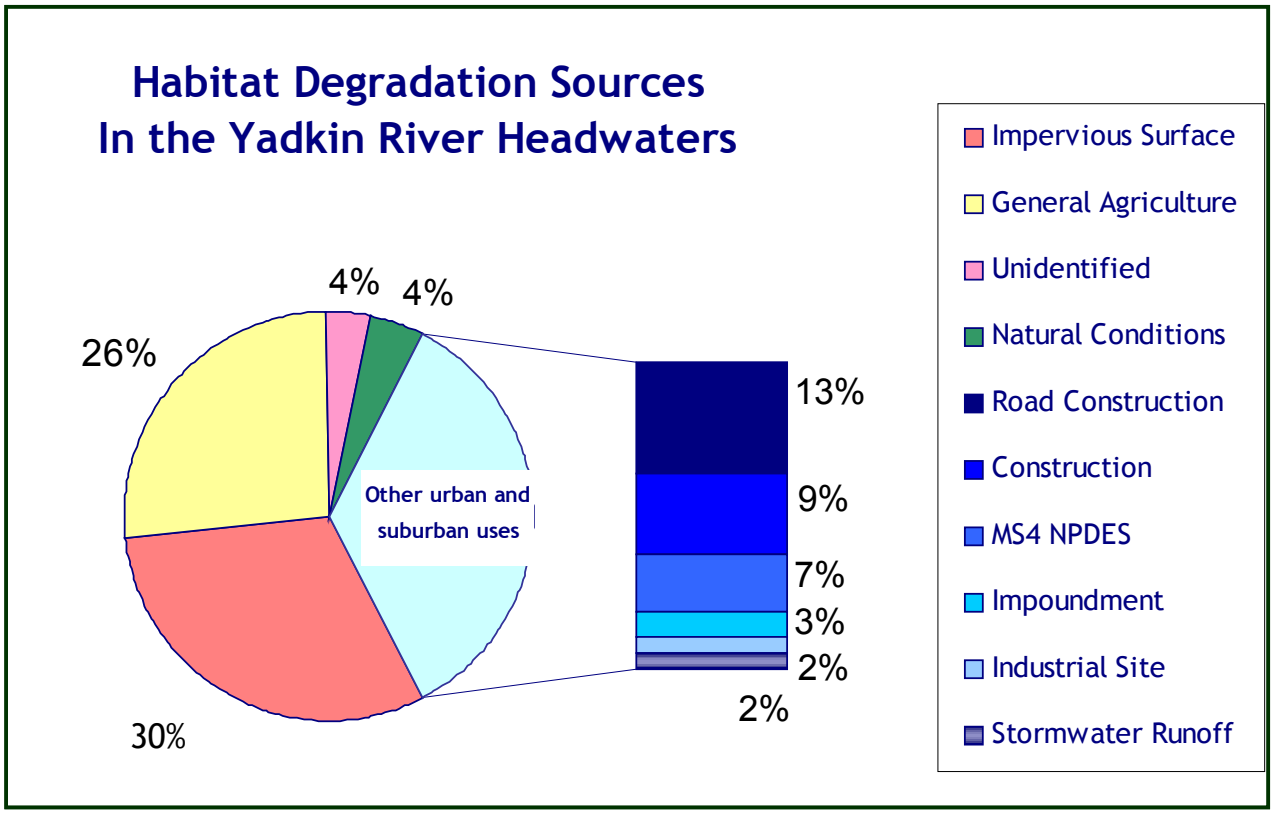


Table 1-1. Streams Impaired or Impacted by Habitat Degradation in Yadkin River Headwaters

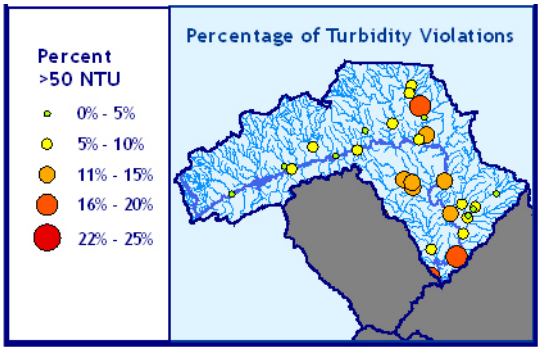
AU Number	Name	Subbasin	Length or Area	Class.	Impaired	Impacted	Potential Source
12-(1)	YADKIN RIVER	03-07-01	35.0 Miles	C; Tr	X	-	Road Construction
12-(53)	YADKIN RIVER	03-07-02	24.7 Miles	C	-	X	Impervious Surface
12-102-(2)a	Dutchman Creek	03-07-05	25.5 Miles	C	-	X	Agriculture, Impervious Surface
12-102-(2)b	Dutchman Creek	03-07-05	7.5 Miles	C	-	X	Impervious Surface, Agriculture, Natural Conditions, Impervious Surface
12-102-13-(2)	Cedar Creek	03-07-05	7.0 Miles	C	X	-	Impoundment, Industrial Site
12-31-3-(2)	Naked Creek	03-07-01	0.9 Miles	WS-IV	-	X	Agriculture
12-35	Fish Dam Creek (Fishtrap Creek)	03-07-01	4.2 Miles	WS-IV	-	X	Impervious Surface, Agriculture
12-39	Moravian Creek (Yellow Jacket Lake)	03-07-01	11.4 Miles	C	-	X	Agriculture
12-42-9	Long Creek	03-07-01	3.1 Miles	C	X	-	Impervious Surface
12-54-(4.5)	Elkin Creek (River)	03-07-02	1.8 Miles	C	-	X	Impervious Surface, Agriculture
12-62-15	Snow Creek	03-07-02	9.6 Miles	C	-	X	Agriculture
12-63-10-(2)	Little Fisher River	03-07-02	8.9 Miles	C	-	X	Agriculture
12-63-5-(3)	Endicott Creek (Branch)	03-07-02	0.5 Miles	WS-II; Tr, HQW	X	-	Agriculture
12-72-(4.5)b	Ararat River	03-07-03	13.7 Miles	C	X	-	Stormwater Runoff, Impervious Surface
12-72-13	Flat Shoal Creek	03-07-03	8.2 Miles	C	-	X	Impervious Surface, Natural Conditions
12-72-6	Faulkner Creek	03-07-03	6.1 Miles	C	-	X	Impervious Surface
12-72-8-(1)	Lovills Creek (Lovell Creek)	03-07-03	2.5 Miles	WS-IV	-	X	Impervious Surface, MS4 NPDES
12-72-8-(3)	Lovills Creek (Lovell Creek)	03-07-03	4.2 Miles	C	X	-	Stormwater Runoff, Impervious Surface
12-72-9-(4)	Stewarts Creek	03-07-03	3.3 Miles	WS-IV	-	X	Impoundment
12-77	Little Yadkin River	03-07-02	12.5 Miles	WS-IV	-	X	Road Construction, Construction, Impervious Surface
12-77-3	Danbury Creek	03-07-02	4.3 Miles	WS-IV	-	X	Impervious Surface
12-83-(1.5)	Forbush Creek	03-07-02	4.9 Miles	WS-IV	-	X	Agriculture
12-83-2-(0.7)	Logan Creek	03-07-02	2.6 Miles	WS-IV	-	X	Stormwater Runoff
12-94-10	Silas Creek	03-07-04	10.1 Miles	C	-	X	Construction, MS4 NPDES, Impervious Surface
12-94-12-(4)	Salem Creek (Middle Fork Muddy Creek)	03-07-04	12.0 Miles	C	X	-	Construction, MS4 NPDES, Impervious Surface, WWTP NPDES, Agriculture, Failing Septic Systems
12-94-13	South Fork Muddy Creek	03-07-04	14.3 Miles	C	-	X	Impervious Surface, Agriculture

Ambient Water Quality

Turbidity

Turbidity violations are common throughout the Yadkin River Headwaters (Figure 1-5). Turbidity is a measure of cloudiness in water and is often accompanied with excessive sediment deposits in the streambed. Excessive sediments deposited on stream and lake bottoms can choke spawning beds (reducing fish survival and growth rates), damage fish food sources, fill in pools (reducing cover from prey and high temperature refuges), and reduce habitat complexity in stream channels. Excessive suspended sediments can make it more difficult for fish to find prey and at high levels can cause direct physical harm, such as clogged gills. Sediments can cause taste and odor problems, block water supply intakes, foul water treatment systems, and fill reservoirs. (USEPA, 1999 and Waters, 1995). Sand and silt were noted in the stream substrate at many of the biological sample sites in the Yadkin River Headwaters.

Figure 1-5. Turbidity Violations



Soil erosion is the most common source of turbidity and sedimentation and while some erosion is a natural phenomenon, human land use practices accelerate the process to unhealthy levels. Construction sites, mining operations, agricultural operations, logging operations, excessive stormwater flow off impervious surfaces are all potential sources. The distribution of turbidity violations and sample locations make it difficult to isolate a single source of erosion in the Yadkin River Headwaters. It appears, however, violations are highest in the Yadkin River mainstem, agricultural areas, and transitional suburban areas. Violations are lowest in the upper watershed where landuse is predominantly forest. This trend demonstrates the importance of ***protecting and conserving stream buffers and natural areas***.

It is likely that a combination of human caused land disturbances and natural erosion are causing the majority of turbidity violations in this watershed, with human causes the leading contributor. To appropriately address turbidity and sediment problems in the Yadkin River Headwaters, an assessment to determine the contribution of human accelerated erosion sources relative to natural processes should be undertaken. All reasonable efforts to reduce or eliminate human sources of erosion should be implemented immediately. These efforts can be organized by developing watershed restoration plans based on the process outlined in Figure 1-3. Plans are needed for each watershed listed below.

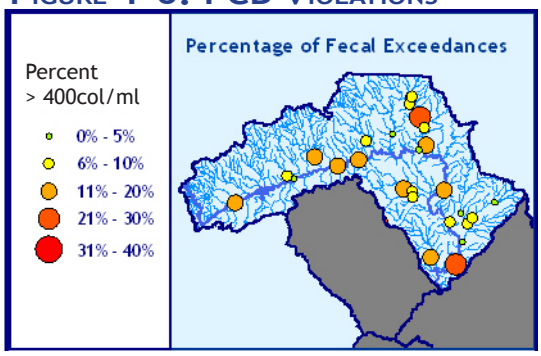
Table 1-2. Streams Impaired or Impacted by Turbidity Violations in Yadkin River Headwaters

AU Number	Name	Subbasin	Miles	Classification	Impaired	Impacted	Source
12-(80.7)	YADKIN RIVER	03-07-02	9.4	WS-IV	X	-	Stormwater Runoff
12-(86.7)	YADKIN RIVER	03-07-02	10.0	WS-IV	X	-	Stormwater Runoff
12-(97.5)	YADKIN RIVER	03-07-04	0.5	WS-IV;CA	X	-	Stormwater Runoff
12-102-(2)b	Dutchman Creek	03-07-05	7.5	C	-	X	Impervious Surface, Agriculture/Pasture
12-63-(9)	Fisher River	03-07-02	21.2	C	-	X	Land Clearing, Impervious Surface, Agriculture/Pasture
12-63-14	Cody Creek	03-07-02	7.0	C	X	-	Impervious Surface
12-72-(4.5)a	Ararat River	03-07-03	14.2	C	-	X	Impervious Surface
12-72-(4.5)b	Ararat River	03-07-03	13.7	C	X	-	Impervious Surface
1 2 - 8 4 - 1 - (0.5)	North Deep Creek	03-07-02	17.3	C	X	-	Impervious Surface, Agriculture/Pasture
1 2 - 8 4 - 2 - (5.5)	South Deep Creek	03-07-02	2.8	WS-IV	X	-	Impervious Surface, Agriculture/Pasture
12-94-(0.5)c	Muddy Creek	03-07-04	4.8	C	-	X	Stormwater Runoff
12-94-12-(4)	Salem Creek (Middle Fork Muddy Creek)	03-07-04	12.0	C	X	-	Unknown

Fecal Coliform Bacteria

Fecal coliform bacteria concentrations often exceeded 400 colonies/100ml in the Yadkin River Headwaters (Figure 1-6). The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of humans or other warm-blooded animals. At the time this occurred, the source water might have been contaminated by pathogens or disease producing bacteria or viruses that can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or nonpoint sources of human and animal waste.

Figure 1-6. FCB Violations



An analysis of all ambient water quality stations in the Yadkin River Headwaters shows a downward trend in fecal coliform bacteria concentrations from 2002-2006. Rainfall, which influences bacteria concentrations, did not appear to be driving this trend. Therefore, the decrease is likely due to implementation of agricultural BMPs and sewer infrastructure improvements. However, concentrations remain elevated and further work remains to be done. Additional funds will be necessary to continue implementing these improvements.

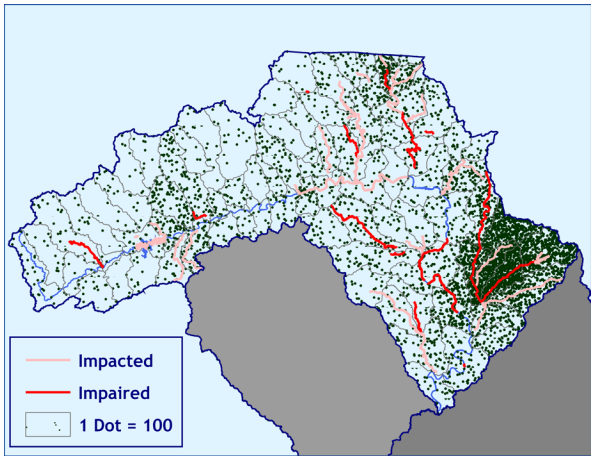
Table 3. Streams Impaired or Impacted by Fecal Coliform Concentration Violations

AU Number	Name	Subbasin	Miles	Classification.	Impaired	Impacted	Potential Source
12-24-(10)	Elk Creek	03-07-01	9.1	B;ORW	X	-	Agriculture
12-54-(0.5)	Elkin Creek	03-07-02	16.3	WS-II;HQW	X	-	Unknown
12-72-10	Rutledge Creek	03-07-03	9.4	C	X	-	Unknown
12-94-(0.5)c	Muddy Creek	03-07-04	4.8	C	-	X	Stormwater Runoff
12-94-12-(4)	Salem Creek (Middle Fork Muddy Creek)	03-07-04	12.0	C	X	-	Construction, MS4 NPDES, Impervious Surface, WWTP NPDES, Agriculture, Failing Septic Systems

See: *Yadkin Ambient Monitoring System Report* /Appendix B and *Yadkin Basinwide Assessments* /Appendix C for detailed sample results and discussion.

Population and Land Use

Figure 1-7. Population Density in 2000

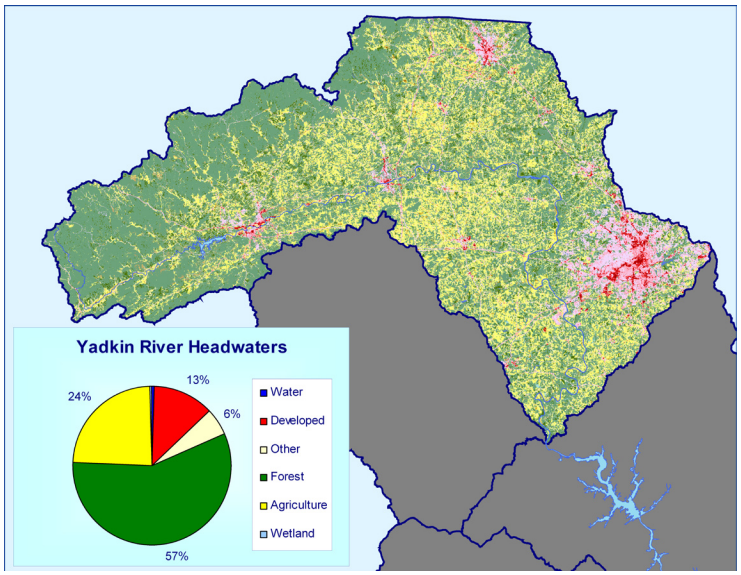


Population distribution and land use patterns are highly variable in the Yadkin River Headwaters. Land use varies from generally undisturbed in the western highlands to decidedly urban in the eastern portion of the watershed around the Winston-Salem metro area. The population distribution closely follows this pattern. The highest population densities are located around Winston-Salem and Mt. Airy. The agricultural regions in the central and western parts of the watershed have much lower population densities.

Stream impacts closely follow the population density and land use patterns. They are more common in agriculture areas than in the forested headwaters and most concentrated in the urban centers. However, this pattern may be changing as new development pressure increases in the forested headwaters. This new pressure comes primarily in the form of secluded resort communities and low-density second home developments. Many of these developments are sited in designated High Quality and Outstanding Resource Watersheds (*HQW/ORW*)

where management strategies are in place to reduce the impact of new development. Because HQW/ ORW watersheds usually occur in historically rural and undisturbed areas, the long-term ability of the management strategies to maintain HQW and ORW status in the face of new development is very difficult to predict. For example, research suggests that streams begin to degrade when watershed imperviousness reaches 10 percent of the total land area (Center for Watershed Protection, 2003). DWQ's own data indicates degradation may begin at even lower levels of imperviousness. The HQW management strategy, however, allows for much higher densities provided the development treats the first inch of rainfall. The management strategy also requires enhanced sediment and erosion control and, in some cases, a 30-foot stream buffer. The management strategy does not restrict the number of developments that may be constructed in a watershed. Therefore, it is unclear if these restrictions are sufficient to maintain excellent water quality if development pressure remains high. New research that accurately projects development scenarios and their impact on water quality is desperately needed in the short term. These trends demonstrate the importance of ***protecting and conserving stream buffers and natural areas***. Protection is especially important given the new develop.

Figure 1-8. Land Use



TMDLs

A TMDL or ***Total Maximum Daily Load*** is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

A TMDL provides a detailed water quality assessment that provides the scientific foundation for an implementation plan. An implementation plan outlines the steps necessary to reduce pollutant loads in a certain body of water to restore and maintain human uses or aquatic life. Plan implementation is usually voluntary. The following TMDL has been completed in the Yadkin River Headwaters and should be adopted by all residents and local governments within the watershed.

Table 1-4. Finalized TMDLs in the Yadkin River Headwaters

Waterbody	Pollutant	Link	Final TMDL Date
Salem Creek	Fecal Coliform	***Final TMDL***	Sept. 25, 2006

High Rock Lake TMDL

Although it is not located within this hydrologic unit, the Yadkin River Headwaters is the largest watershed draining to ***High Rock Lake***. High Rock Lake is impaired due to violations of the turbidity and chlorophyll *a* standards. Therefore, DWQ has initiated a TMDL development process for the lake. As discussed above, turbidity and sedimentation are a significant water quality issue in the Yadkin River Headwaters. The sediment generated in the Yadkin River Headwaters contributes directly to the water quality impairment observed in High Rock Lake. In addition to sediment, runoff from the Yadkin River Headwaters delivers substantial nutrients to High Rock Lake that lead to chlorophyll *a* violations. Residents and government agencies in the Yadkin River Headwaters should be active in the TMDL development process for the lake and continue implementing nonpoint source pollution reduction strategies.

Local Initiatives

Cooperative Conservation Partner Initiative

The Cooperative Conservation Partnership Initiative (***CCPI***) is a voluntary program established to foster conservation partnerships that focus technical and financial resources on conservation priorities in watersheds of special significance. See the ***Rapid Watershed Assessment*** completed in the Yadkin River Headwaters.

Section 319-Grant Program

The ***Section 319 Grant Program*** was established to provide funding for efforts to reduce nonpoint source (NPS) pollution, including that which occurs through stormwater runoff. The U.S. Environmental Protection Agency provides funds to state and tribal agencies, which are then allocated via a competitive grant process to organizations to address current or potential NPS concerns. Each fiscal year North Carolina is awarded nearly 5 million dollars to address nonpoint source pollution through its 319 Grant Program. Thirty percent of the funding supports ongoing state nonpoint source programs. The remaining 70 percent is made available through a competitive grants process.

319 grant funds have been used in combination with other funding sources in the Yadkin River Headwaters to implement successful restoration projects. One example is the ***Agriculture Sediment Initiative for Yadkin-Pee Dee and Cape Fear Basins.*** Table 1-5, includes a list of all the 319 projects implemented in the Yadkin River Headwaters.

Table 1-5. 319 Projects in the Yadkin River Headwaters

Fiscal Year	Contract Number	Name	Description	Agency	Funding
2000	EW05032	Ag Sediment Initiative Rockingham, Clay, & Surry Counties		DSWC	$157,810
2000	EW01070	Ag Sediment Initiative Rockingham, Clay, & Surry Counties		DSWC	$125,984
2001	EW02027	Restoration of Mountain Wetlands and the Upper Yadkin Training Center	Wetlands & Hydrologic Modification	NCSU	$20,000
2001	EW03047	Ag Sediment Initiative Yadkin PeeDee, Cape Fear River Basins		DSWC	$367,900
2002	EW03006	Demo at Dupont & Rendezvous Mountain Educational State Forest	Forestry, Education	NC DENR, DFR	$86,000

North Carolina Agriculture Cost Share Program

Nonpoint source pollution is a significant source of stream degradation in the Yadkin River Headwaters. The approach taken in North Carolina for addressing agriculture's contribution to the nonpoint source water pollution problem is to primarily encourage voluntary participation by the agricultural community. This approach is supported by financial incentives, technical and educational assistance, research, and regulatory programs.

Financial incentives are provided through ***North Carolina's Agriculture Cost Share Program***. The ***Division of Soil and Water Conservation*** within the DENR administers this program. It has been applauded by the U.S. Environmental Protection Agency and has received wide support from the general public as well as the state's agricultural community. Table 1-6 shows the number of projects implemented and in the Yadkin River Headwaters and the dollar amount invested. Table 1-7 shows the water quality benefits realized from that investment.

Table 1-6. ACSP Project Expenditures in the Yadkin River Headwaters

	Erosion Reduction/Nutrient Loss Reduction in Fields		Stream Protection from Animals		Proper Animal Waste Management	
12-digit hydrologic unit	Total Implemented	Cost	Total Implemented	Cost	Total Implemented	Cost
030401010100	34.2 ac.	$8,465	381 units	$31,295	5 units	$52,950
030401010101					1 unit	$3,725
030401010200			5 units	$14,618	3 units	$10,904
030401010300					8 units	$73,524
030401010400					2 units	$28,454
030401010500					2 units	$8,992
030401010600	0.10 ac.	$50	10 units	$19,243	13 units	$109,778

	Erosion Reduction/Nutrient Loss Reduction in Fields		Stream Protection from Animals		Proper Animal Waste Management	
12-digit hydrologic unit	Total Implemented	Cost	Total Implemented	Cost	Total Implemented	Cost
030401010700	29.5 ac.	$6,638	455 units	$45,130	8 units	$54,310
030401010800	133.55 ac.	$99,396	20 units	$45,846	3 units	$35,826
030401010900	111.31 ac.	$14,241	72.3 units	$189,196	3 units	$48,965
030401011000	36.15 ac.	$4,182	30.2 units	$63,752	1 unit	$19,344
030401011100	100.18 ac.	$17,626	192.82 units	$496,030	6 units	$62,008
030401011200	135.29 ac.	$21,040	2 units	$6,738	2 units	$4,475
030401011300	83.78 ac.	$11,741	17 units	$43,395	4 units	$35,736
030401011400	16 ac.	$3,600	6 units	$19,217	2 units	$4,209
030401011500	146.88 ac.	$42,819	4 units	$13,155		
030401011600	4.83 ac.	$1,087				
030401011700	163.7 ac.	$36,743	12.07 units	$23,630	4 units	$12,102
030401011800	155.25 ac.	$17,948				
030401011900	9 ac.	$1,577	1 unit	$2,658		
030401012000	132.52 ac.	$16,324			4 units	$55,959
TOTAL		$303,477		$1,013,903		$621,261

Table 1-7. NC ASCP Water Quality Benefits

	Water Quality Benefits				
12-digit hydrologic unit	Soil Saved (tons)	Nitrogen Saved (lbs)	Phosphorus Saved (lbs)	Waste-N Managed (lbs)	Waste-P Managed (lbs)
030401010100	465	2,736	1,368	74,763	83,830
030401010101				5,405	8,681
030401010200	14			67,723	94,907
030401010300				106,606	173,710
030401010400				93,717	75,933
030401010500				34,056	54,692
030401010600	8			335,740	359,092
030401010700	1,817	1,475	4,959	234,923	269,616
030401010800	3,122	54,795	1,964	14,128	5,191
030401010900	2,576	10,371	691	2,080	1,120
030401011000	827	3,572	132	69,648	
030401011100	3,623	10,422	995	33,419	34,215
030401011200	3,589	3,804	2,092		
030401011300	757	1,173	180	19,008	5,244
030401011400	445	3,300	198		
030401011500	3,975	4,008	489		
030401011600	12	242	15		
030401011700	3,248	5,975	2,234	3,290	647
030401011800	759	28,789	149		
030401011900	138	450	600		
030401012000	1,245	135,835	245	17,065	20,768
TOTAL	26,619	266,946	16,312	1,111,571	1,187,646

Clean Water Management Trust Fund

Created in 1996, the ***Clean Water Management Trust Fund*** (CWMTF) makes grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. The fund has made significant investment in the Yadkin River Headwaters. Figure 1-9 shows the distribution of projects to date in the watershed and Table 1-8, includes a list of projects and their cost. These projects include land acquisitions, capital improvements to wastewater and stormwater infrastructure, and stream restorations.

Figure 1-9 demonstrates how the CWMTF has partnered with conservation groups and clustered projects into specific watersheds in order to leverage additional funds and increase the benefits to water quality and conservation. Two examples are the Mitchell and Ararat River projects.

Figure 1-9. CWMTF Projects

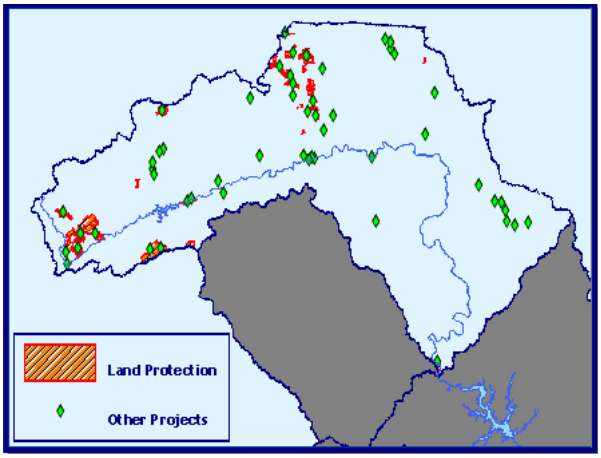


Table 1-8. CWMTF Projects In The Yadkin River Headwaters (9/1/2001-8/31/2006)*

Project Number	Application Name	Proposed Project Description	Amount Funded
2001A-002	Blue Ridge Rural Land Trust - Jenkins Tract Land Cons Easement	Provide funds to cover transactional costs of acquiring a donated permanent conservation easement on 1200 acres along Osborne Creek.	$103,000
2001A-510	North Wilkesboro- Elim Discharge & Reroute Waste/ Mulberry Ck	Eliminate existing package WWTP discharging to Mulberry Ck & install gravity sewer from area now served by package plant to the Mulberry Ck Pump Station and then to Town's 2.0 MGD WWTP which discharges into the Yadkin River. 100 ft CE.	$200,000
2001A-806	Surry Soil & Water Conservation District - Restoration Monitoring & Watershed Study	Conduct monitoring to measure the benefits of previously funded stream restoration and BMP projects in Mitchell River watershed. Continues five years of previous TSS monitoring and stream restoration parameters (physical and biological).	$434,000
2001B-003	Blue Ridge Rural Land Trust - Acquisition/ Reddies River	Provide funds to cover transactional and stewardship costs on one donated conservation easement to protect 75 acres along the North Fork of Reddies River.	$18,000
2001B-044	Piedmont Land Conservancy-Acquisition/ Upper and South Fork Mitchell Rivers	Acquire through fee simple purchase 83 acres on the Upper and South Fork Mitchell Rivers. Includes education and outreach.	$216,000
2002A-008	Elkin, Town of - Acq/ Big Elkin Creek	Acquire 65 acres through fee simple purchase along Big Elkin Creek. An additional 20 acres will be protected through a permanent conservation easement. Project will protect a total of 85 acres.	$259,000
2002A-023	NC Div Forest Resources - Acq & Restoration/ Purlear Creek	Acquire 98 acres through fee simple purchase along Purlear Creek. CWMTF would fund purchase of 62% of the tract.	$600,000
2002A-026	Piedmont Land Conservancy-Acq/ Upper Mitchell R. Winebarger Tract	Acquire 298 acres through fee simple purchase and acquire conservation easements on an additional 118 acres along the South Fork and Upper Mitchell Rivers. Project to protect a total of 416 acres.	$1,408,000
2002A-031	Yadkin River Greenway Council - Acq/ Wilkesboro Greenway	Acquire donated permanent conservation easements on 12.7 acres along the Yadkin River as part of a greenway system. Funds are also provided to plant a woody vegetated buffer along the river and to monitor erosion rates.	$74,000
2002A-405	Surry Soil & Water Conservation District - Stream Restoration/ S. Fork Mitchell R. Phase II	Restore 7,000 linear feet of the South Fork Mitchell River using natural channel design and 2,000 feet of buffer. Monitor results for five years.	$1,137,000

Project Number	Application Name	Proposed Project Description	Amount Funded
2002A-407	Wilkes Soil & Water Conservation District- Warrior Creek Ag. BMPs	Construct six animal waste/feed dry-stack structures in Warrior, Purlear and Little Bugaboo Creek watersheds. Project is part of a larger stream restoration and livestock exclusion project. Includes donated conservation easements on 48 acres.	$150,000
2002A-503	Elkin, Town of - Chatham WWTP Upgrade & Consolidation	Upgrade Elkin's WWTP to serve as a regional plant for Elkin, Ronda and East Wilkes High School. Eliminate approximate 200 failing septic tanks in Ronda. Includes a donated easement on 20 riparian acres (potentially 47 acres) along the Yadkin River.	$1,000,000
2002A-707	Mount Airy - Stormwater/ Lovills Creek	Fund design and permitting of improvements to Tumbling Rock Reservoir to treat stormwater drainage in Lovills Creek, a tributary of the Ararat River. The City will donate 21 acres adjacent to the reservoir as a greenway.	$81,000
2002B-001	Blue Ridge Rural Land Trust - Acq./Brushy Mts., Moravian Cr	Acquire permanent conservation easements on 122 riparian acres along Moravian and Big Warrior Cks. An additional 1,298 acres will be protected through donation or other funding sources. A total of 1,420 acres will be protected.	$276,000
2002B-405	NC Div Parks & Recreation - Restoration/Stone Mt. State Park, Big Sandy Cr.	Restore 4,225 feet of Big Sandy Creek and tributaries in Stone Mountain State Park. Match includes land acquisition in the watershed.	$290,000
2002B-406	Pilot View RC&D, Inc. - Restoration/Tom's Cr.	Restore 900 linear ft and plant buffers along 1200 ft of Toms Creek, a tributary of Ararat River. Accept donation of an additional 300 feet of buffer along the stream (98 ac) and purchase 116 acre tract with federal funds.	$192,000
2002B-407	Pilot View RC&D, Inc. - Restoration/Yadkin Farmland Project	Restore a total of 5,700 linear feet of stream in Surry County on Toms, Pauls and Ramey Creeks. Match provided by EQIP funds and donated permanent conservation easements. Monitor water quality results.	$314,000
2002B-804	Pilot View RC&D, Inc. - Planning/Upper Yadkin Sediment	Fund a 5-year planning and water quality monitoring program for bedload and suspended sediment in the Upper Yadkin & Dan River basins, using the Mitchell River as a reference site. Use to validate stream restoration methods used in the Yadkin Basin.	$295,000
2002M-003	NC Div Forest Resources - Benton Tract Mini-Grant/ Purlear Ck	Minigrant to pay for preacquisition costs for approxmately 100 acres that border Purlear Creek.	$25,000
2003A-035	NC Wildlife Resources Commission- Acq./ Mingo Tribal Tract, Joes Creek	Acquire 5,621 acres through fee simple purchase along Layton and Buffalo Creeks and Green Rock Branch.	$13,500,000
2003D-004	Blue Ridge Rural Land Trust - Donated Minigrant, Johnston Tract/ Cales and Bussels Creeks	Minigrant to pay for transactional costs for a donated easement on 96 acres along the Cales and Bussels Creeks.	$25,000
2004A-002	Caldwell County - Acq./ Donahue Creek	Protect a total of 400 acres along Donahue Creek through fee simple purchase, including 168 riparian acres.	$685,000
2004A-020	NC Wildlife Resources Commission - Acq./ Long Ridge Tract, Buffalo Creek	Protect through fee simple purchase 965 acres along Buffalo and Rockhouse Creeks and Lowder Mill Branch. Property will be managed as part of the Game Lands Program.	$2,776,000
2004A-411	NC Div Forest Resources - Rest./ Purlear Creek, Phase II	Design, permit & construct natural channel stream restoration project along 4,000 linear feet of Purlear Creek. Of the restored stream, 3,000 linear feet are located within Redezvous Mountain Educational State Forest. Monitor water quality.	$508,000

Project Number	Application Name	Proposed Project Description	Amount Funded
2004A-413	Surry Soil & Water Conservation District - Rest./ Snow Creek Watershed	Design, permit & construct natural channel stream restoration project along 10,353 linear feet of Snow Creek. Monitor results. Includes funds to install livestock exclusion systems.	$850,000
2004B-049	Piedmont Land Conservancy- Acq/ Ellis Tract, Mill Creek	Protect through fee simple purchase 75 riparian acres on the headwaters of Mill Creek, an Outstanding Resources Water and wild trout stream with significant endangered aquatic species habitat. Tract is adjacent to Mitchell River Game Lands.	$270,000
2004B-517	Wilkes County School Board - WW/ C.C. Wright Elementary School, Cub Creek	Decommission existing sand filtration system at elementary school and connect to a new sewer line by installing 1,100 LF of collection lines and 7 manholes. Will eliminate discharge to Cub Creek.	$45,000
2004B-706	Pilot View RC&D, Inc. - Storm & Rest/ Upper Silas Creek	Design, permit & construct natural channel stream restoration project along 3,808 linear feet of stream in Upper Silas Creek watershed. Construct 3 stormwater BMPs (2 wet ponds and 1 extended wetland detention pond) in the watershed. Monitor results.	$1,603,000
2004B-809	Pilot View RC&D, Inc. - Plan/ Bath Creek Restoration	Investigate the feasibility of "daylighting" a section of Bath Creek in downtown Winston-Salem. Explore options that would open the stream segment to the surface and reestablish vegetation, habitat and a natural channel configuration.	$59,000
2004B-811	Pilot View RC&D, Inc. - Plan/ Monarcas Creek Restoration	Evaluate and prepare preliminary designs for a natural channel restoration project of approximately 4,200 linear feet of Monarcas Creek. Wake Forest University will conduct an archaeological survey of the project area.	$134,000
2005A-001	Blue Ridge Rural Land Trust - Acq/ Minton and Church Tracts, Lewis Fork and Reddies Creeks	Protect through easements 209 acres along South Prong Lewis Fork. CWMTF funds to purchase a permanent conservation easement on 34.3 riparian acres and landowner to donate a permanent agricultural and timber management easement on 175 acres of upland.	$157,000
2005A-402	Pilot View RC&D, Inc. - Rest/ Shoals Restoration Project, Ararat River	Design, permit and construct a natural channel stream restoration project on 4,830 LF of the Ararat River, including 3,600 LF of restoration and 1,230 LF of enhancement. Project includes purchase of 77 acres with the potential for a greenway.	$488,000
2005B-007	Conservation Trust for North Carolina - Acq/ Cumberland Knob Tract, Roaring Fork	Protect through fee simple purchase 201 acres, including 138 riparian acres, along Roaring Fork. The property is adjacent to the Blue Ridge Parkway and will transferred to the National Park Service. CWMTF funds to purchase the riparian portion.	$512,000
2005B-030	NC Wildlife Resources Commission - Acq/ Bernhardt Tract, Walnut Branch	Protect through fee simple purchase 245 acres of the Bernhardt tract along Walnut Branch. Tract is adjacent to and will become part of the Buffalo Cove Game Land.	$364,000
2005B-040	Piedmont Land Conservancy - Acq/ Harris Tract, Mill Creek	Protect through fee simple purchase and a permanent conservation easement 262 acres along headwater tributaries to Mill Creek. Includes 233 riparian acres. Mill Creek is an Outstanding Resource Waters with rare aquatic species.	$199,000
2005B-406	Pilot View RC&D, Inc - Rest/ Mill Creek Restoration	Design, permit & construct natural channel stream restoration & stabilization project on 3,600 LF of Mill Ck. Restore over 6.5 ac of wetlands, renovate 3.2 ac of a shallow lake for stormwater benefits, & restore 2.3 ac of riparian buffer.	$292,000

Project Number	Application Name	Proposed Project Description	Amount Funded
2005B-407	Resource Institute, Inc. - Rest/ Mount Airy, Ararat River Restoration	Design, permit & construct a natural channel stream restoration & enhancement project on 15,000 LF of the Ararat River. Easements to become part of a greenway system & will provide a canoe launch area.	$1,847,000
2005B-412	Surry Soil & Water Conservation District - Rest/ Fisher River Restoration Project	Design, permit and construct a natural channel stream restoration project on 16,900 linear feet of Cody and Ramey Creeks and the Fisher River. Project compliments other restoration projects in the area.	$976,000
2006A-042	Surry SWC District- Acq./ Surry County Greenway, Yadkin Tributaries	Protect through at least three donated conservation easements 270 acres along the South Mitchell River and tributaries. CWMTF funds to be used to cover transactional costs and to support the District in acquiring and processing easements.	$81,000
2006A-409	Resource Institute, Inc.- Rest/ Ararat River Restoration Sites	Design, permit and construct natural channel design stream restoration project on 11,500 linear feet of the Ararat River, Toms Creek and Lovils Creek, a 303(d)-listed stream.	$910,000
2006A-417	Winston-Salem, City of- Rest/ Reynolds, Silas, Monarcas & Muddy Creek Restoration	Fund a one-time relocation of utilities along stream reaches with the highest potential for sewer line failure due to streambank erosion. Applicant will revamp its methodology for bank stabilization to more environmentally friendly procedures.	$192,000
2006A-509	Elkin, Town of- WW/ Regionalization with Jonesville, Ronda, Yadkin River	Upgrade Elkin WWTP (1.8 to 2.5 MGD) as a regional facility for Elkin, Jonesville, Ronda and Wilkes High School. Eliminate Jonesville and High School discharges. Connect unsewered community of Ronda.	$2,000,000
2006A-807	Elkin and Jonesville, Towns of- Plan/WW/Storm/ GIS Mapping, Elkin Creek	Fund GIS mapping of the Towns' stormwater and sewer systems by locating lines, manholes and catch basins. The Towns will use this information to develop programs to eliminate sources of pollution to both surface and groundwaters.	$70,000
2006A-812	Mount Airy, City of - Plan/ Storm/ Stormwater Management Initiative, Ararat River	Fund stormwater planning for the Ararat River watershed, including a map and inventory of the stormwater conveyance system, study of bacterial loading to determine needed measures, identification of BMP sites, and design of two demonstration projects.	$95,000
2006A-814	Northwest Piedmont Council of Governments - Plan/ Acq/ Yadkin River Corridor Planning	Develop a riparian corridor plan for the 34-mile section of the Yadkin River through Surry County, including mapping and parcel assessments.	$50,000

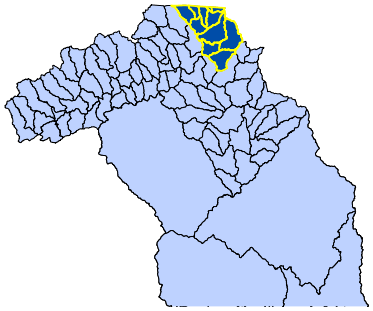
*This list does not include: - regional or statewide projects that were in multiple river basins, or projects that were funded and subsequently withdrawn.

References

Center for Watershed Protection. 2003. Impacts of Impervious Cover on Aquatic Systems.

U.S. Environmental Protection Agency (USEPA) 1999. Protocol for Developing Sediment TMDLs. First Edition. EPA 841-B-99-044. U.S. EPA, Office of Water, Washington D.C.

Waters, T.F. 1995. Sediment in streams—Sources, biological effects, and control. American Fisheries Society Monograph 7. American Fisheries Society, Bethesda, MD.



Ararat River Watershed

Part of the Yadkin River Headwaters: HUC 03040101

This document is a working draft and will be updated as information and resources become available

Overview

The Ararat River and many of its tributaries originate in Virginia. The river enters North Carolina just north of the Town of Mount Airy and flows south near the Town of Pilot Mountain into the Yadkin River. Most of this watershed lies within Surry County.

Flowing south, the Ararat River watershed empties into the Yadkin River to the east of Elkin. The Ararat's main tributaries include Stewarts, Lovills, and Flat Shoal Creeks. This watershed is known to have moderate to swift flows throughout the year, with turbidity problems following rainfall events. Outside of the cities of Mt. Airy and Pilot Mountain, landuse in this subbasin is mostly forest and pasture. The Mt. Airy and Pilot Mountain wastewater treatment plants discharge 7MGD and 1.5 MGD of effluent to the Ararat River, respectively.

Watershed at a Glance

Goal: Restoration

Actions Needed:
BMP Installation, Impacted Stream Surveys

Partners:
Mt. Airy, Pilot Mountain, Surry SWCD, 319, CWMTF, Pilot View RC&D

Timeline: Ongoing

Counties
Surry, Stokes

Municipalities
Mount Airy, Pilot Mountain

Permitted Facilities

NPDES WWTP:	
Major	2
Minor	9
NPDES Nondischarge:	5
NPDES Stormwater:	
General	16
Individual	1
Phase II	0
Animal Operations:	6

Table 1.1-1. 12-Digit HUCs Forming the Ararat River Watershed

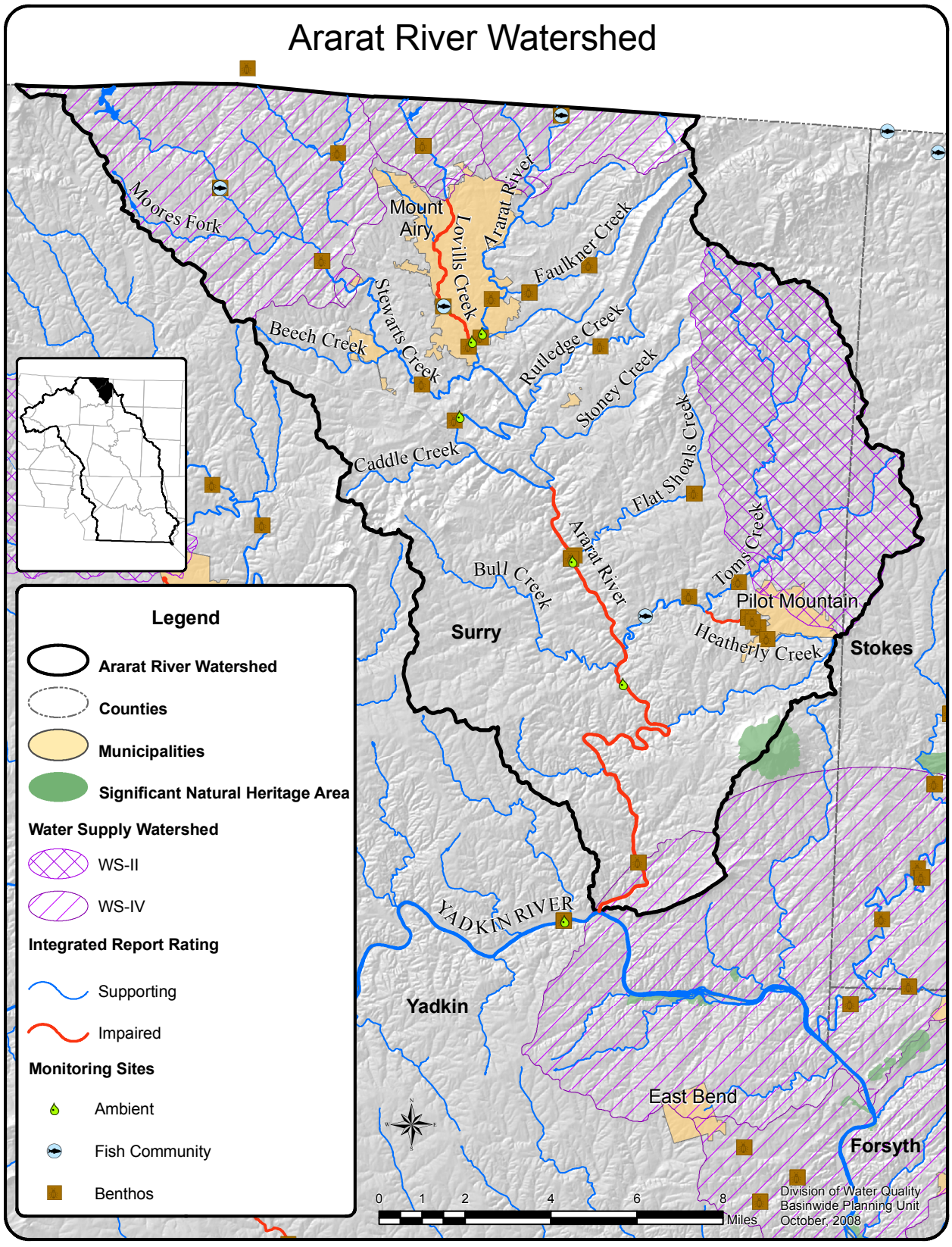
Watershed Name	HUC 12	Acres	Sq. Miles
Toms Creek	030401010902	24,602	38
Outlet Stewarts Creek	030401010806	10,109	16
Bull Creek-Ararat River	030401010903	11,309	18
Outlet Ararat River	030401010904	17,454	27
Faukner Creek-Ararat River	030401010807	10,563	17
Flat Shoal Creek-Ararat River	030401010901	25,106	39
Pauls Creek	030401010805	18,322	7
Headwaters Ararat River	030401010801	25,677	5
Lovills Creek	030401010803	23,017	11
Johnson Creek	030401010802	11,823	1
Headwaters Stewarts Creek	030401010804	22,593	19

Current Status

Table 1.1-2. Ararat River Watershed Monitored Stream Segments

AU Number	AU Name	Class.	Miles	Stressor	Source	Impaired	Impacted
12-72-(1)	Ararat River	WS-IV; Tr	2.5	-	-	-	-
12-72-(18)	Ararat River	WS-IV	2	Turbidity	Unknown	X	-
12-72-(4.5)a	Ararat River	C	14.2	Turbidity	Impervious Surface	-	X
12-72-(4.5)b	Ararat River	C	13.7	Habitat Degradation, Turbidity	Stormwater, Impervious Surface	X	-
12-72-10	Rutledge Creek	C	9.4	Fecal Coliform	Unknown	X	-
12-72-13	Flat Shoal Creek	C	8.2	Habitat Degradation	Impervious Surface	-	X
12-72-14-(4)	Toms Creek	C	5.7	-	-	-	-
12-72-14-5a	Heatherly Creek	C	2	-	-	-	X
12-72-14-5b	Heatherly Creek	C	1.4	Unknown-	Unknown	X	-

AU Number	AU Name	Class.	Miles	Stressor	Source	Impaired	Impacted
12-72-6	Faulkner Creek	C	6.1	Habitat Degradation	Impervious Surface	-	X
12-72-8-(1)	Lovills Creek (Lovell Creek)	WS-IV	2.5	Habitat Degradation	Impervious Surface, MS4 NPDES	-	X
12-72-8-(3)	Lovills Creek (Lovell Creek)	C	4.2	Habitat Degradation	Impervious Surface, Stormwater	X-	
12-72-9-(1)	Stewarts Creek	WS-IV; Tr	5.0	-	-	-	-
12-72-9-(4)	Stewarts Creek	WS-IV	3.3	Habitat Degradation	Impoundment	-	X
12-72-9-(8)	Stewarts Creek	C	6.8	-	-	-	-



DRAFT

Impaired Streams

Ararat River

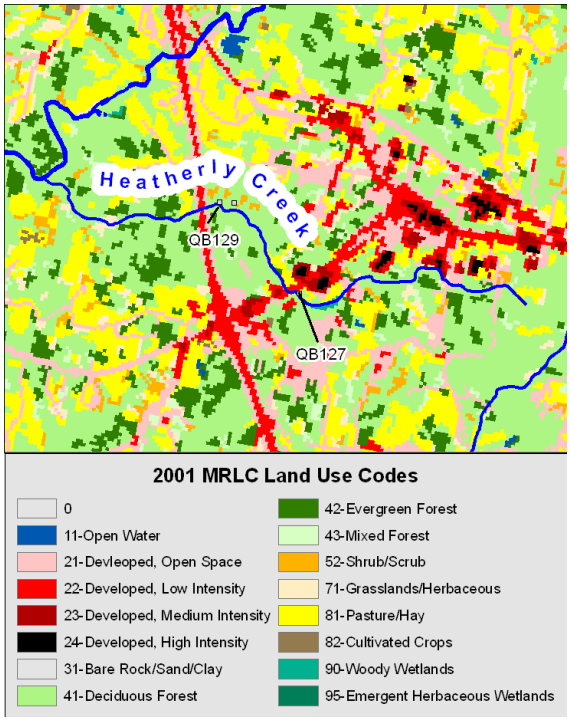
[AU# 12-72-(4.5)b] (From Stoney Creek 12-72-12 to a point 0.1 mile upstream of Surry County SR 2080) **&**
[AU #12-72-(18)] (From a point 0.1 mile upstream of Surry County SR 2080 to Yadkin River)
At the uppermost monitoring site on the Ararat River (QB114 & QF56), nearly the entire drainage flows from Virginia. In 2006, this site was rated Good based on the benthic community (an improvement from the two previous Good-Fair ratings) and Excellent based on the first fish community assessment. Further downstream at QB118, the benthic community has shown consistent improvements in water quality since the 1996 assessment (rated Fair). Since then, the site has earned a Good-Fair rating in 2001, then improved to a rating of Good for benthos in 2006, which was partly due to the loss of the textile industry in Mt. Airy. All biological monitoring efforts indicate that water quality is improving in this watershed and most of the Ararat River has been removed from the 303(d) list. Unfortunately, ambient monitoring at site Q1780000 reveals turbidity standard violations and results in impairment in the downstream segment 12-72-(18).

Both the 1998 and 2003 Yadkin Basin Plans called for local efforts to identify and correct non-point source pollution problems in the Ararat River Watershed. The Town of Mt. Airy and the Surry County Soil and Water Conservation District have initiated successful projects to address water quality impacts in the watershed. Their efforts are supported by the ***319 Program*** and the ***Clean Water Management Trust Fund*** and have led to water quality improvements as indicated by the sample results discussed above. DWQ recommends these projects continue and expand until all Impairment in the entire Ararat River is reversed.

Heatherly Creek

[AU# 12-72-14-5a] (From source to NC 268) **&**
[AU# 12-72-14-5b] (From NC 268 to Toms Creek)
Heatherly Creek drains the southwestern urban area around the Town of Pilot Mountain. AU# 12-72-14-5b, 1.4 miles will remain on the 303(d) list of impaired waters due to major municipal discharges. Historically, the Pilot Mountain wastewater treatment plant discharged to Heatherly Creek, but was removed to the Ararat River mainstem in 1996. The biological communities have continued to improve since its relocation.

FIGURE 1.1-1. HEATHERLY CREEK LAND COVER



DWQ conducted several studies on Heatherly Creek using improved benthic sampling methodology during the current assessment period. The improved methods result in a borderline Not Rated/ Not Impaired rating at site QB129. Therefore, two miles of Heatherly Creek [AU# 12-72-14-5a] will be removed from the 303(d) list of impaired waters.

Despite its pending removal from the 303(d) list, the studies indicate Heatherly Creek remains heavily impacted by non-point source pollution. Its watershed contains many impervious surfaces in the urban and suburban areas (See Figure 1.1-1). Potential stressors present in this system include hydro-modification, pronounced streambank erosion, increased sedimentation, and toxic impacts. Numerous culverts draining directly to the stream were noted during sampling. Such practices allow a direct input of toxicants and sediment into the stream without any treatment. In addition, direct conveyance of stormwater to a stream with out treatment or flow attenuation leads to increased streambank erosion and instream sedimentation.

Further implementation of BMPs to reduce stormwater impacts from urban and suburban areas is needed in this watershed.

Lovills Creek [AU# 12-72-8-(3)] (From Town of Mount Airy Water Supply Dam to Ararat River)

Lovills Creek flows south through the center of Mt. Airy. The Lovills Creek site at SR 1371 in southwest Mt Airy has been rated Fair in three consecutive benthos assessments

Streams with Notable Impacts

Flat Shoal Creek [AU# 12-72-13] (From source to Ararat River)

Flat Shoal Creek was sampled for the first time for benthos at SR 2017 in 2006, and earned a rating of Good-Fair. However, the influence of the Ararat River (site 250 feet above the Ararat River confluence) during high flow events may cause this site to be somewhat unrepresentative of the watershed as a whole. A sandy substrate and streambank stability concerns indicate erosion is impacting this stream. The Good-Fair bioclassification indicates notable impacts to this stream. A complete ***Impacted Stream Survey*** is needed to identify non-point source pollution sources.

Lovills Creek [AU# 12-72-8-(1)] (From N.C.-Va. State Line to a point 0.5 mile upstream of Town of Mount Airy Water Supply Dam)

Lovills Creek flows south through the center of Mt. Airy. There are three monitoring sites on Lovills Creek. The benthos site just below the Virginia line (SR 1700) has been rated Good-Fair on three occasions and continues to indicate no specific stressors in that upper part of the catchment. The Lovills Creek site at SR 1371 in southwest Mt Airy has been rated Fair in three consecutive benthos assessments, however, the first fish community sample in 2006 indicated Good water quality, mostly as a result of the extreme number of fish that were collected. The abundance of aquatic vegetation at this site (due to an open canopy and non-point nutrients) may be enhancing the fish community.

Stewarts Creek

[AU# 12-72-9-(1)] (From N.C.-Va. State Line to Surry County SR 1622),
[AU# 12-72-9-(4)] (From Surry County SR 1622 to a point 0.7 mile downstream of mouth of Pauls Creek),
[AU# 12-72-9-(8)] (From Town of Mount Airy water supply intake to Ararat River)

Stewarts Creek drains the western side of the watershed. The fish community site in the upper part of this catchment (SR 1622) was rated Excellent for the third time in 2006, and the benthos site draining western Mt. Airy (located just above the Ararat River confluence at SR 2258) earned a second rating of Good. Stewarts Creek at NC 89 was re-sampled in order to determine if it should be placed on the 303d list, as an earlier 2001 sample resulted in a Fair bioclassification. The 2002 resample produced a Good-Fair rating. A temporary cofferdam upstream of the sampling location during the 2001 sample restricted flow to the riffle area, and thereby lowered EPT richness and the bioclassification. The dam was removed after the 2001 sample, thereby restoring the riffle and the stream's bioclassification. The aquatic biotas at these sites are very stable and there appears to be no discernable water quality stressors in this watershed.

Faulkner Creek [AU# 12-72-6]

The 6.1 miles of Faulkner Creek, from its source to the Ararat River, appears on the 2006 303(d) list of impaired waters based on biological impairment due to unknown sources. DWQ biologists sampled the stream in two locations to determine the extent of impairment and the impact of restoration efforts. The upstream site, QB122 had very good habitat and exhibited no signs of ecological impacts. Downstream, at site QB123, habitat is significantly worse but the benthic community was rated Good-Fair despite obvious impacts. This is an improvement from the Poor bioclassification that resulted in placement of Faulkner Creek on the 303(d) list in 1998. Improvement at this site is due at least partially to the combined efforts of Mt. Airy and Surry County Soil and Water Conservation District.

Agricultural Sediment Initiative

Background

The ***Agricultural Sediment Initiative*** project was funded through the EPA Section 319 Program in the amount of $367,900. The effective project period commenced on April 1, 2003 and terminated on December 31, 2006. State match was provided by the Clean Water Management Trust Fund grant, Project 2001A-405 that is also being applied in these watersheds and will conclude in December 2007. As a result of a survey and pilot study for the Agricultural Sediment Initiative, the Ararat River Watershed was identified as a watershed with sediment impaired 303(d) listed waters due to agricultural sources, among other possible sources.

Outcomes/Results

This project resulted in partnerships developed, people informed and motivated, BMPs installed and maintained, and has served as a catalyst for continuing efforts to restore and protect the Ararat River watershed. Most of the Ararat River has been removed from the 303(d) list and current impairment exists only in the lower reach.

A total of 50 contracts totaling $249,347 in EPA Section 319 funding and 47 contracts totaling more than $210,000 in

CWMTF in matching funds were applied in the Haw and Ararat River Watersheds during the course of this project.

Over 50 cooperating landowners were involved in implementing BMPs with EPA Section 319 funding, and strong partnerships were formed between local, state and regional agencies and organizations.

Water quality benefits from the BMPs installed in the Ararat River watershed during this project include 728 acres affected, 688 tons of soil saved per year, 1,338 pounds nitrogen saved per year, and 33 pounds of phosphorus saved per year.

This project has been tremendously successful towards reaching its goals of education and outreach, water quality improvement and benefits realized, and as a means to generate additional resources to continue the efforts in Surry County.

Table 1.1-3: CWMTF Projects in the Ararat River Watershed

APPLICANT	PURPOSE
Mount Airy - Lovills Creek	Stormwater
Pilot View RC&D - Tom's Creek	Restoration
Pilot View RC&D - Shoals Restoration Project	Restoration
Mount Airy - Plan/Storm/Stormwater Management Initiative	Planning
Resource Institute Inc. - Ararat River Restoration Sites	Restoration
Resource Institute Inc. - Mount Airy / Ararat River	Restoration