

**STATE OF GEORGIA
TIER 2 TMDL IMPLEMENTATION PLAN REVISION 01**

Etowah River Watershed
Coosa River Basin
April 28, 2006

Local Watershed Governments
Dawson County
Lumpkin County
City of Dawsonville

I. INTRODUCTION

Total Maximum Daily Load (TMDL) Implementation Plans are platforms for evaluating and tracking water quality protection and restoration. These plans have been designed to accommodate continual updates and revisions as new conditions and information warrant. In addition, field verification of watershed characteristics and listing data has been built into the preparation of the plans. The overall goal of the plans is to define a set of actions that will help achieve water quality standards in the state of Georgia.

This implementation plan addresses the general characteristics of the watershed, the sources of pollution, stakeholders and public involvement, and education/outreach activities. In addition, the plan describes regulatory and voluntary practices/control actions (*management measures*) to reduce pollutants, milestone schedules to show the development of the management measures (*measurable milestones*), and a monitoring plan to determine the efficiency of the management measures.

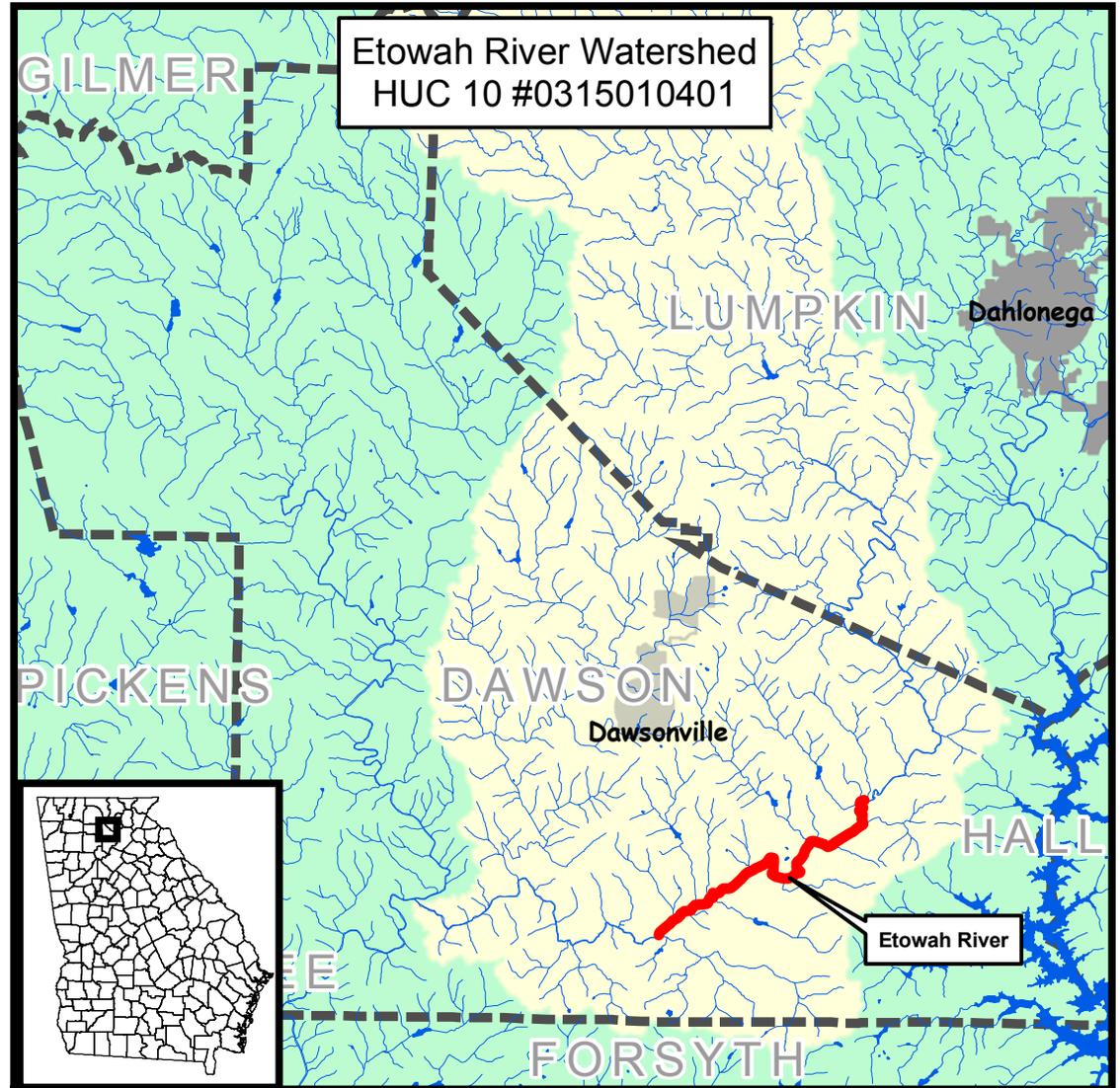


Table 1. IMPAIRMENTS

IMPAIRED STREAM SEGMENT	IMPAIRED SEGMENT LOCATION	IMPAIRMENT	TMDL ID
Etowah River	Proctor Creek To Black Creek (replaces original 24 mile segment from Clear Creek to Forsyth Co. Line)	Fecal Coliform	CSA0000052

II. GENERAL INFORMATION ABOUT THE WATERSHED

Write a narrative describing the watershed, HUC 10 #0315010401. Include an updated overview of watershed characteristics. Identify new conditions and verify or correct information in the TMDL document using the most current data. Include the size and location of the watershed, political jurisdictions, and physical features that could influence water quality. Describe the source and date of the latest land cover/use for the watershed. Describe and quantify major land uses and activities that could influence water quality. See the “Instructions for Completing the Georgia Total Maximum Daily Load (TMDL) Tier 2 Implementation Plan” for more information on what to include.

HUC 10# 0315010401 is located in central north Georgia and covers 191,920 acres, within which 8 miles of the Etowah River, from Proctor Creek to Black Creek, have been identified as not meeting its water quality standard for fecal coliform. The HUC10 watershed covers the political jurisdictions of Dawson and Lumpkin Counties and the City of Dawsonville. The TMDL document used data from Georgia's National Land Cover Dataset 1995 (NLCD) to identify the distribution of land use within the watershed, and is the most up to date land use data for the HUC 10. Forestlands cover the greatest extent of the watershed, followed by pasture, hay and transitional lands. The table below identifies the land use type and acreage of the land use within the watershed.

Land Use Classification	Open Water	High Intensity Residential	High Intensity Commercial, Industrial, Transportation	Transitional	Forest	Row Crops	Pasture, Hay	Other Grasses	Total
Acres	209	120	139	3,563	177,747	1,036	9,030	46	191,920
Percent Total Land Coverage	0.10	0.10	0.10	1.90	92.60	0.50	4.70	0.00	100%

The USDA Forest Service is the major landholder in the HUC10, and manages approximately 37,000 acres. Forest Service managed lands are found exclusively in the headwaters of the Etowah River which is extremely rugged with high mountains rising to 3,500ft, steep slopes, and deeply incised stream valleys. As one moves downstream from the headwaters of the Etowah River, the topography transitions to rolling hills while maintaining incised stream valleys. Land use in this area is generally forestry with scattered agricultural and low intensity residential lands. The southern most portion of the HUC 10 remains largely forestry; however, residential development has been increasing as the population from the Atlanta metropolitan area continues to move northward.

Permitted facilities within the HUC 10 include landfills, land application sites, and NPDES permit holders. The U.S. Army maintains camp Frank D. Merrill, a training facility located near the headwaters of the Etowah River. This site includes a closed landfill and an active land application site. Dawsonville also has a closed landfill, which is located near SR 136 and the Etowah River, in Dawson County. Both Dawsonville and the Etowah Water and Sewer Authority sustain land application sites in Dawson County. Both of these sites are located near SR 9 and the Etowah River. Two NPDES sites are located within Dawsonville, the Dawsonville Pond and Dawsonville WPCP. Flat Creek is used as the receiving waters for both of these facilities.

A number of activities are ongoing within the watershed including local erosion control programs and watershed protection performed through the Upper Etowah River Alliance, Adopt-A-Stream, and the Etowah River Habitat Conservation Plan (HCP). Local erosion and sedimentation ordinances have been adopted by all local governments in the watershed. Similarly, each local government is preparing for the Erosion and Sedimentation Certification Process under HB 285, which becomes effective December 31, 2006. The Upper Etowah River Alliance has been an active participant in the conservation and restoration of the Upper Etowah River. Projects within the HUC 10 include the installation of heavy use pads on agricultural lands, campsite restoration within the Chattahoochee National Forest, streambank restoration on tributaries to the Etowah River, and the installation of raingardens. The Alliance has provided public educational opportunities throughout the watershed by acting as the Adopt-A-Stream sponsor and providing erosion and sedimentation training and certification.

The University of Georgia, Kennesaw State University, and the Georgia Conservancy are developing the Etowah Habitat Conservation Plan for the U.S. Fish and Wildlife Service. This plan is developing policies to minimize negative impacts on the 8 federally threatened or endangered species within the Upper Etowah Basin, which includes Dawson and Lumpkin Counties. Upon completion of the plan, local governments will have the option to adopt these policies. Policy development for the Etowah HCP is expected to be completed in late 2006 or early 2007.

{Etowah River}

COMPLETE THE FOLLOWING TABLES FOR AND NARRATIVES ABOUT EACH IMPAIRED STREAM IN THE WATERSHED.

STREAM SEGMENT NAME	LOCATION	MILES/AREA	DESIGNATED USE	PS/NS
Etowah River	Proctor Creek To Black Creek (replaces original 24 mile segment from Clear Creek to Forsyth Co. Line)	8	Fishing	NS

III. SOURCES AND CAUSES OF STREAM SEGMENT IMPAIRMENT LISTED IN TMDLs

After reviewing the TMDLs written for this stream, complete the following tables with the information found in the TMDLs. List each parameter for which the stream segment is impaired and the water quality standard not met. See the "Instructions for Completing the Georgia Total Maximum Daily Load (TMDL) Tier 2 Implementation Plan" for the water quality standards. Enter the needed reduction from the TMDL. Describe the sources and causes of each impairment identified in the TMDLs.

Table 2. SOURCES OF IMPAIRMENT AS INDICATED IN TMDLs

PARAMETER 1	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED REDUCTION FROM TMDL
Fecal Coliform	May-October: 200 (counts/100ml) Geometric Mean November-April: 1000 (counts/100ml) Geometric Mean or; 4,000 (counts/100ml) Single Sample	Nonpoint Sources	67%
		Wildlife	
		Agricultural Livestock	
		Urban Development	

IV. IDENTIFICATION AND RANKING OF POTENTIAL SOURCES OR CAUSES OF IMPAIRMENT

INVESTIGATE AND EVALUATE the extent and relative contributions from causes or sources of the impairment for each parameter listed in Table 2. Write a narrative describing efforts made or procedures used to verify the significance and extent of the sources or causes of each impairment listed in the TMDLs. Include: 1) involvement of stakeholder group; 2) review of land cover data; 3) field surveys; and 4) other pertinent sources of information consulted.

Methods of identifying and ranking potential sources or causes of impairment included a visual field survey of the watershed and discussion with members of the stakeholder group. A visual field survey was conducted for the Etowah River watershed, which included an evaluation of in-stream and watershed characteristics (Appendix C). A stakeholder meeting schedule was established to provide local input into the development of the TMDL Implementation Plan. This schedule allowed for three stakeholder meetings, which provided for focused discussion regarding the listed segment. During the first meeting, selected images of the watershed were presented to the stakeholder group to provide a characterization of existing conditions within the watershed and to facilitate discussion regarding potential causes of impairment. The second meeting focused local knowledge through discussion with stakeholders to identify sources or causes of impairment. The information collected from the first two meetings was then used to rank potential sources of impairment. The ranked potential sources of impairment were presented to the stakeholder group for review and modification during the third and final stakeholder meeting.

Combining information provided in the TMDL document, stakeholder knowledge, existing watershed assessments, and the watershed evaluation conducted for this plan, identify the potential sources or causes most likely to contribute to each identified impairment (parameter) in Table 3. If available information is inadequate to estimate the extent and relative contribution of significant potential sources or causes, recommend appropriate management actions (watershed assessments, monitoring, etc.) to determine the potential sources or causes and relative contributions. In Table 3, list the significant potential sources or causes of each impairment. Estimate the geographic extent of each potential source or cause as percent of the contributing watershed area, percent of stream miles affected, or number per square mile and enter the appropriate rating (from the following table) in the column entitled "Rating (A)". Estimate the relative contribution of each major source or cause to the pollutant causing the impairment and enter the appropriate rating (from the following table) in the column entitled "Rating (B)". Calculate a relative impact ratings for each source or cause by multiplying "Rating (A)" by "Rating (B)". Comments on the source of information used to determine the extent or contribution may be entered in the applicable columns in Table 3.

The following table provides guidance for rating the estimated extent and portion of the contribution from each potential source and cause.

Estimated Geographic Extent of the Source or Cause in the Contributing Watershed (Percent of area or stream miles)	Estimated Contribution of the Source or Cause to the Pollutant Load Causing the Impairment (Percent of load)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	0.5
Scattered or low (approximately 5-20%)	Scattered or low (approximately 5-20%)	1
Medium (approximately 20-50%)	Medium (approximately 20-50%)	3
Widespread or high (approximately 50% or more)	Widespread or high (approximately 50% or more)	5
Unknown	Unknown	UNK

Table 3. CONCLUSIONS MADE OF POTENTIAL SOURCES OF STREAM SEGMENT IMPAIRMENT

PARAMETER 1: FECAL COLIFORM

POTENTIAL SOURCES OR CAUSES	ESTIMATED EXTENT OF CONTRIBUTION		ESTIMATED PORTION OF CONTRIBUTION		IMPACT RATING (A X B)
	Comments	Rating (A)	Comments	Rating (B)	
Residential/Commercial	Widespread	5	High	5	25
Agriculture-Pastureland/Livestock	Scattered	.5	Low	1	.5
Recreation	Scattered	3	Low	1	3
Other -Illicit Discharges -Wildlife/forestland	Scattered	1	Low	1	1

V. STAKEHOLDERS

PUBLIC INVOLVEMENT AND THE ACTIVE PARTICIPATION OF STAKEHOLDERS is essential to the process of preparing TMDL implementation plans and improving water quality. Stakeholders can provide valuable information and data regarding their community, impaired water bodies, potential causes of impairments, and management practices and activities which may be employed to reduce the impacts of the causes of impairment.

Describe outreach activities to advise and engage stakeholders in the TMDL implementation plan preparation process. Describe the stakeholder group employed or formed to address the impaired segments in the watershed. Summarize the results of the number of attendees and meetings and describe major findings, recommendations, and approvals.

Stakeholders were identified through existing knowledge of local and regional governments, agencies, and organizations. Additional stakeholders were identified during the field survey and included major landholders, businesses, and concerned citizens. In total, 49 stakeholders were notified of the TMDL meetings, their purpose, schedule, and location. Three meetings were held for the listed stream segment to provide adequate stakeholder input into the development of the TMDL Implementation Plan and to help address the specific concerns found in the watershed. The first meeting included a description of the TMDL process, identification of the impaired section, characterization of watershed conditions, and a discussion regarding the potential sources of impairment. The second meeting provided additional discussion regarding potential sources of impairment, followed by the selection of management measures. The final meeting allowed for consideration regarding the implementation of additional management measures, monitoring, outreach, and the development of milestones. In addition, a review of the draft implementation plan was performed during the final meeting.

The stakeholder group included representatives from the Etowah Water and Sewer Authority, Dawson County Extension Service, the NRCS, the University of Georgia and the Etowah River Habitat Conservation Plan, Temple Inland, and Lumpkin County. Although turnout for the TMDL meetings were between 2 and 5 attendees, the stakeholder group provided adequate knowledge to develop the TMDL Implementation Plan.

Poorly functioning residential and commercial septic systems were identified as the leading cause of fecal coliform impairment in the Etowah River watershed. Aged septic systems that have not received appropriate maintenance are a likely cause of fecal coliform loading due to functional failure. These septic systems are dispersed over the entire watershed and have been, and will continue to be, difficult to identify. Newer septic systems may also be leading to a limited amount of fecal coliform discharge into the Etowah River. Recent development of the Etowah River corridor for permanent and part-time residential housing units has resulted in the placement of septic tanks and drainfields in close proximity to both steep slopes adjacent to the riverbanks and saturated lowlands. While the Health Department for Dawson and Lumpkin Counties has continuously strived towards ensuring the proper placement and installation of septic systems, it is possible that unforeseen environmental conditions or incorrect installation of the septic systems is leading to a limited amount of fecal coliform impairment in the Etowah River.

Agricultural activities in the watershed that may be leading to fecal coliform impairment include cattle grazing, poultry operations, and horse boarding and training. All agricultural activities account for only a small percentage of land area within the watershed, and fecal coliform impairment from agricultural activity is expected to account for an equally small percent of the total fecal coliform load in the Etowah River. Nonetheless, cattle and horses have direct access to small tributaries of the Etowah River and provide fecal inputs through interaction with these small stream systems. Poultry operations are scattered throughout the watershed. Dispersal of poultry litter as fertilizer on agricultural fields has been a common practice in the past, although this custom is becoming less common as alternative methods for litter disposal are becoming increasingly available and the number of poultry operations decline within the watershed due to increased residential pressure. In the future, it is expected that the extent of existing agricultural lands will be declining as a result of farmland conversion to residential lands as the population in both Dawson and Lumpkin Counties continues to increase.

Intensive recreational activity occurs from the headwaters of the Etowah River to Black Creek. These recreational opportunities include camping, hiking, mountain biking, horseback riding, fishing, and canoeing. All of these activities occur within close proximity to the Etowah River and its tributaries or directly within the waterbodies and may be resulting in water quality impairment. Restoration of campsites, installation of permanent toilets, and the construction of bridges over stream crossings would all reduce fecal coliform inputs to the Etowah River and its tributaries.

A number of other potential sources of fecal coliform sources exist within the Etowah River watershed, including natural waste deposition from wildlife, vehicular animal kills at stream crossings, improper disposal of game, or illicit discharges from septic system maintenance contractors.

Because the type and distribution of potential fecal coliform inputs has such spatial and temporal variability, additional monitoring through state and local agencies and conservation groups is necessary to firmly identify sources of fecal coliform.

List the watershed stakeholder advisory group committee members, described in Project Task #1 of the Scope of Services, in following table.

Table 4. STAKEHOLDER ADVISORY GROUP MEMBERS

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doris Cook/ Etowah Water and Sewer Authority	P.O. Box 769	Dawsonville	GA	30534	706-216-6168	dorisc@etowahwater.org
Louise McPherson/ USDA-NRCS	298 Academy Ave.	Dawsonville	GA	30534	706-265-2174	
Clark Beusse/ UGA County Agent- Dawson County	P.O. Box 128	Dawsonville	GA	30534		cbeussee@uga.edu
Curt Gervich/ UGA-Etowah HCP	P.O. Box 287	Acworth	GA	30101	678-758-0781	curt@etowah.org
Sam Breyfogle/ Temple Inland	208 Springdale Dr.	LaGrange	GA	30240	706-884-8077	samuelbreyfogle@templeinland.com
Chris Ernst	P.O. Box 1720	Gainesville	GA	30503	770-538-2621	cernst@gmrdc.org

In Appendix A, list the names, addresses, telephone numbers, and e-mail addresses for local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed, as described in Project Task #1 of the Scope of Services.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Identify and list in Table 5A the significant management measures or activities which have or will be taken in the contributing watershed to address sources or causes of the impairment(s). List significant management measures and activities in Column 1 and responsible organizations in Column 2. Describe the measure or activity in Column 3 and sources of funding or resources in Column 4 (you may wish to adapt the generic language included in the “Standard Language for Management Measures and Activities” to local applications) In Column 5, enter one of the following codes describing the status of the measure or activity: (A) installed and active; (AE) active and **will be** enhanced or expanded; (R) required in the future by law, regulation or permit conditions; (P) currently proposed, but not required; and (N/R) **additional new recommended** or (N/E) **recommended enhanced** management measures and activities. In Column 6 enter the rating of the estimated existing or proposed extent of application of the measure or activity or percentage of individual sources to which the management actions have or will be applied (see the following table). In Column 7 enter a rating of the estimated effectiveness of the management measures and activities (see following table). Effectiveness may be estimated by local experts or derived from tables included in the “Standard Language for Management Measures and Activities”.

The following table provides guidance for rating the estimated extent and portion of the contribution for each significant potential source and cause.

Estimated Extent of Application or Percentage of Individual Sources to Which the Mangement Measure or Activity Has or Will be Applied in the Contributing Watershed	Estimated Effectiveness or Percent Removal of Constituent (Percent of load)	Rating
None or negligible (approximately 0-5%)	None or negligible (approximately 0-5%)	.5
Scattered or low (approximately 5-20%)	Low to medium (approximately 5-25%)	1
Medium (approximately 20-50%)	Medium to High (approximately 25-75%)	3
Widespread or high (approximately 50% or more)	High (approximately 75% or more)	5
Unknown	Unknown	UNK

Table 5A. MANAGEMENT MEASURES AND ACTIVITIES

GENERAL MEASURES APPLICABLE TO ALL PARAMETERS

MEASURE	RESPONSIBILITY	DESCRIPTION	SOURCES OF FUNDING & RESOURCES	STATUS CODE	TARGET DATE	EXTENT RATING (Area, #)	EFFECT. RATING (Reduction)
Federal Clean Water Act	USEPA, Georgia DNR/EPD	The objective of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Section 305 requires states to report progress in restoring impaired waters to EPA on a biennial basis. Section 303(d) requires states to identify "impaired" waters, submit a list to EPA every two years, and develop TMDLs for these waters.	Federal, State	AE	Ongoing	5 (High)	Medium (3)
Federal Clean Water Act Section 404	EPA (situations involving forestry are normally referred to the GFC to determine compliance with this regulation)	Requires normal ongoing agricultural and silvicultural practice to adhere to BMPs and 15 baseline provisions for road construction and maintenance in and across waters of the US including lakes, rivers, perennial and intermittent streams, wetlands, sloughs in order to qualify for the exemption from the permitting process.	Federal	A	Ongoing	High (5)	Medium-High (4)
Georgia Water Quality Control Act	Georgia Rules and Regulations for Water Quality Control, Chapter 391-3-6	Law prohibiting discharge of excessive pollutants (sediments, nutrients, pesticides, animal wastes, etc.) into waters of the State in amounts harmful to public health, safety, or welfare, or to animals, birds, or aquatic life or the physical destruction of stream habitats.	Federal, State, Dawson County, Lumpkin County, Dawsonville	A	Ongoing	High (5)	Medium-High (4)

GENERAL MEASURES APPLICABLE TO ALL PARAMETERS

MEASURE	RESPONSIBILITY	DESCRIPTION	SOURCES OF FUNDING & RESOURCES	STATUS CODE	TARGET DATE	EXTENT RATING (Area, #)	EFFECT. RATING (Reduction)
Georgia Planning Act	Dawson County, Lumpkin County, Dawsonville	Coordinated Planning Program, managed by Georgia DCA, assigns local governments Environmental Planning Criteria (set by Georgia DNR) to include in local long-term comprehensive plans: Water Supply Watersheds, Groundwater, Wetlands, Protected Rivers, Protected Mountains. Program also requires local governments to identify Developments of Regional Impact (DRI) and develop plans to protect and manage Regional Impact Resources (RIR).	Dawson County, Lumpkin County, Dawsonville	AE	Ongoing	Medium (3)	Medium-High (4)
Georgia River Basin Management Planning Act, Georgia Code Section 12-5-521	Georgia DNR/EPD	River Basin Management Plans describe strategies and measures necessary for local governments, businesses, and citizen groups to educate the general public on matters involving the environmental and ecological concerns specific to the river basin; improve water quality and reduce pollution at the source; improve aquatic habitat and reestablish native species of fish; restore and protect wildlife habitat; and provide recreational benefits.	State, Dawson County, Lumpkin County, Dawsonville	R	2006	High (5)	Medium (3)
Farm Bill 2002	United States Department of Agriculture / NRCS	Enhances long-term quality of our environment and conservation of our natural resources. This bill provides several opportunities for receiving grants to improve water quality.	Federal Cost-Share and Incentive Programs.	A	Ongoing	Medium (3)	High (5)

MEASURES APPLICABLE TO SPECIFIC PARAMETER: FECAL COLIFORM.

MEASURE	RESPONSIBILITY	DESCRIPTION	POTENTIALSOURCES OF FUNDING & RESOURCES	STATUS	TARGET DATE	EXTENT RATING	EFFECT. RATING
Storm Water Management Audit/ Assessment	Dawson County, Lumpkin County, Dawsonville	Internal assessment of storm water pollution prevention plan (map of facility and responsibilities for upkeep): municipal operations, trend monitoring, source detection, septic system controls, storm drain system cleaning, storm water detention basins maintenance, spill response and prevention, materials management, leaking fluids from vehicles, and street sweeping. The county needs to ensure that they are meeting all applicable storm water requirements.	Dawson County, Lumpkin County, Dawsonville	P	2015	Low (2)	Medium-High (4)
Storm Water BMP Guidance Document for Municipal Operations	Dawson County, Lumpkin County, Dawsonville	Following the audit/assessment, prepare a BMP procedures and guidance manual for county and the cities departments to minimize impact of municipal operations on storm water runoff. This document should address all of the activities identified in the audit/assessment and focus on any common problem areas identified.	Dawson County, Lumpkin County, Dawsonville	P	2016	Medium (3)	Medium-High (4)

APPLICABLE TO SPECIFIC PARAMETER: FECAL COLIFORM.

MEASURE	RESPONSIBILITY	DESCRIPTION	POTENTIAL SOURCES OF FUNDING & RESOURCES	STATUS	TARGET DATE	EXTENT RATING	EFFECT. RATING
Section 319(h) Non-point Source Implementation Grant	Georgia DNR/EPD	Funds distributed through a competitive process to public agencies, regional development centers, state colleges and universities, and state agencies. Eligible projects include implementation of TMDL or Watershed Management Plans, BMP Demonstrations, and Information and Education Campaigns.	Federal, State	P	2010	1-5 (depending on application extent)	High (5)
New Development Ordinance Revision	Dawson County, Lumpkin County, Dawsonville	Review current local Erosion and Sedimentation Control ordinances and modify as appropriate. Include requirements for professionals involved in erosion and sediment control design and construction to be certified by the county. Subdivision ordinances addressing channel protection and conservation will provide further guidelines for construction activities.	Dawson County, Lumpkin County, Dawsonville	P	2007	High (5)	High (5)

MEASURES APPLICABLE TO SPECIFIC PARAMETERS: FECAL COLIFORM.

MEASURE	RESPONSIBILITY	DESCRIPTION	POTENTIALSOURCES OF FUNDING & RESOURCES	STATUS	TARGET DATE	EXTENT RATING	EFFECT. RATING
Regulation of On-Site Sewage Management Systems, IAW O.C.G.A 290-5-26	Georgia DHR, County Board of Health	Rules and regulations for installation and repair of on-site sewage management systems.	State, Dawson County Board of Health, Lumpkin County Board of Health	A	Ongoing	High (5)	High (5)
Chapter 40-13-8 Animal Manure Handlers Rules of Georgia Department of Agriculture Animal Industry Division	Georgia Department of Agriculture	This requires that persons engaged in removing animal manure from livestock/poultry production areas, transporting animal manure on public roadways, or depositing animal manure to a premise other than its point of origin obtain a permit and follow rules to control animal disease, and outlines regulations for transportation, equipment and storage.	State	A	Ongoing	High (5)	Medium-High (4)
Soil Testing	UGA Extension	Soil analysis for multiple parameters including pH, Buffer pH P, K, Ca, Mg, Zn, Calc CEC. Soil analysis also includes recommendations for agronomic crops, horticultural crops, and water treatment.	State, Landowner	A	Ongoing	High (5)	High (5)

MEASURES APPLICABLE TO SPECIFIC PARAMETERS: FECAL COLIFORM.

MEASURE	RESPONSIBILITY	DESCRIPTION	POTENTIALSOURCES OF FUNDING & RESOURCES	STATUS	TARGET DATE	EXTENT RATING	EFFECT. RATING
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Voluntary program that provides technical and cost share assistance for protection of ground and surface water, erosion control, air quality, wildlife habitat, and plant health. Specific focus should be placed on restoration activities such as stream crossings, water ramps, heavy use areas, stream bank restoration, grassed waterways, nutrient and pest management plans.	Federal 50% cost share with possible additional incentive payments	A	Ongoing	High (5)	Medium-High (4)
Etowah Habitat Conservation Plan	U.S. Fish and Wildlife Service, Dawson County, Lumpkin County, Dawsonville	Provides planning process and development guidelines to enhance the protection of threatened and endangered aquatic species in the upper Etowah Basin	Development of the Plan is funded through the USFWS. Adoption and implementation of management measures will be funded through local governments.	AE	2006-2007	5	High (5)
Private Mitigation Banking	Landowner	The purchase and conservation of natural greenspace and habitats in compensation for disturbance of sensitive environments in other areas. Proposed site is located at confluence of Bannister Creek and Brewton Creek.	Landowner and credit purchaser.	P	2006-2007	1	High (5)
U.S. Fish and Wildlife Service- Rivers, Trails, and Conservation Assistance Program	State and Local Agencies and nonprofit organizations	To advocate and assist community-based conservation action, including river restoration and water quality enhancement. Funding should focus on the development of designated river access points with full facilities.	State and local agencies and nonprofit organizations	P	2010	Moderate (1-3) extent depends on application type and location	High (5)

The purpose of Table 5B is to initiate and guide a “first-cut” evaluation of the capacity of existing, currently proposed, and future required management measures and activities to achieve the load reductions specified in the TMDL (and meet water quality goals) and where needed, identify potential feasible and effective measures and practices which could be encouraged and supported to further reduce pollutant loadings from significant potential sources. Though completely voluntary, such recommendations would provide an effective local guide to effective management actions to achieve local water quality goals, establish priorities for grant or loan programs (Section 319 (h), EQUIP, SRF), establish eligibility for grants for Tier plans and implementation, and identify priorities for local watershed assessments and protection plans.

In Columns 1 and 2 of Table 5B, enter each significant potential source and its’ corresponding impact ratings from Table 3. Review Table 5A and list significant management practices and activities applicable to each significant cause or source. Evaluate and compare the estimated extent and relative contribution of each significant cause or source with the extent and effectiveness of the applicable management measures and in conjunction with appropriate local stakeholders or organizations, make a best current determination of whether the existing or proposed management practices would achieve the load reductions needed to achieve the TMDL. Summarize conclusions and rationale in Column 4. If more information is needed to adequately determine the significant sources or causes and their relative contributions so note and recommend management actions needed to adequately identify sources such as monitoring, watershed assessments, or Tier 1 implementation plans in the last column. If the current, proposed and required management measures are judged inadequate to achieve the needed load reductions for significant sources, recommend, in consultation with the advisory groups, additional management activities, programs, and measures which would effectively reduce pollutant loads from the source. List such measures in the final column and list as a recommended activity in the milestones (Table 8).

TABLE 5B: EVALUATION OF MANAGEMENT MEASURES AND ACTIVITIES APPLIED TO SPECIFIC SOURCES OR CAUSES

APPLICABLE TO SPECIFIC PARAMETER: FECAL COLIFORM.

SIGNIFICANT POTENTIAL SOURCE (S) OR CAUSE(S) (From Table 3)	IMPACT RATING (From Table 3)	EXISTING, CURRENTLY PROPOSED, OR REQUIRED MANAGEMENT MEASURES OR ENHANCEMENTS APPLICABLE TO EACH SIGNIFICANT SOURCE (From Table 5A)	EVALUATION: WILL THE ESTIMATED EXTENT OF APPLICATION AND EFFECTIVENESS OF EXISTING, CURRENTLY PROPOSED, AND REQUIRED MANAGEMENT MEASURES BE ADEQUATE TO ACHIEVE THE SOURCE REDUCTION SPECIFIED BY THE TMDL?	IF MANAGEMENT MEASURES ARE ESTIMATED TO BE INSUFFICIENT, RECOMMEND ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES WHICH COULD EFFECTIVELY REDUCE LOADS FROM SIGNIFICANT SOURCES
Residential/ Commercial Septic Systems	25	New Development Ordinance Revisions/ Local County Land Development Guidelines	New development ordinance revisions and local land development guidelines should achieve >75% reduction in contaminant loads	Stormwater Management throughout Dawson and Lumpkin Counties with specific focus on bioretention ponds, wetlands, filter strips and swales.
		Section 319(h) Non-point Source Implementation Grant	Effectiveness of Section 319 program will depend on specific structural managements implemented. A septic tank failure detection program should be implemented through 319 funding.	
Agriculture Practices	.5	Environmental Quality Incentives Program (EQIP)	Effectiveness of EQIP and Section 319 program will depend on specific structural management measures implemented	
		Section 319(h) Non-point Source Implementation Grant		
		Mitigation Banking	Mitigation banking is expected to achieve >75% reduction in contaminant loads from mitigation area	
Recreation	3	Section 319(h) Non-point Source Implementation Grant	Effectiveness of Section 319 program will depend on specific structural managements implemented.	
		U.S. Fish and Wildlife Service Rivers, Trails, and Conservation Assistance Program	Funding from U.S. Fish and Wildlife Service should focus on the installation of river access points that contain adequate restroom facilities.	

SIGNIFICANT POTENTIAL SOURCE (S) OR CAUSE(S) (From Table 3)	IMPACT RATING (From Table 3)	EXISTING, CURRENTLY PROPOSED, OR REQUIRED MANAGEMENT MEASURES OR ENHANCEMENTS APPLICABLE TO EACH SIGNIFICANT SOURCE (From Table 5A)	EVALUATION: WILL THE ESTIMATED EXTENT OF APPLICATION AND EFFECTIVENESS OF EXISTING, CURRENTLY PROPOSED, AND REQUIRED MANAGEMENT MEASURES BE ADEQUATE TO ACHIEVE THE SOURCE REDUCTION SPECIFIED BY THE TMDL?	IF MANAGEMENT MEASURES ARE ESTIMATED TO BE INSUFFICIENT, RECOMMEND ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES WHICH COULD EFFECTIVELY REDUCE LOADS FROM SIGNIFICANT SOURCES
Other	1	Illicit Discharge Detection	Detection and maintenance can be provided through Dawson and Lumpkin Counties, Dawsonville, and the Etowah Water and Sewer Authority	
		Illegal Dumping Control		
		Bridge and Roadway Maintenance		
		Storm drain Signage		

VII. MONITORING PLAN

The purposes of monitoring are to obtain more data to determine the sources of pollution, describe baseline conditions, and evaluate the effects of management and activities on water quality. Describe any sampling activities or other surveys - active, planned or proposed (including monitoring required for watershed assessments, or stormwater permits) - and their intended purpose. Reference the development and submission of a Sample Quality and Assurance Plan (SQAP) if monitoring for listing decisions.

Table 6. MONITORING PLAN

PARAMETER (S) TO BE MONITORED	ORGANIZATION	STATUS (CURRENT, PROPOSED, PLANNED)	TIME FRAME		PURPOSE (If for delisting, date of SQAP submission)
			START	END	
Multiple	Etowah River HCP	Proposed (development of monitoring schedule and parameters to be initiated by May 2006)	To be determined	To be determined	Monitoring for Etowah HCP
Multiple	Upper Etowah River Alliance/ Adopt-A-Stream	Proposed- Monitoring will be based on HCP criteria and will supplement that study.	To be determined	To be determined	General monitoring and possible delisting.

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

List and describe outreach activities, including those described in the Scope of Services that will be conducted to support this plan and the implementation of it.

Table 7. PLANNED OUTREACH

RESPONSIBILITY	DESCRIPTION	AUDIENCE	DATE
Etowah River Habitat Conservation Plan	The HCP is developing management policies that local governments can adopt for the protection of federal and state listed threatened and endangered species.	General public and local governments	On-going
Keep America Beautiful-Dawson County Affiliate	Community outreach activities including litter prevention, waste reduction, and community beautification projects.	General Public	On-going
Keep America Beautiful-Lumpkin County Affiliate	Community outreach activities including litter prevention, waste reduction, and community beautification projects.	General Public	On-going
Adopt-A-Stream	Provides educational material, workshops/training, and stream monitoring.	General public	On-going
Upper Etowah River Alliance	Outreach through educational seminars, brochures, and sponsoring of Adopt-A-Stream events.	Government officials and general public	On-going
Georgia Mountains RDC	Complete plan outreach activities as specified in Section 106 grant funded contract.	Local governments, major stakeholders, public	June 1, 2006

IX. MILESTONES/ MEASURES OF PROGRESS OF BMPs AND OUTREACH

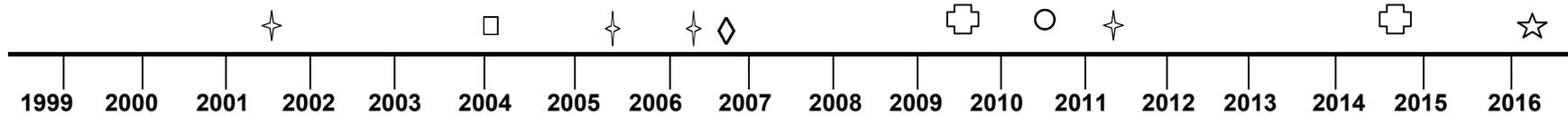
This table will be used to periodically track and report progress of significant management practices and activities identified or recommended in Tables 5A, 5B, and other sections of this plan, including outreach, additional monitoring and assessments, and the enhancement or installation of management measures and activities. Identify and list significant planned or recommended activities and the target date of accomplishment. Provide room to comment on the effectiveness of the management measure, how much support the measure was given by the community, what was learned, how the measure might be improved in the future, and any other observations made. This table can be "pulled out" of this template and used to report and track progress.

Table 8. MILESTONES

MANAGEMENT MEASURE OR ACTIVITY	RESPONSIBLE ORGANIZATIONS	STATUS		COMMENT
		PROPOSED	INSTALLED	
New Development Ordinance Revisions/ Local County Land Development Guidelines	Dawson County, Forsyth County, Dawsonville		X	Regulation updates are recommended at scheduled intervals to provide consistent regulatory performance.
Adopt Etowah River HCP Policies	Dawson County, Forsyth County, Dawsonville	X		Policies currently being developed and should be completed by 2007. Once completed, Dawson and Lumpkin Counties should consider adoption of these policies, where appropriate.
Section 319(h) Non-point Source Implementation Grant	Upper Etowah River Alliance	X	X	The Upper Etowah River Alliance is currently administering a 319 grant to improve water quality in the Etowah River watershed and has been recommended to receive additional funding through a second 319 grant.
Environmental Quality Incentives Program (EQIP)	NRCS	X	X	
Illegal Dumping Control	Dawson County, Forsyth County, Dawsonville		X	Additional monitoring and enforcement.
Bridge and roadway maintenance	Dawson County, Forsyth County, Dawsonville		X	Additional monitoring and enforcement.

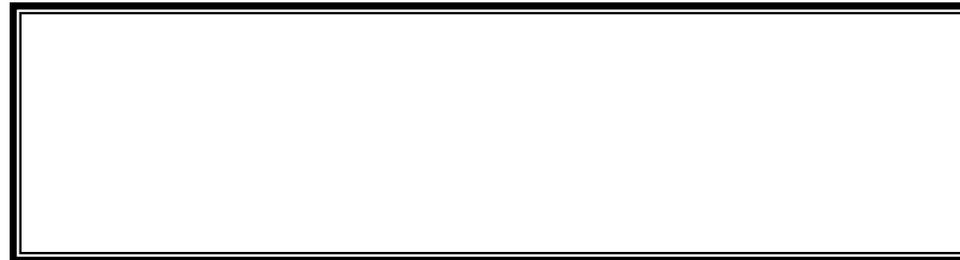
PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of the TMDL Implementation Plan by Georgia EPD.



- Scheduled EPD Basin Group Monitoring ✦
- TMDL Completed □
- Revised TMDL Implementation Plan Accepted ◇
- Plan Status Evaluation Report ☒
- Plan Update or Revision, if Necessary ○
- Project Attainment for Plans Prepared in 2006 ☆

Prepared By:	<u>Christopher Ernst</u>		
Agency:	<u>Georgia Mountains Regional Development Center</u>		
Address:	<u>P.O. Box 1720</u>		
City:	<u>Gainesville</u>	ST:	<u>GA</u>
		ZIP:	<u>30503</u>
E-mail:	<u>cernst@gmrdc.org</u>		
Date Submitted to EPD:	<u>03/31/2006</u>	Revision:	



APPENDIX A.
STAKEHOLDERS

List the names, addresses, telephone numbers, and e-mail addresses for local governments, agricultural or commercial forestry organizations, significant landholders, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doris Cook/ Etowah Water and Sewer Authority	P.O. Box 769	Dawsonville	GA	30534	706-216-6168	dorisc@etowahwater.org
Leonard Ridings/ Upper Chattahoochee Soil and Water Conservation District	5955 Keith Bridge Rd.	Cumming	GA	30041	404-887-5186	
Louise McPherson/ USDA-NRCS	298 Academy Rd.	Dawsonville	GA	30534	706-265-2374	louise.mcpherson@ga.usda.gov
Curt Gervich/ UGA-Etowah HCP	P.O. Box 287	Acworth	GA	30101	678-758-0781	curt@etowahhcp.org
Sam Breyfogle/ Temple Inland	208 Springdale Rd	LaGrange	GA	30240	706-884-8077	smauelbreyfogle@templeinland.com
Dennis Martin Georgia Forestry Commission	3008 Atlanta HWY	Gainesville	GA	30507	770-531-6048	
Buddy Belflower USDA-NRCS	101 East Maple Street County Office Building, Room 5	Cumming	GA	30040		
Joe Riley Chestatee- Chattahoochee RC&D	170 Scoggins Dr.	Demorest	GA	30535	706-894-1597	
Robert Amos GASWCC Region 2	P.O. Box 8024	Athens	GA	30603	706-542-9233	
James S. Stokes Georgia Conservancy	817 West Peachtree St. Suite 200	Atlanta	GA	30308	404-876-2900	
April Ingle Georgia River Network	126 South Milledge Ave. Suite E3	Athens	GA	30605	706-549-4508	

Keith Hastie U.S. Fish and Wildlife Service	105 Westpark Drive #D	Athens	GA	30606	706-613-9493	
Robin Drake Upper Etowah River Alliance	Rt.2 Box 104	Eastanolee	GA	30538	706-779-5756	
Dr. Bert Langley Georgia Environmental Protection Divison- Mountain District (Cartersville Office)	P.O Box 3250	Cartersville	GA	30120	770-387-4900	
Wayne Jenkins Georgia Forest Watch	15 Tower Rd.	Ellijay	GA	30540	706-635-8733	
Mike Berg Dawson County Board of Commissioners	76 Howard Ave. E. Suite 120	Dawsonville	GA	30534	706-344-3501	
Phil Anderson Dawson County Manager	76 Howard Avenue East, Suite 120	Dawsonville	GA	30534	706-344-3501 ext 233	
Randy Bowen Dawson County Public Works Department	76 Howard Ave. East, Suite 120	Dawsonville	GA	30534	706-344-3501 ext 246	
Lynn Tulley Dawson County Planning Department	76 Howard Ave. East, Suite 100	Dawsonville	GA	30534	706-344-3650	
Linda Williams Dawson County Chamber of Commerce	P.O. Box 299	Dawsonville	GA	30534	706-265-6278	
Dawson County Health Department	P.O. Box 245	Dawsonville	GA	30534	706-265-2611	
Cassius Cash USDA Forest Service- Toccoa District	6050 Appalachian Hwy	Blue Ridge	GA	30513	706-632-3031	
Charlene Breeden USDA Forest Service-	1755 Cleveland Highway	Gainesville	GA	30501	770-297-3096	

Forest Supervisor's Office						
Mary Gazaway GA DNR-EPD	4220 International Parkway, Suite 101	Atlanta	GA	30354	404-675-6247	Mary_Gazaway@dnr.state.ga.us
Stephen Gooch Lumpkin County Board of Commissioners	99 Courthouse Hill Suite A	Dahlonega	GA	30533	706-864-3742	
Tim Schick Lumpkin County Planning Department	99 Courthouse Hill	Dahlonega	GA	30533	706-864-6894	
Charles Trammell Lumpkin County Public Works Director	99 Courthouse Hill Suite AA	Dahlonega	GA	30533	706-864-3742	
Ben Chitwood Lumpkin County Roads Department	99 Courthouse Hill	Dahlonega	GA	30533	706-864-3122	
Gregory Sheppard Lumpkin County Cooperative Extension	26 Johnson Street, Suite A	Dahlonega	GA	30533	706-864-2275	
Dale Steenberg Dahlonega-Lumpkin County Chamber of Commerce	13 South Park Street	Dahlonega	GA	30533	706-864-3513	
Linda Truelove Lumpkin County Health Department	56 Short Street, Suite A	Dahlonega	GA	30533	706-867-2727	
Honorable Joe Land Cox City of Dawsonville	P.O. Box 6	Dawsonville	GA	30534		
Gary Barr Dawsonville Water and Sewer	P.O. Box 6	Dawsonville	GA	30534		
Steve Holder Dawsonville Planning Director	P.O. Box 6	Dawsonville	GA	30534	706-265-3256	
Honorable Chip	321-B Legislative Office	Atlanta	GA	30334		

Pearson Senate District 51	Building					
Honorable Amos Amerson House of Representatives- District 9	401-G State Capitol Building	Atlanta	GA	30334		

APPENDIX B.
UPDATES TO THIS PLAN

Describe any updates made to this plan. Include the date, section or table updated, and a summary of what was changed and why.

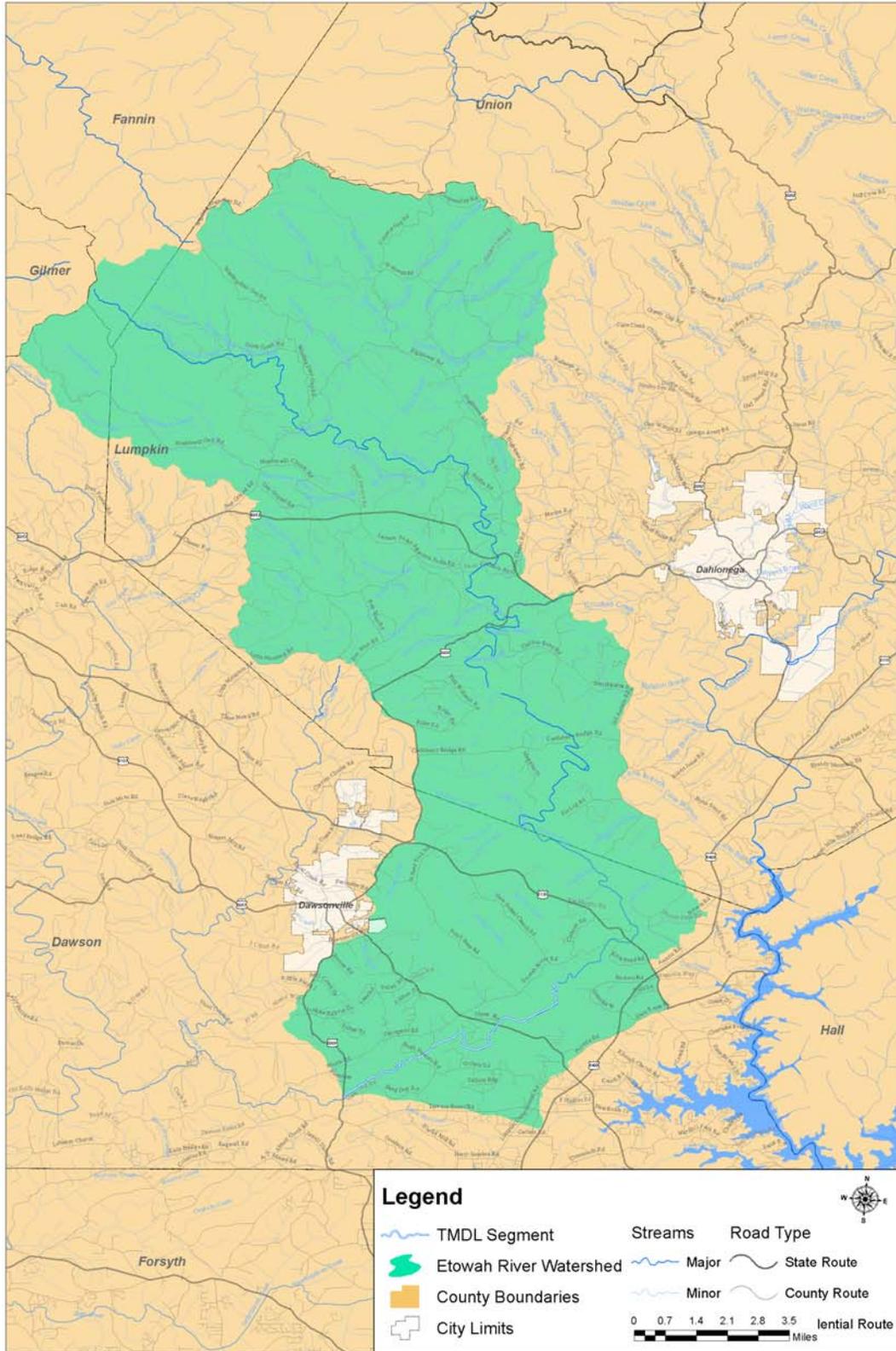
APPENDIX C.
FIELD SURVEY FORMS

GEORGIA ADOPT-A-STREAM

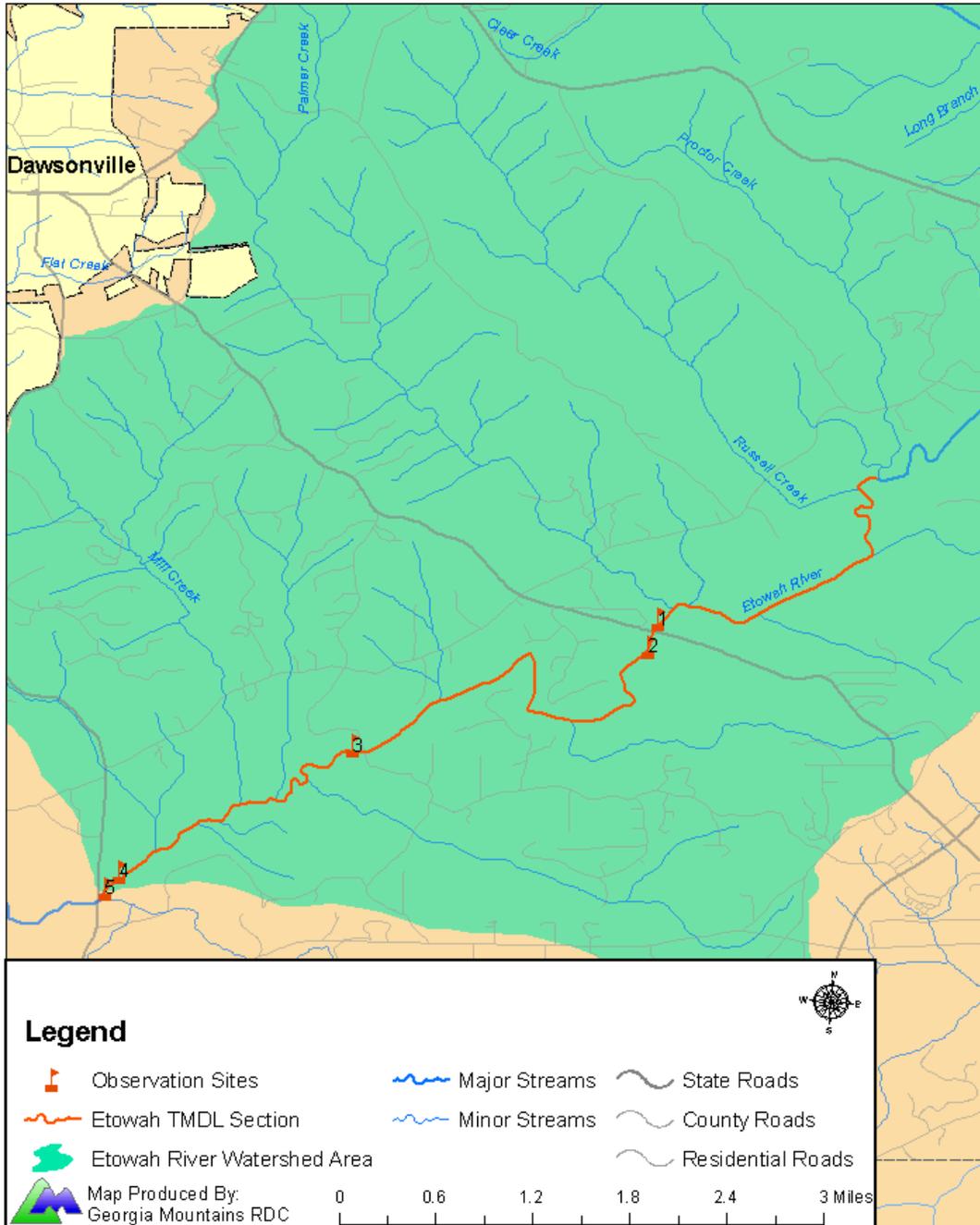
Watershed Survey and Map Assessment

AAS group name:	<u>Etowah River</u>	Investigator(s):	<u>Christopher Ernst</u>
Type of waterbody:	<u>stream / wetland / lake</u>		<u>Stream</u>
Water body name:	<u>Etowah River</u>	County(ies):	<u>Dawson County Lumpkin County</u>
Approximate size of drainage/study area:	<u>191,920</u> acres		
Date:	<u>March 18, 2006</u>	Time:	<u>9:00am</u> Picture/photo documentation? Yes

Etowah River TMDL Stream Section



Etowah River Observation Site Locations



II. LAND USES/ACTIVITIES AND IMPERVIOUS COVER

1. Identify land uses and activities in the watershed which have the highest potential to impact water bodies:

Check all boxes that apply, describe the location of the activity(ies) under Notes on Location & Frequency of Activities and also mark the locations on your map. If too frequently occurring to record locations, so note. If you don't know some of the information below, write DK under Notes.

Please indicate if you: surveyed only adjacent to the waterbody
 surveyed the whole watershed
 Provide notes as necessary

The watershed field survey included an evaluation of in-stream and watershed conditions. In-stream conditions were identified along the TMDL listed segment at the sites identified in the Etowah River Observation Site Location Map and Section III. Images of the observation site locations are provided in Appendix A. Because nonpoint source pollution commonly originates from activities relating to land use, the Etowah River watershed was also surveyed to note existing land use types and intensities. Selected images of the watershed survey can be found in Appendix B.

The Etowah River watershed appears to be undergoing significant residential development, with the greatest development intensity located in the southern edge of the watershed and along major transportation corridors such as SR 9, SR 52, SR 53, and SR 136. Many of the new housing units are being located on the Etowah River valley-sides to provide the homeowner with a scenic view of the river. These parcels are commonly located on steep slopes, which require additional septic design requirements to perform correctly. Aged residential housing units are also common throughout the watershed and may be contributing to fecal coliform loadings due to a lack of maintenance and repair.

Agriculture and livestock activity is dispersed throughout the watershed. Best management practices (BMPs) are commonly found in the watershed; however, a limited number of landowners still allow animals to have unrestricted interaction with riparian areas and streams. Due to the direct input of animal waste into stream systems, there is the possibility that these locations are increasing the fecal coliform load of the Etowah River and its tributaries. Agricultural lands are especially common along the Etowah River, between SR 53 and SR 9.

Recreational activities including camping, fishing, swimming, horseback riding, hiking, and canoeing are common along the scenic Etowah River. Continued human or animal interaction in close proximity to any waterbody commonly results in elevated fecal coliform loads, especially in areas with basic restroom facilities or on trails that frequently cross streams, as is the case with the Etowah River corridor.

Plan for Etowah River Watershed
HUC 10 #:0315010401

Land Disturbing Activities & Other Sources of Sediment	Adjacent to Water	In Watershed	Notes on location & frequency of activity
Extensive areas disturbed by land development or construction of utilities, roads & bridges	<input type="checkbox"/>	X	SR 9, SR 136, SR 53
Large or extensive gullies	<input type="checkbox"/>	<input type="checkbox"/>	_____
Unpaved roads near or crossing streams	<input type="checkbox"/>	X	Too many to note.
Croplands	X	X	Too common to note.
Pastures with cattle access to water bodies	X	<input type="checkbox"/>	Located in tributaries of the Etowah River between SR 53 and SR 9.
Commercial forestry activities including harvesting and site-preparation	<input type="checkbox"/>	X	Hurricane Creek watershed
Extensive areas of streambank failure or channel enlargement	X	<input type="checkbox"/>	Entire length of the Etowah River
Other Agricultural Activities			
Confined animal (cattle or swine) feeding operations and concentrations of animals	<input type="checkbox"/>	<input type="checkbox"/>	_____
Animal waste stabilization ponds	<input type="checkbox"/>	<input type="checkbox"/>	_____
Poultry houses	<input type="checkbox"/>	X	SR 136 near Dawsonville
Highways and Parking Areas			
Shopping centers & commercial areas	<input type="checkbox"/>	X	GA 400 corridor
Interstate and controlled access highways and interchanges	<input type="checkbox"/>	X	GA 400 corridor
Major highways and arterial streets	X	X	SR 9, SR 53, SR 136, SR 53, GA 400

Other extensive vehicle parking areas _____

Mining

Quarries with sediment basins in live flowing streams _____

Transportation and Motor Vehicle Services

Adjacent to Water	In Watershed	Notes on location & frequency of activity
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Truck cleaning services	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Public and private automobile repair facilities	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Car washes and large auto dealers	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Rail or container transfer yards	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Airports with fuel handling/aircraft repair	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Business & Industry, General

Activities with exterior storage or exchange of materials.	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Activities with poor housekeeping practices indicated by stains leading to streams or storm drains or on-site disposal of waste materials	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Heavy industries such as textiles & carpet, pulp & paper, metal, and vehicle production or fabrication	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Dry cleaners/outside chemical storage	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Food & Kindred Products

Fertilizer production plants	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Feed preparation plants	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Meat and poultry slaughtering or processing plants	<input type="checkbox"/>	<input type="checkbox"/>	_____
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Construction Materials

Wood treatment plants	<input type="checkbox"/>	<input type="checkbox"/>	_____
Concrete and asphalt batch plants	<input type="checkbox"/>	<input type="checkbox"/>	_____

Waste Recycling, Movement & Disposal

	Adjacent to Water	In Watershed	Notes on location & frequency of Activity
Junk and auto salvage yards	<input type="checkbox"/>	X	Scattered
Solid waste transfer stations	<input type="checkbox"/>	<input type="checkbox"/>	_____
Landfills and dumps (old & active)	<input type="checkbox"/>	X	2 inactive sites Camp Frank D. Merrill and Dawson County Landfill
Recycling centers	<input type="checkbox"/>	<input type="checkbox"/>	_____
Drum cleaning sites	<input type="checkbox"/>	<input type="checkbox"/>	_____

Illicit Waste Discharges*

Sanitary sewer leaks or failure	<input type="checkbox"/>	<input type="checkbox"/>	_____
Overflowing sanitary sewer manholes due to clogging or hydraulic overloading	<input type="checkbox"/>	<input type="checkbox"/>	_____
Bypasses at treatment plants or relief valves in hydraulically overloaded sanitary sewer lines	<input type="checkbox"/>	<input type="checkbox"/>	_____
Domestic or industrial discharges	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extensive areas with aged/malfunctioning septic tanks	<input type="checkbox"/>	<input type="checkbox"/>	_____
Dry-weather flows from pipes with detectable indications of pollution)	<input type="checkbox"/>	<input type="checkbox"/>	_____
Streamside areas of illegal dumping	<input type="checkbox"/>	<input type="checkbox"/>	_____

* If found (most likely during stream surveys), these activities should be immediately reported to the local government or the EPD regional office. These phone numbers are listed in Chapter 4.

III. GENERAL WATERBODY AND WATERSHED CHARACTERISTICS

This information will be gathered from your wetland, lake or stream segment.

1. Note the number of hydrologic modifications on your waterbody: structures that alter water flow

None	_____	Beaver dams	_____
Dams	_____	Dredge spoils	_____
Bridges	3	Pipes	_____
Waterfalls	_____	Other	_____

2. Note the approximate length of the stream that is affected by the following: if assessing a wetland, lake or pond, some of the following may also affect your waterbody

Stream culvert	_____	feet or	_____	mile or	_____	% of
stream length						
Stream straightening	_____	feet or	_____	mile or	_____	%
Concrete streambank/bottom	_____	feet or	_____	mile or	_____	%
Dredging/channelization	_____	feet or	_____	mile or	_____	%
Riprap/gabion	_____	feet or	_____	mile or	_____	%
Cattle crossing	_____	#				
Stream crossing (for vehicles)	_____	#				

3. Note extent of vegetative buffer along the banks: at a minimum of 5 sites*, at regular intervals (every 500 ft. in a 1/2 mile. section) note the following

#	Width in feet	Location (Left bank, Right bank or N, S, E, W side of wetland or lake)	Characteristics and comments
1	40ft	Right at upstream side of U.S 53	Stream velocity is medium to low, with the highest velocity at the center of the channel. Depth varies from 5 to 10ft. Substrate is composed of silt and sand with some moderate to large sized woody vegetation in the channel. Some rip rap is located in the stream bed due to gravity transport from bridge footings. The river left bank is 12ft tall with little vegetation composed of light grasses and exposed roots. The slope is near vertical and shows signs of light to mild erosion. The river right bank is 6ft tall with moderate grass vegetation, with a near vertical slope. Some signs of bank instability exist. There is no floodplain on either side of the stream at this location.

2	60	Left at Georgia Forestry Commission Site	<p>Stream velocity is medium (2ft per second) with velocity constant across channel. Stream depth is 1-4ft with large woody debris located on the right streamside. Right bank is near vertical with large, mature trees supporting the bank. Undercutting of tree root wads is ongoing. River left bank is vertical and supported with logs. This site has undergone bank stabilization efforts, as indicated by the placement of log structures. Bank is completely stable. GFC has placed picnic benches along grassed floodplain area. Both stream sides have a vertical height of 10-12ft between current stream level and the floodplain. River right floodplain is a large agricultural field (40 acres), with a 20 foot forested buffer between the field and Etowah River. River left floodplain has a grassed recreational area that extends from the streambank 50ft a managed forest area. Managed forestlands are located beyond the grassed recreational area.</p>
3	50ft	Right, slightly downstream of bridge at Hugh Stowers Rd.	<p>Water velocity is medium (2 fps) and has two main current lines located right and left of center due to the two channel design of the bridge, which is located 30ft upstream. The substrate is composed of sand and silt with a small amount of woody debris found on the channel bottom. The stream banks are 12-15ft nearly vertical. The bottom 3ft has signs of erosion and contain little vegetation. The remaining banks are stable and are vegetated with grasses and briars. The river right floodplain is a forested area with dense underbrush, while the river left floodplain is a fenced grassed pastureland.</p>
4	65ft	Right, 150 yards above U.S. 9 bridge	<p>Water velocity is medium (2-3 fps). Channel is wide and shallow (2-3ft deep) and composed of pebbles and cobbles. Some woody debris is located in channel. Banks are vertical with a height of 10ft. Banks are vegetated with both young and mature trees and also support some grasses and cane. Undercutting near the existing water level indicates some bank instability. The left floodplain is a pasture area that is fenced at</p>

			the stream bank. The river right floodplain is a large pasture (100+ acres) with a 75ft cane buffer between the field and stream bank.
5	30ft	Left, 10ft above U.S. 9 bridge	Stream velocity is high (3-4 fps). Channel is constricted as it passes between bridge footings. Stream depth is 3-5ft. Substrate is sand and pebbles with no woody debris. The stream banks are 25ft tall, nearly vertical, and rip rapped. No floodplain is present at this site.

4. Check the categories that best describe the general appearance of the waterbody:

Litter:

- No litter visible
- Small litter occasionally (i.e., cans, paper)
- Small litter common
- Large litter occasionally (i.e., tires, pallets, shopping carts)
- Large litter common

Special Problems:

- Spills of chemicals, oil, etc.
- Fish kills
- Wildlife, waterfowl kills

Erosion:

- No bank erosion or areas of erosion very rare; no artificial stabilization
- Occasional areas of bank erosion
- Areas of bank erosion common
- Artificial bank stabilization (i.e., riprap) present

5. Comments on general waterbody and watershed characteristics: (e.g. date and size of fish kill, increased rate of erosion evident, litter most evident after storms)

* Fish kills should be immediately reported to DNR Wildlife Resources Division at 770-918-64

The watershed appears to be in good condition. The banks of the Etowah River appear unstable at many locations. However, riparian buffers of mature trees, cane, and brush are helping to provide continued stability to the majority of the streambank. Due to the large size of the Etowah River, cattle and other farm animals are fenced out of the stream and did not appear to have direct access to the Etowah River at any locations noted during the field survey.

6. Summarize notable changes that have taken place since last year (if this is not your first year conducting the Watershed Survey).

This is the first year watershed survey.

APPENDIX A
OBSERVATION SITE PHOTOGRAPHS

Site# 1



Site# 2



Site# 3



Site# 4



Site# 5



APPENDIX B
PHOTOGRAPHS FROM WATERSHED SURVEY



Image taken at Davis Chapel Rd. and SR 52, facing north.
Note excellent fencing and dense grass vegetation.



Image taken at Wahsega Rd. near Etowah River, facing west.
Note abandoned poultry operation.



Image taken at Bull Mountain Trail System
Note heavy recreational use.



Image taken at Mill Creek Rd. and SR 9, facing east.
Note advertisements for newly constructed residential housing units.

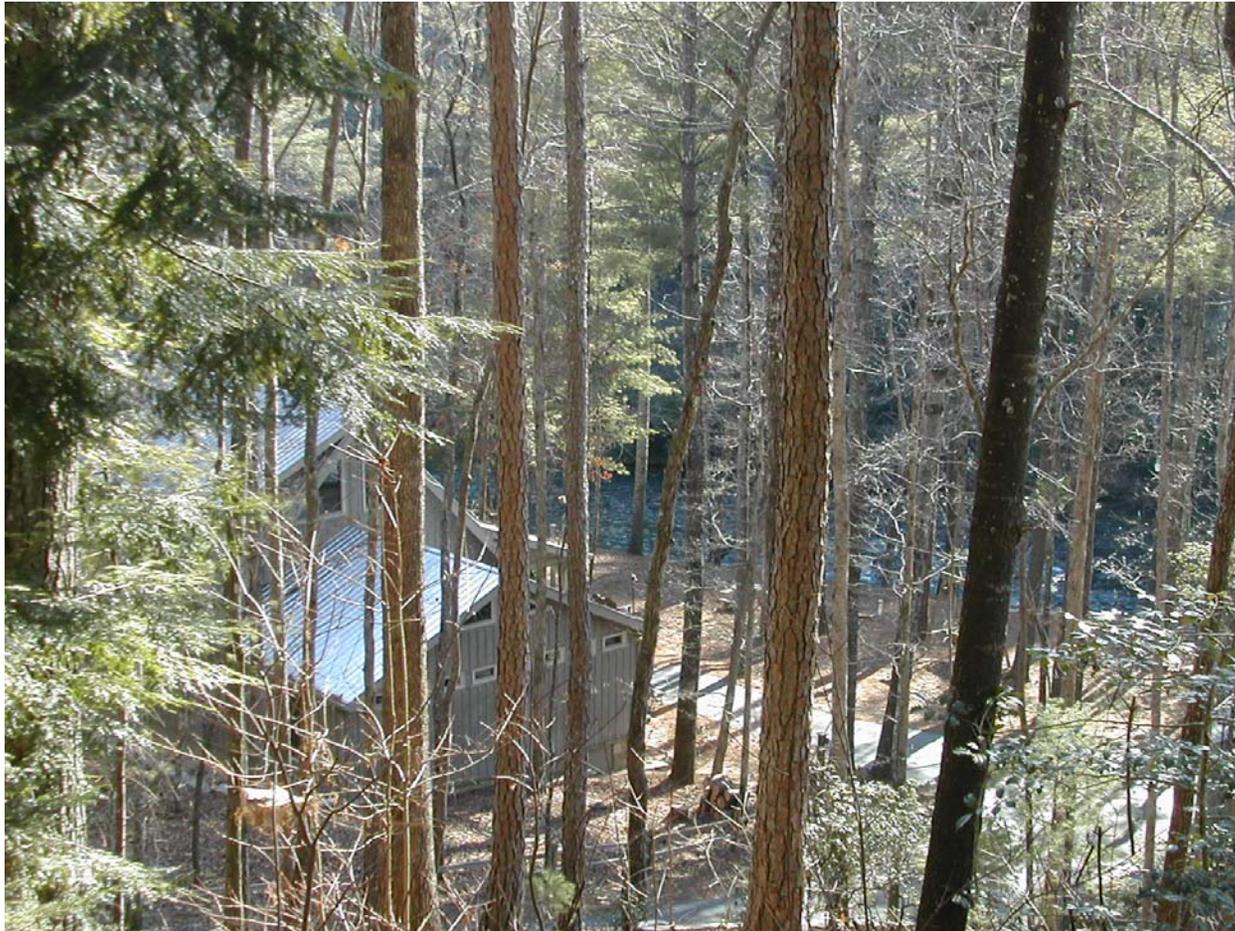


Image taken at Etowah River, near Auraria Rd.
Note residential development in close proximity to Etowah River



Image taken at Etowah River Rd. and Russell Creek, facing east
Note unlimited animal access to stream.



Image taken at Etowah River Rd. near Russell Creek, facing east.
Note low intensity pastureland and vegetated stream buffer along Etowah River in background.