CHATTOOGA RIVER WATERSHED PLAN

Susan M. Varlamoff[1] and Jimmy Bramblett[2]

AUTHORS: [1]Public Service Assistant, Office of Environmental Sciences, College of Agricultural and Environmental Sciences, University of Georgia, 109 Conner Hall, Athens, GA 30602; [2]Assistant State Conservationist, USDA Natural Resources Conservation Service, 355 East Hancock Avenue, Athens, Georgia 30601
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Abstract. In 1999, the Georgia Environmental Protection Division (EPD) established TMDLs on eight tributaries in the Chattooga River Watershed located in Georgia, North Carolina, and South Carolina. The Georgia Environmental Protection Division estimated that over 85 percent of the water quality impairments from fecal coliform and erosion and sedimentation stemmed from agricultural related activities. In 2000 and 2001, cooperating agencies and representatives from urban, development, municipal, environmental, forestry, and agricultural interests formed the Chattooga River Watershed Group to use the Natural Resources Conservation Service (NRCS) nine-step process to identify contamination sources and to develop a watershed plan. The process determined that the City of Clayton's leaking waster water treatment facility was responsible for significant amounts of the fecal coliform contamination. Modeling studies showed fecal contamination from agricultural runoff to be below water quality standards (100 col/100 ml). Sediment from harvested forest land, public forest land and development contributed 63 percent of erosion and sedimentation in the watershed according to modeling activities. Agricultural lands contributed only two percent of all erosion in the watershed.

BACKGROUND

The initial phases of the NRCS planning process began in the Chattooga River Watershed prior to the grant. EPA and the USFS conducted a number of preliminary investigations to identify water quality problems and potential sources of those problems. Cooperating agencies met on December 18, 2000 and February 9, 2001 in Clayton, Georgia to discuss the TMDLs and assess available opportunities.

Participants of this process are currently identified as the Chattooga River Watershed Group. During their first meeting, the Group developed a Steering Committee and Technical Advisory Committee. Both of these committees included representation from urban, development, municipal, environmental, forestry, and agricultural interests. Both committees agreed, during their second meeting to pursue Section 319[h] funds to facilitate a detailed NRCS-Planning Process for the purpose of defining TMDL sources and increasing the likelihood of acquiring BMP implementation funds.

The NRCS planning process contains provisions for public participation, technical analysis [i.e. water quality analysis], economic analysis, and a formal interagency review process. It conforms to the criteria established in the NRCS-National Watershed Manual, Economic and Environmental Principles and Guidelines, and other NRCS watershed planning policy.

PROJECT LOCATION

The project was located in the Chattooga River Watershed, which is part of the Tugaloo River Basin. Headwaters of the Chattooga River are in the Nantahala National Forest and private lands in North Carolina. Flowing southward out of North Carolina, they form approximately 40 river miles of boundary between Georgia and South Carolina. The river drops 3,000 feet elevation at its headwaters to 950 feet at its termination into Lake Tugalo. It is under the control and protection of the Chattahoochee National Forest in Georgia, Sumter National Forest in South Carolina, and the Nantahala National Forest in North Carolina. The total project area was 248,228 acres of which 16.5 percent is located in Macon County, North Carolina; 42 percent is found in Oconee County, South Carolina; and 41.5 percent is situated in Rabun County, Georgia.

In addition to having eight TMDLs, the Chattooga River Watershed was selected as one of seventeen Category I watersheds under the Unified Watershed Assessment. Stekoa Creek, which has five of the eight impaired stream segments, was also identified as a priority subwatershed in Georgia's statewide Watershed Restoration Action Strategy (Figure 1).

The Chattooga River was designated a National Wild and Scenic River by Congress in 1974. As a result, no motorized vehicles are allowed within ¼ mile of its banks. Man-made facilities are minimal within the riparian zone and consist primarily of hiking trails. It has Class 4 and 5 rapids and was the chosen venue for white water rafting in the 1996 Olympics. It is a very popular tourist attraction and provides many recreational opportunities in the form

of white water rafting, hiking, camping, boating and fishing. Clayton is the largest city in the watershed with a population (2000 census) of 2,019.

The watershed is oriented primarily to agriculture, forestry, and recreation. Broiler production and vegetable farms are by far the largest agricultural operations in the drainage basin. (Table 1).

Figure 1.

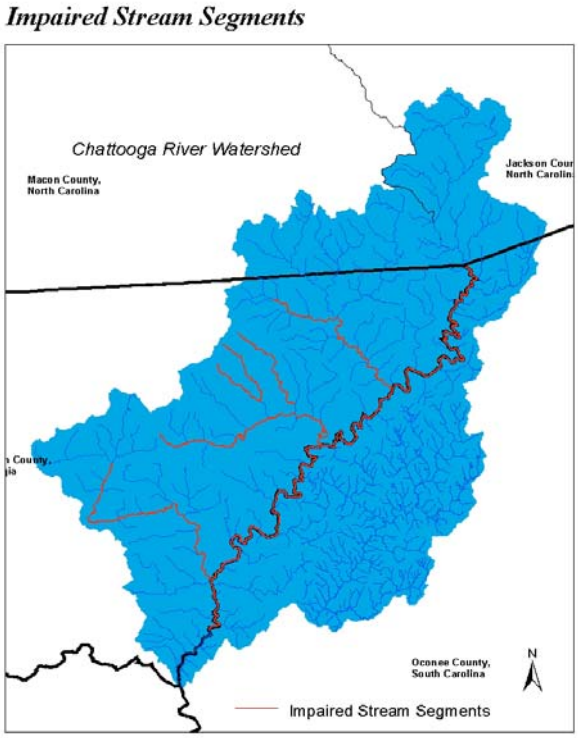


Table 1 Chattooga River Watershed Project area – Land Use

Land Cover	Acres	Percent
Cropland	849	0.34
Pasture	5,623	2.27
Grazed Woodland	650	0.26
Forest – private	78,061	31.45
Forest – public	152,053	61.26
Forest – harvest	7,096	2.86
Wetlands	88	0.04
Open Water	871	0.35
Urban	1,781	0.72
Other Lands	1,156	0.47
TOTAL	248,228	100

PLANNING PROCESS

Since the 1990's, citizens within the Chattooga River Watershed have recognized increasing water quality issues and potential problems related to agriculture.

Landowners used assistance through the Environmental Quality Incentives Program to address their concerns, but were limited by program policy and budget constraints. Meetings were held to evaluate the problem and determine if the issues warranted application for additional federal assistance through the Small Watershed Program. Based on data obtained, and interest within the watershed; the Districts (Sponsors) and NRCS agreed that this watershed should be targeted for special water quality improvement efforts. The Sponsors submitted an application in October 2002 to the Georgia Soil and Water Conservation Commission for NRCS planning assistance and received approval.

To facilitate consultation and public involvement in the Chattooga River Watershed Project, a project organizational structure was developed. It consisted of the Project Sponsors, who were supported by an Interdisciplinary Planning Team, a Technical Advisory Group, and Stakeholder Involvement.

Sponsors

Meetings were held with key farmers and District representatives from the watershed area to discuss problem identification, conservation systems and requirements for NRCS assistance. During the Fall of 2002, the following sponsors were secured:

- Blue Ridge Soil and Water Conservation District [Georgia]
- Oconee County Soil and Water Conservation District [South Carolina]
- Macon County Soil and Water Conservation District [North Carolina]
- Sekoa Creek Watershed Group

The project was guided by a Planning Team, Technical Advisory Group, and the general public with representation from interested stakeholder groups across the watershed.

Planning Team

The Planning Team provided for the "technical" administration of this project. Technical administration includes tasks pursuant to the NRCS nine-step planning process. Examples of tasks completed by the Planning Team included, but are not limited to, Preliminary Investigations, Resource Inventorying, Analysis of Resource Data, Formulating and Evaluating Alternatives, and Writing the Watershed Plan and Environmental Assessment.

Data collected from partner agencies, databases, landowners, and others throughout the planning process were evaluated at formal Planning Team meetings held on December 2002 to November 2005. Informal discussions among the planning team, partner agencies, and landowners were conducted throughout the entire planning period.

Technical Advisory Group
A Technical Advisory Group was developed to aid the Planning Team with the planning process. The following organizations were involved in the development of this plan and provided representation:

- Chattooga River Watershed Coalition
- Georgia Department of Natural Resources, Environmental Protection Division, Water Protection Branch
- Georgia Department of Natural Resources, Wildlife Resources Division, Game and Fisheries Management Sections
- Georgia Forestry Commission
- Georgia State Historic Preservation Office
- Georgia Soil and Water Conservation Commission
- South Carolina Forestry Commission
- United States Environmental Protection Agency
- University of Georgia, Cooperative Extension Service
- USDA, Natural Resources Conservation Service
- USDA, US Forest Service
- USDA, Fish and Wildlife Service

Meetings were held with members of the Technical Advisory Group as needed to determine the influence of agriculture, and other land-use, activities on natural resource concerns in the watershed. This information was used to calculate current and future conditions in the watershed.

Public Participation
A public meeting was held on June 21, 2004 to scope the problems and concerns and to explain impacts of the program in relation to the identified concerns. An overflow crowd of approximately 50 concerned citizens, landowners, and partners attended the meeting. Support was unanimous for continued development of the PL-566 Land Treatment project to help protect the area's natural resources.

Plan Review and Development
A Drafted version of the Watershed Plan and Environmental Assessment was submitted to Planning Team members. Comments from individuals participating with these groups were incorporated into this final plan.

WATERSHED PROBLEMS

Eleven tributaries of the Chattooga River Watershed were not meeting their designated use according to the Georgia Environmental Protection Division 303(d) list for the year 2002 (Table 2). Water quality impairments were identified by the Georgia EPD through water quality monitoring; and by the US EPA, Region IV through biological monitoring.

While developing a Total Maximum Daily Load [pollutant load limitation] for streams within the watershed, the Georgia Environmental Protection Division estimated that over 85 percent of the water quality impairments on the 32.4 miles of stream miles stem from agricultural related activities. Left unchecked, the continued excessive erosion and sedimentation in the watershed would continue to accelerate water quality degradation, and would have the potential to diminish land productivity, reduce recreational opportunities, impact real estate values, and threaten drinking water capacity for urban areas.
Landowners and other individuals in the watershed participated in visually identifying additional natural resource concerns in the watershed. The following were identified as examples of potential sources of pollutants.

Suspected Fecal Coliform Sources
- City of Clayton's aging waste water treatment facility
- Land application of animal waste, livestock access to streams

Suspected Sediment Sources
- Unprotected streambanks where livestock access streams
- Roads adjacent to streams
- Development

Table 2 Impaired Stream Segments – Chattooga River Watershed

CREEK	Supporting	Reason	Miles
Cherchero Creek	partially	sediment	1.5
Cherchero Creek	partially	fecal coliform	1.5
Law Ground Creek	partially	sediment	2.3
Pool Creek	partially	sediment	1.6
Roach Mill Creek	partially	sediment	1.5
Saddle Gap Creek	partially	sediment	4.0
Saddle Gap Creek	partially	fecal coliform	4.0
Scott Creek	partially	sediment	3.5
Stekoa Creek	partially	fecal coliform	14
Stekoa Creek	partially	sediment	13
Warwoman Creek	partially	sediment	4

Source: Georgia Environmental Protection Division, 303(d) list for year 2002.

Suspected fecal sources from modeling activities in the watershed included Clayton's waste treatment facility, and its associated drainage network, agriculture livestock and poultry operations, marginal septic systems, and wildlife. Modeling activities by EPA identified sediment sources to include rural unpaved roads, road banks, development [particularly in Clayton, and along US Highway 441], streambanks, streambeds, agricultural operations, and silvicultural operations.

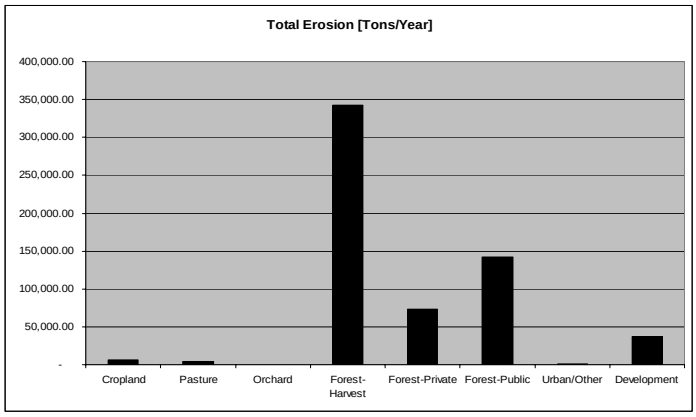
Historic trends indicate that livestock and poultry numbers, land use and management of agricultural operations in the watershed will have the potential to increase over the projected 25 year evaluation period without strong external incentives and accelerated program opportunities. However, with increased urban influences from Atlanta, the expected agricultural growth is forecasted as a constant with regard to animal numbers.

Survey and Research Results

A Resource Inventory was completed by Planning Team members to determine number of farms and animals on farms, percent of waste applied to cropland, active streambank erosion, percent of animals with access to streams, etc. This results of this inventory plus data from the U.S. Geological Survey, U.S. Forest Service, U.S. EPA, Georgia EPD, and other sources was put into the NRCS- Georgia Agricultural Water Quality Watershed Assessment Model to determine sediment sources. The results are shown in the figure below.

Collectively, erosion from agricultural land uses amounts to 10,372 tons/year, which accounts for 2 percent of all erosion that takes place within the watershed.

Harvested forestland and development have the highest erosion rates at 48 tons/acre and 32 tons/acre respectively. Total erosion from these two land-uses amounts to 379,284 tons/year, accounting for 63 percent of all erosion in the watershed.



Source: NRCS-Georgia Agricultural Water Quality Watershed Model, March 2004.

Scientific assessment of agricultural operations in the watershed determined that approximately 215 tons of waste from beef operations, and 12 tons of waste from poultry operations are delivered to streams in the Chattooga River Watershed annually. This amount of waste contains 17 tons of N and 3 tons of P.

In addition to contamination to the watershed by agriculture, a UGA study by Agricultural and Applied Economics [Marselli 2002] identified leaks in the sewage distribution system as a major contributor to water quality impairments. The City of Clayton, recognizing a need to update their aging infrastructure, applied for and received a GEFA grant to address these issues.

Recommended Plan

The Planning Team selected the No Action Alternative Watershed Plan. It consists of implementing the existing EQIP, CRP, and other Farm Bill Programs on agricultural lands within the watershed. Under this alternative, it is estimated that land treatment will occur on 849 acres of cropland and 5,623 acres of pasture over the next 25 years of the evaluation period. Animal waste management practices would be installed on 42 beef operations and12 poultry operations. Funds from ongoing NRCS Conservation Programs will be sufficient to install adequate Resource Management Systems on any land based or animal operation.

Costs: Total installation cost - $ 715,103; Gov't share - $357,551; State/Local - $357,551; Annual cost - $51,373

With respect to fecal coliform, it is estimated that agricultural runoff contains a concentration of 100.48 col/100mL. This concentration is below current water quality standards. Additionally, ongoing Farm Bill Programs will target conservation practices that will further reduce livestock access to creeks and streams, providing alternative water supply sources, comprehensive nutrient management planning and implementation.

The average erosion rate for cropland, in the watershed, exceeds soil tolerance levels of 5.0 tons/acre/year at a current rate of 7.06 tons/acre/year. Erosion rates that take place below soil tolerance levels allow for the natural soil replenishing process to unfold. Anticipated conservation practices that include crop residue management, conservation tillage, comprehensive nutrient management, etc. will reduce cropland erosion rates within soil tolerance levels. Estimated Total Suspended Sediment concentrations in agricultural runoff will continue to improve from the current 7.44 mg/L, which already exceeds The University of Georgia recommendation of 20-30 mg/L.