

STATE OF GEORGIA

TIER 2 TMDL Implementation Plan (Revision # 01)

Segment Name: SOUTH CREEK AND BIGER CREEK

Date: June 15, 2007

River Basin: Savannah River Basin

Local Watershed Governments:

- Madison, Oglethorpe and Clarke Counties
- Cities of Colbert, Hull, Comer, Carlton, Danielsville
- Ila, Arnoldsville, and Crawford

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 (Best Management Practices, or BMPs) to reduce pollutants, milestone schedules to show development of the BMPs (*measurable milestones*), and a monitoring plan to determine BMP effectiveness.

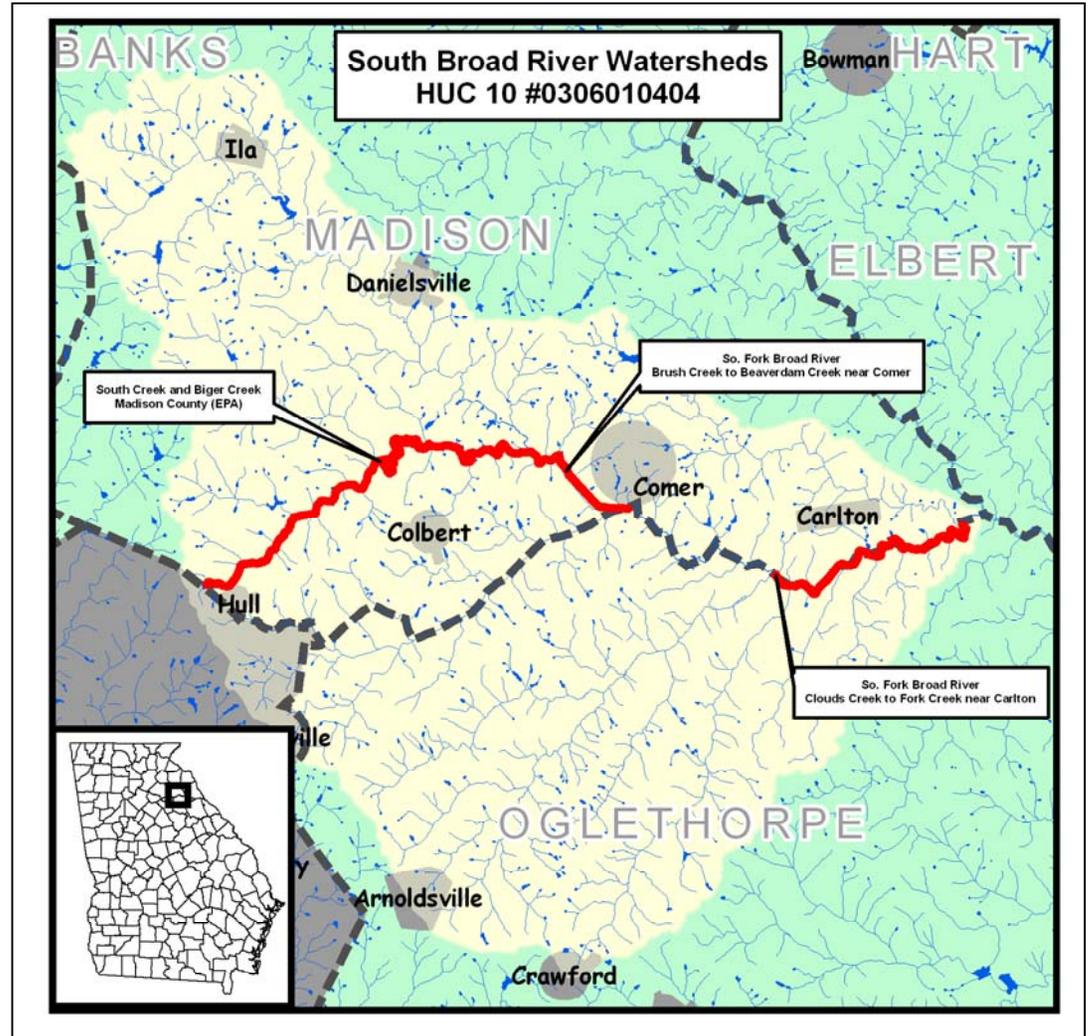


Table 1. IMPAIRED SEGMENTS IN THE HUC 10 WATERSHED

IMPAIRED SEGMENT	IMPAIRED SEGMENT LOCATION	EXTENT (mi/ac)	CRITERIA VIOLATED	EVALUATION
South Creek and Biger Creek	Madison County (EPA)	14 miles	Bio (Sediment)	EPA Listed
South Fork Broad River	Clouds Creek to Fork Creek near Carlton	7 miles	Fecal Coliform	NS
South Fork Broad River	Brush Creek to Beaverdam Creek near Comer	3 miles	Fecal Coliform	NS

II. GENERAL INFORMATION ABOUT THE HUC 10 AND THE SPECIFIC SEGMENT WATERSHEDS

Following is a review of watershed characteristics including its size and location, political jurisdictions, physical features, land uses, and identified potential sources of pollutants that could cause or contribute to violations of water quality standards addressed in this TMDL Implementation Plan. New conditions or changes in information contained in the previous TMDL Implementation Plan should be in are in **bold** and underlined.

The HUC 10 # 0306010404 encompasses parts of Madison, Oglethorpe and Clarke Counties. The Cities of Carlton, Comer, Colbert, Hull and Ila are entirely within the HUC 10 watershed. Cities that lie partially within the watershed are Crawford, Arnoldsville and Danielsville. There are three TMDL stream segments within this HUC 10 watershed. Two segments of the South Fork Broad River are not supporting their designated use of fishing due to fecal coliform impairment, and the South Creek/Biger Creek TMDL segment was listed by EPA as violating standards for biota due to sediment impairment. South Creek/Biger Creek becomes Brush Creek and Brush Creek is a tributary of the South Fork Broad River. The HUC 10 watershed is 156,952 Acres.

2004 NEGRDC Land Use for South Fork Broad River TMDL Segment Watershed			The South Creek/Biger Creek (EPA listed) (Hull, GA to South Fork Broad River) TMDL segment is 14 miles in length and is located in southern Madison County just North of Hull and Colbert. The data that listed the segment was collected at GA-172 near Comer in 2002. Madison County and the Cities of Hull and Colbert are the only jurisdictions that impact the South Creek/Biger Creek segment watershed. The watershed for the segment is 23,325.6 acres.
Land Use Category	Area (Acres)	% of total	
Residential	7759.72	33%	Primary land uses in the watershed are residential, crop production and forestry/logging according to NEGRDC 2004 land use data. Residential land accounts for 33% of the watershed. There are several new developments in the watershed and some do not appear to be using best management practices to prevent stormwater runoff. Crop production accounts for 31% of land use. Crop production is a source of sediment if best management practices are not utilized. According to the land use data, only a small percentage of the land in the South Fork Broad River watershed is used for animal production. However, during the windshield survey animal production was observed to be quite common. It is possible that some of the land classified in the land use data as crop production is in fact used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. Animal Production in the watershed consists primarily of pasture for cattle and horses and poultry and egg production. Livestock can be a source of sediment if they have access to stream banks and therefore destabilize them or if grazing management practices are not used. Forestry/logging accounts for 27%. Forestry/logging causes increased sediment loads if best management practices are not followed.
Commercial	147.81	1%	
Transportation/Utility	840.39	4%	
Park/Recreation/Conservation	151.27	1%	
Public/Institutional	177.65	1%	
Crop Production	7219.26	31%	
Animal Production	504.13	2%	
Forestry/Logging	6393.28	27%	
Other	132.10	1%	
Total	23325.61	100%	

One purpose of the TMDL implementation plans is to compare the most recent RDC land use data with the 1995 land use data that was used in the development of the TMDLs. Comparison of the 1995 TMDL land use data and the 2004 RDC land use data shows significant changes in land use.

Urban land use (residential, public/institutional and transportation/communication/utility) increased 1,234%, Commercial/Industrial increased 25.3%, Forestry/logging decreased by 57.6%, and Agriculture increased 8.3%.

The Madison County Comprehensive Plan was written in 2001. According to this plan, Madison County, Danielsville and Comer adopted a Soil Erosion and Sedimentation Control Ordinance that addresses non-point source pollution on newly developed lands, and Madison County adopted a Stormwater Ordinance to address post-development stormwater runoff in anticipation of becoming a permitted stormwater system in the future. The River Corridor Protection Ordinance was adopted in 1993. Madison County also has an ordinance allowing for the construction of conservation subdivisions that require at least 50% of the land to be kept as greenspace and be put into a permanent conservation easement. The remaining land will be developed with the same number of residences that would be allowed on the entire property under standard zoning regulations. Madison County has also adopted a Groundwater Recharge Protection Ordinance. The City of Hull adopted a Groundwater Recharge Ordinance and Well-head Protection Ordinance. The City of Carlton adopted a Wetlands Protection Ordinance.

In the future, Madison County will be adopting an ordinance to increase the riparian buffer limit on state waters from 25ft. to 50ft. and the South Fork Broad River may be added to the River Corridor Protection Ordinance.

Keep Madison Beautiful led the 2005 and 2006 Rivers Alive Cleanups on the Broad River in Oglethorpe, Madison, and Elbert Counties. The Broad River Watershed Association is active in Broad River watershed in Oglethorpe County and has been conducting a water quality study on Long Creek and other streams in the Broad River watershed. Oglethorpe County is in the Oconee River RC&D region. The Oconee River RC&D has led EPA 319(h) funded programs in other counties in the region, but these have not been active in the South Creek/Biger Creek watershed.

III. CAUSES AND SOURCES OF SEGMENT IMPAIRMENT(S) LISTED IN TMDLs

Table 2 provides information contained in the current TMDL for the impaired water body. This includes the name and location of the impaired segment, the water quality criteria violated, and the wasteload and load allocations determined in the TMDL. Potential sources described in the TMDL may include domestic treatment facilities (M), industrial treatment facilities (I), urban runoff and sources (UR), and other nonpoint or unknown (NP) sources. By definition, “wasteload allocations” (WLA) are established for municipal and industrial treatment facilities and storm water discharges in permitted areas (WLA_{sw}), while “load allocations” (LA) are established for nonpoint sources. **Wasteload allocations are assigned by EPD during the NPDES permitting process. They are not part of EPD’s TMDL implementation planning process, which deals solely with non-point sources of pollutants.**

Table 2. WASTE LOAD AND LOAD ALLOCATIONS AND TMDLS FOR THE IMPAIRED SEGMENT

STREAM SEGMENT NAME	LOCATION	CRITERIA VIOLATED	WLA	WLA _{sw}	LA	TMDL
South Creek/Biger Creek	Madison County (EPA)	Biota Impacted by Sediment			5,790 Tons/yr	5,790 Tons/yr

Table 3 also contains information presented in the TMDLs that this plan is designed to address. This includes the criteria responsible for the impairment(s), the specific water quality standard(s) violated, potential sources/causes of impairment, and the needed reduction in nonpoint source loads estimated in the TMDL.

Table 3. SOURCES OF IMPAIRMENT INDICATED IN THE TMDLs

CRITERIA VIOLATED : Biota	WQ STANDARD	SOURCES OF IMPAIRMENT	NEEDED % REDUCTION (FROM THE TMDL)
Biota Impacted by Sediment	No Degredation of Fish Community	EPA Listed (NP)	39

IV. IDENTIFICATION AND RANKING OF POTENTIAL SOURCES OF IMPAIRMENT

This section identifies and describes, in order of importance, the extent and relative contributions from sources of pollutants listed in Table 2 and identified through this TMDL implementation planning process. This description includes information presented in the current TMDL or TMDL implementation plan and/or collected during the TMDL implementation planning process that either verifies or alters estimates of contributions from the sources listed in the TMDL and repeated in Table 2.

Sources in the South Creek / Biger Creek TMDL segment watershed were identified by conducting visual field surveys of the stream crossings and the watershed land use. Prior to conducting the field survey 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of sediment pollution within the watershed boundary shown on the maps on the previous pages. 2004 RDC land use data was also consulted to determine the extent of potential sources of sediment.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. Sources investigated during the windshield survey were land-disturbing activities, because these are easy to identify from aerials and it can be readily apparent if they are not using Best Management Practices. These activities were considered to be priority sources if best management practices were not in place to prevent runoff of sediment into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

The field surveys were presented to stakeholders at a TMDL implementation meeting. Any comments that were made in the meeting were included in the visual field survey report, which can be found in Appendix C of this document. The field surveys were posted on the NEGRDC website TMDL page.

Point Sources

NPDES permitted construction sites (sites over 1 acre) are the only point sources of sediment in the watershed.

Non-Point Sources

Residential Development

Residential development accounts for the largest percentage of land use in the watershed. There were several new developments in the watershed. Some developments still had vacant lots that will be developed soon. One or two areas are being cleared for future residential development. For example, on Garnett Ward Rd. there is a future subdivision that has cleared trees, exposed a lot of loose dirt, and installed utility lines with no apparent use of best management practices to prevent sediment runoff. Urban development increases impervious surfaces, which will cause more runoff of sediment and other pollutants. Practices used during road construction can be another big source.

Agriculture

Agriculture is another potential source of sediment pollution. Erosion and sedimentation can be a problem if proper best management practices are not used in crop production. Farms with animal production can be a source of sediment if animals are allowed access to the stream banks or if grazing is not managed properly. According to the land use data, only a small percentage of the land in the South Creek/Biger Creek watershed is used for animal production. However, during the windshield survey animal production was observed to be quite common. It is possible that some of the land classified in the land use data as crop production is in fact used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. At one of the road crossings, cattle had access to the TMDL segment. At another, cattle had access to a gully that drains to the TMDL segment during storm flows. Madison County has 18,200 beef cattle, which are the most likely animal source of sediment in streams.

Forestry/logging

Forestry/logging is another source of sediment if best management practices are not implemented. Evidence of inactive logging operations was discovered during the visual field survey. The Georgia Forestry Commission reports no evidence of recent silvicultural activities in the South Creek/Biger Creek watershed.

Table 4 ranks potential sources of water quality impairments in order of importance as determined through this TMDL implementation planning process. A “rating scale” of 0.5 to 5 has been developed for this activity. “Rating A” is an estimate of the geographic extent of each potential nonpoint source as a percentage of the contributing watershed area, percent of stream miles affected, or number of acres. “Rating B” is an estimate of the relative contribution from each major source of the pollutant causing the impairment. The overall relative “Impact Ratings” for each source is calculated by multiplying Rating A by Rating B.

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

Rating A: Estimated Geographic Extent of the Source or Cause in the Contributing Watershed	Rating B: Estimated Portion of Contribution from the Source to the Pollutant Load Causing the Impairment	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

Comments on the source of information used to determine the extent or contribution are entered in the applicable columns in Table 4. Appropriate management actions (i.e. watershed assessments, increased water quality monitoring, etc.) are suggested where available information is deemed inadequate to estimate the extent and relative contribution of significant potential sources.

Table 4. EVALUATION OF POTENTIAL SOURCES OF STREAM SEGMENT IMPAIRMENT

CRITERION 1: Sediment.

POTENTIAL SOURCES	ESTIMATED EXTENT OF CONTRIBUTION		ESTIMATED PORTION OF CONTRIBUTION		IMPACT RATING (A X B)
	Comments	Rating (A)	Comments	Rating (B)	
Construction	Residential is 33% of watershed, lots of new development	3	New development with no apparent use of best management practices	3	9
Animal Production	Animal Production is 2% of land use according to land use data, but likely to be more (some grazing land classified as crop production)	1	Some farms allow animal access to stream banks causing direct input of sediment	3	3
Forestry/logging	Forestry/logging is 27% of land use	3	Some logging operations are not using all recommended best management practices	1	3
Crop Production	Crop Production is 31% of land use according to land use data, stakeholders say there is very little crop production in county	0.5	No observation of presence or absence of BMPs	1	0.5

V. STAKEHOLDERS

Public involvement through the stakeholder process is a vital component of TMDL implementation planning. Stakeholders with local knowledge can provide valuable information regarding their communities, impaired waters, potential sources of impairments, and BMPs that might be employed to improve water quality. This section describes outreach activities engaging local stakeholders in the TMDL implementation plan preparation process, including the number of attendees, meeting dates, and major findings, recommendations, and approvals.

Stakeholders were involved in the TMDL implementation planning process through public meetings about TMDLs and TMDL implementation, through invitation to participate in visual field surveys, through county meetings to draft the plans, through one-on-one meetings, and through correspondence via e-mail and telephone.

Stakeholder Identification

Stakeholders were identified by compiling lists of stakeholders who participated in previous implementation activities and by reviewing TMDL implementation plans written by other RDCs to determine which organizations they brought to the table. Others were identified by word of mouth.

Press releases were sent out to local newspapers announcing public meetings, and memorandums were sent to previously identified key stakeholders. The Press releases and memos suggested that stakeholders invite others who are interested in water quality to the meetings as well. At the meetings it was made known that the stakeholder advisor group is ever expanding and that anyone with a vested interest in water quality should be added.

Elbert/Madison/Oglethorpe Counties Public Meetings

November 13, 2006 (14 attendees)

- Viewed video entitled “Watershed Wisdom: Georgia’s TMDL Program”
- PowerPoint presentation entitled “Introduction to TMDL Implementation “ was presented by RDC

March 6, 2007 (11 attendees)

- Presented visual field surveys
- Presented case studies of BMP implementation and 319 (h) projects used for TMDL implementation

Stakeholder Comments/Questions

- Concerns were raised about the accuracy of the RDC land use layer on the maps
 - GIS staff found more updated land use layers, but they are from 2004 so any changes since 2004 will not be included
 - Land use layers are parcel based. Parcel land use is determined by aerial photos and tax data from the internet. Some parcels may be labeled inaccurately
- Concerns were raised that the listing of water bodies is based on very limited sampling

- Mary Gazaway of EPD responded that as of 2002, 4 samples must be collected within a 30-day period and the geometric mean of those samples has to exceed the limit for the stream to be listed. EPD recommends that sampling be conducted quarterly.
- Dudley Hartel mentioned that Madison County has a Adopt-a-Stream Program
- Ruth Ann Tesanovich said Madison County is in the process of revising its comprehensive land use plan. As part of the proposed revision the riparian buffers would be increased to 50ft. Property Owners for Commonsense Growth recommended it be increased to 75ft.
 - The revision was passed with riparian buffer requirements being increased to 50ft.
- Can volunteers submit water quality data for listing/delisting decisions?
 - Yes, but they must have an EPD approved Sampling Quality Assurance Plan and the samples must be analyzed in an EPD certified lab
 - UGA (Engineering or Ecology) has an EPD certified lab that volunteers can use (ask Mark Risse)
 - Municipal Wastewater Treatment Facilities have EPD certified labs
- The suggestion was made that future meetings be conducted during the day so there will be more participation
- Another suggestion was to meet with each county separately at the county seat

Madison County Advisory Group Meeting

April 25th, 2007

(3 Attendees)

- Presented source ratings for Broad River (Madison), South Fork Broad River (Madison), Southe Fork Broad River (Madison/Oglethorpe) and South Creek/Biger Creek.
- Presented current funding options, current water quality ordinances and management measures, and new recommended management measures.
- Revised plans based on stakeholder comment/suggestion

Stakeholder Comments/suggestions

- Discharge from Danielsville system is likely to be a source of fecal coliform. System does not treat effluent well.
- Stakeholders verified that crop production is not a source of fecal coliform, and crop production probably only 1 or 2% of watershed land use. Most parcels classified as crop production are actually pastures, but some have been forested or developed.
- Code enforcement officer enforces septic repair and illegal dumping. He says septic not likely to be a major source, because repairs are enforced.
- County extension agent runs articles in newspaper, but only when the newspaper has space.
- Stakeholders say that a septic maintenance ordinance will probably not be adopted.

Following is a list of advisory committee or watershed group members who participated in this TMDL implementation planning process.

Table 5. STAKEHOLDER ADVISORY GROUP MEMBERS

NAME/ORG	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doug Appler, Madison County Planning	P.O. Box 68	Danielsville	GA	30633	706-795-6340	dappler@madisonco.us
Jack Huff, Madison County Code Enforcer	P.O. Box 510	Danielsville	GA	30633	706-795-5685	mcce@madisonco.us
Carl Varnadoe, Madison County Extension Director	P.O. Box 510	Danielsville	GA	30633	706-795-2281	Uge1191@uga.edu
Ruth Ann Tesanovich, Property Owners for Commonsense Growth	959 Hwy. 172	Colbert	GA	30628	706-788-3238	rtesanovich@uha.uga.edu
Burton 'Chip' Chandler, Watson Mill Bridge State Park	740 First St.	Carlton	GA	30627	706-797-3501	dewchndlr@aol.com
Marvin White, Madison County Chamber of Commerce	P.O. Box 361	Danielsville	GA	30633-5961	706-795-3473	marvin@madisoncountyga.org
Steve Sorrells, City of Comer Clerk	P.O. Box 65	Comer	GA	30629-0065	706-783-4552	shsorrells@alltel.net
Sam Linhart, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-783-2308	jeansmithga@earthlink.net
Victor Johnson, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-795-2184	glfvyj@charterinternet.com
Dudley Hartel, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-559-4236	drhartek@alltel.net

Major stakeholders in the watershed are listed in Appendix A.

VI. MANAGEMENT MEASURES AND ACTIVITIES

Table 6A identifies significant BMPs that either have been or may be taken in the future to address sources of impairment. The BMPs are in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (A) installed and active; (AE) active and will be enhanced or expanded; (R) required by law, regulation or permit conditions; (P) currently proposed, but not required; (NR) new recommendation; or (NE) enhanced existing recommendation. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP has or will be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	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 6A. MANAGEMENT MEASURES AND ACTIVITIES

GENERAL AND SPECIFIC MEASURES APPLICABLE TO CRITERION 1: Sediment

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Federal Clean Water Act, Section 305(b) and 303(d)	USEPA, Georgia DNR/EPD, Local/County Government	The congressional objective of the CWA “is to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.” Section 305 (the <i>National Water Quality Inventory</i>) 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	A	In place, on-going		
Georgia Water Quality Control Act (OCGA 12-5-20)	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, Local/County Governments	A	In place, on-going		

Plan for South Creek and Bigger Creek
HUC 10 # 0306010404

		Law authorizing Georgia EPD to control water pollution, eliminate phosphate detergents and regulate sludge disposal; to require permits for agricultural ground and surface water withdrawals; to prohibit siltation of state waters by land disturbing activities and require undisturbed buffers along state waters; to require land-use plans that include controls to protect drinking water supply sources and wetlands; to require river basin management plans on a rotation schedule for all major river basins.					
Georgia Planning Act, Part 5	NEGRDC, Madison County	Coordinated Planning Program, managed by Georgia DCA, requires local governments to identify Developments of Regional Impact (DRI) and develop plans to protect and manage Regional Impact Resources (RIR).	Local/County Governments Impact Fees	A	In place, on-going		Effectiveness varies with the specific BMPs applied.
Construction Storm Water Discharge NPDES Permit	Georgia DNR/EPD	General storm water discharge permit for stand-alone construction sites; infrastructure projects; and common developments. Requires implementation of Erosion, Sedimentation and Pollution Control Plan plus monitoring of discharge for compliance with Georgia's in-stream water quality standards.	State		On-going		See Tables 1A and 1B.
Riparian Buffer Ordinance	Madison County	Increases riparian buffer width requirement from 25 ft. to 50 ft. Allows for residential development within buffer provided it is located on 2 acres or more and the septic drainfield is located outside the buffer area. Agricultural use is exempt provided BMPs are used.		NE	May 2007	5	1 (for new and redevelopment)
Post-Development Stormwater Management Ordinance	Madison County	Stormwater ordinance complies with NPDES Phase II, which wouldn't have been required until after 2010. Requires post development storm water BMPs for land disturbing activities that create 5,000 square feet of impervious surface or that involve land development of 1 acre or more.	Madison County	A	2006	3	5 (for new and redevelopment)
Conservation Subdivision Ordinance	Madison County	Requires at least 50% of the land to be kept as greenspace and be put into a permanent conservation easement. The remaining land will be developed with the same number of residences that would be allowed on the entire property under standard zoning		A	2001	1	3 (for new conservation developments)

Plan for South Creek and Biger Creek
HUC 10 # 0306010404

		regulations.					
Set aside funds for purchase of greenspace	Madison County	?	Georgia Land Conservation Program, Madison County	A	Ongoing	.5	3
Development Standards Program	Madison County	Creates point system for approval of development. Must have 200 points for approval. Different development practices worth different number of points. Some practices involve increasing or maintaining tree cover and greenspace.		A	2005	5	1 (for new and redevelopment)
Rivers Alive	Keep Madison Beautiful	Annual river cleanup. Keep Madison Beautiful leads volunteer effort on Broad River in Elbert, Madison and Oglethorpe Counties.		A	Ongoing	.5	.5
Illegal Dumping Programs	Madison County, Cities of Colbert, Comer, Danielsville, Hull and Ila	Develop ordinance forbidding illegal dumping of waste, place no dumping signs, and allow for citizen reporting of illegal dumping		A	In place, on-going	UNK	UNK
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.	Informs those involved in the agricultural business of effective practices to minimize non-point source pollution.	State	A	In place, on-going		Varies with BMP applied.
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.	Federal (Farm Bill 2002) 50% cost share with possible additional incentive payments	A	In place, on-going		Varies with BMP applied.
Conservation Reserve Program (CRP)	Natural Resources Conservation Services / USDA Farm Services Agency	Provides technical assistance, rental payments and cost share funding to address specific natural resource concerns including: protection of ground and surface waters, soil erosion and wildlife habitat. Eligible practices include tree planting, grassed waterways, wildlife habitat buffers, and shallow water area for wildlife and filter strips.	Federal Annual rental payment for land taken out of production and 50% cost share for practice installation.	A	In place, on-going		Effectiveness will vary with the specific application.
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	Natural Resources Conservation Services	This is the first program that rewards farmers and ranchers for high levels of environmental stewardship. Producers on cropland, orchards, vineyards, pasture and range may apply for CSP regardless of size, type of operation, or crops produced. Land in other cost share programs is not eligible. CSP will first be offered in	Federal (Farm Bill 2002) Cost Share. There are three tiers of involvement, which result in different expectations and cost share opportunities.	A	2007		Varies with BMP applied.

Plan for South Creek and Bigger Creek
HUC 10 # 0306010404

		watersheds with greatest potential for improving water quality, soil quality and grazing land condition.					
Georgia Forestry Commission Monthly BMP Assurance Examination	Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)	In an effort to document "reasonable assurance" that water quality will be proactively protected during regular ongoing silvicultural operations, the GCF will offer a monthly BMP assurance examination of active sites. All active of ongoing sites will be identified either through monthly air patrol flights, courthouse records, riding the roads, notification or by landowners. Sites located within watersheds of specific biota (sediment) impaired streams will be given a higher priority to identify and conduct examinations.	Federal and State	A (not yet active in the South Creek/Bigger Creek watershed, protocol being developed)	In place, on-going	5	3
Partners for Fish and Wildlife	US Fish and Wildlife Services	This is a proactive, voluntary program that works with private landowners to restore fish and wildlife habitats on their land. The projects have several different focuses, but for the purpose of water quality the projects focus on stream and riparian restoration and restoration of rare species habitat.	Federal variable cost share	A	In place, on-going		Varies with BMP applied.
Special Forestry/Wildlife Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services	Special funds allocated out of the EQIP program that will address forest road erosion/water quality, plant health, and wildlife habitat. This program has a separate ranking for rewarding money from the regular EQIP program.	Federal 50% cost share with possible additional incentive payments	A	In place, on-going		Varies with BMP applied.
Wildlife Habitat Incentives Program (WHIP)	Natural Resources Conservation Services	Provides technical and cost share assistance for the creation of high quality wildlife habitat. Habitats of special concern include riparian areas and endangered and threatened species habitat.	Federal 75% of cost of the installation of practice provided	A	In place, on-going		Varies with BMP applied.
Soil Erosion and Sedimentation Control Ordinance	Madison County	Currently requires 25ft. buffer on state waters for new and redevelopment. Single-family residential housing allowed in buffer if on 2 acre lot and septic drainfield is not installed in buffer. This will be changed to 50ft. in May 2007.		P	May 2007	5	1 (for new and redevelopment)
Targeted Sampling Volunteer Monitoring Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling by measuring turbidity (if determined to be a reasonable parameter for assessment of sources) to determine priority sources of sediment. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3

Plan for South Creek and Bigger Creek
HUC 10 # 0306010404

Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of Sediment and help prioritize use of funding and resources.	Section 106 Grant for TMDL Implementation	NE	2008	5	3
-------------------------------	--	--	---	----	------	---	---

Work Sheet for Table 6B is designed to evaluate the capacity of existing, proposed, or pending BMPs to achieve nonpoint source load reductions specified in the TMDL as well as other BMPs that might be implemented to further reduce pollutant loadings from significant sources. This approach is intended to provide a usable local guide to adopt BMPs for achieving water quality goals, establishing priorities for grant or loan programs, and identifying priorities for local watershed assessments and protection plans.

Columns 1 and 2 contain significant potential sources and their corresponding impact ratings (from Table 4). Column 3 lists significant BMPs applicable to each significant source (from Table 6A). Column 4 is a very brief “evaluation summary”, developed in conjunction with local stakeholders, of whether existing or proposed BMPs will achieve load reductions identified in the TMDL. Column 5 contains a summary of additional information needed to further determine significant sources and their relative contributions, and could contain recommendations for water quality monitoring, watershed assessments, or additional data acquisition. If current or proposed management measures are judged inadequate to achieve the load reductions for significant sources identified in the TMDL, additional management measures that could effectively reduce pollutant loads should be listed in “Additional Information / Measures Needed” (Column 5) and included as new enhanced existing recommendations (NE) or new recommendations (NR) under “Status Code (5)” in Table 6B and under “Milestones” (Table 9).

**Work Sheet for Table 6B: EVALUATION OF GENERAL AND SPECIFIC MANAGEMENT MEASURES AND ACTIVITIES
APPLICABLE TO EACH CRITERION**

APPLICABLE TO CRITERION 1: Sediment.

SIGNIFICANT POTENTIAL SOURCES (1) (From Table 4)	IMPACT RATING (2) (From Table 4)	APPLICABLE BMPs (3) (From Table 6A)	EVALUATION SUMMARY (4)	ADDITIONAL INFORMATION / MEASURES NEEDED (5)
Construction	9	Construction Storm Water Discharge NPDES Permit	Effective enforcement of existing and proposed measures should eliminate or minimize sediment load from new and redevelopment.	Additional studies could be conducted to determine the role of legacy sediment in the impairment of South Creek/Biger Creek.
		River Corridor Protection Ordinance		
		Riparian Buffer Ordinance		
		Post-Development Stormwater Management Ordinance		
		Conservation Subdivision Ordinance		
Crop Production	0.5	Development Standards Program	Crop production is not considered to be a significant source.	There may not be a need for additional measures.
		Georgia Best Management Practices		
		Environmental Quality Incentives Program (EQIP)		
		Conservation Reserve Program (CRP)		
		Conservation Security Program (CSP) (available for Broad River Watershed in 2007)		

Plan for South Creek and Biger Creek
HUC 10 # 0306010404

Animal Production	3	Environmental Quality Incentives Program (EQIP)	Current management practices do not target farms that are in close proximity to the TMDL segment or those that are shown to have a direct impact on water quality.	Successful implementation of programs requires technical, assistance, education and marketing
		Conservation Reserve Program (CRP)		If loads from animal production are not being reduced, consider improving marketing to farms close to TMDL segment.
		Georgia Best Management Practices		
		Conservation Security Program (CSP) (available for Broad River Watershed in 2007)		
Forestry/logging	3	Georgia Forestry Commission Monthly BMP Assurance Examination	The BMP Assurance Examinations are targeted to TMDL watersheds. If effectively enforced sediment load from forestry practices should be minimized. Other management practices do not target operations that are in close proximity to the TMDL segment or those that are shown to have a direct impact on water quality. Successful implementation of programs requires technical, assistance, education and marketing	If loads from forestry/logging operations are not being reduced, consider improving marketing to operations close to TMDL segment.
		Partners for Fish and Wildlife		
		Special Forestry/Wildlife Environmental Quality Incentives Program (EQIP)		
		Wildlife Habitat Incentives Program (WHIP)		

Table 6B identifies new enhancements to existing measures (NE) or new recommended measures (NR) that could improve or supplement current or proposed management measures listed in Table 6A, where current and required measures have been judged inadequate for achieving the load reductions from significant sources identified in the TMDL. After further evaluation generated in the Work Sheet for Table 6B, the additional management measures proposed in Table 6B have been determined more effective in reducing pollutant loads from the most likely sources of impairment. The BMPs are listed in Column 1, organization responsible for implementation in Column 2, description of the measure(s) in Column 3, and sources of funding or other resources in Column 4. Column 5 contains one of the following status codes: (NE) enhanced existing measure or (NR) new recommended measure. Column 6 shows the approximate date when the measure has or will be implemented. Column 7 contains an “extent” rating for the BMP or the percentage of individual sources to which the BMP could be applied (see the following table). Column 8 is an estimated BMP “effectiveness” rating that may be either provided by local experts or derived from technical guidance information. The following table provides guidance for rating the estimated management measure “extent” and “effectiveness” of each significant potential source.

BMP Extent (Percentage of Sources to Which the BMP Has or Will Be Applied)	BMP Effectiveness (Percent Removal of Pollutant by the BMP)	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 6B. RECOMMENDED ADDITIONAL MANAGEMENT MEASURES AND ACTIVITIES TO ACHIEVE LOAD REDUCTIONS
(COMPILED FROM TABLE 6A AND COLUMN 5 IN WORK SHEET FOR TABLE 6B)**

APPLICABLE TO CRITERION 1: Sediment

BEST MANAGEMENT PRACTICE (1)	RESPONSIBILITY (2)	DESCRIPTION (3)	SOURCES OF FUNDING & RESOURCES (4)	STATUS CODE (5)	TARGET DATE (6)	EXTENT RATING (7)	EFFECT. RATING (8)
Targeted Sampling Volunteer Monitoring Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	Targeted sampling by measuring turbidity (if determined to be a reasonable parameter for assessment of sources) to determine priority sources of sediment. Will be a publicized volunteer sampling event and public water quality education effort.	Section 106 Grant for TMDL implementation, Donations	NR	2008	5	3
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	Results from targeted sampling monitoring event will be presented to local officials and stakeholders to stimulate and guide their course of action. Data obtained from sampling would isolate the most likely sources of Sediment and help prioritize use of funding and resources.	Section 106 Grant for TMDL Implementation	NE	2008	5	3
Riparian Buffer Ordinance	Madison County	Increases riparian buffer width requirement from 25 ft. to 50 ft. Allows for residential development within buffer provided it is located on 2 acres or more and the septic drainfield is located outside the buffer area. Agricultural use is exempt provided BMPs are used.		NE	May 2007	5	1 (for new and redevelopment)

VII. MONITORING PLAN

Water quality monitoring serves several purposes, including obtaining data to determine sources of pollution, supporting management decisions, describing baseline conditions, and evaluating the effects of management measures on water quality. This section describes parameters to be monitored, status, whether monitoring is required for watershed assessments or storm water permits, and the intended purpose. Submittal of a Sampling and Quality Assurance Plan (SQAP) for EPD approval is mandatory if monitoring data is to be used in support of listing decisions.

Water quality data used to evaluate the criteria violated are less than five years old? Yes [] No [X].

Table 7. MONITORING PLAN

PARAMETER (S) TO BE MONITORED	RESPONSIBLE ENTITY	STATUS (CURRENT, PROPOSED, OR RECOMMENDED)	TIME FRAME		PURPOSE (If for listing assessment, date of SQAP submission)
			START	END	
Sediment	Broad River Watershed Association, Adopt-A-Stream, EPD	Recommended	2008		Determine priority sources (targeted sampling by measuring turbidity) (if determined to be a reasonable parameter for assessment of sources)

VIII. PLANNED OUTREACH FOR IMPLEMENTATION

Table 8 lists and describes outreach activities that will be conducted to support this implementation plan. (At a minimum, this is to include all education/outreach activities defined in the contractual Scope of Work for TMDL Implementation Plan development or revisions.)

Table 8. PLANNED OUTREACH FOR IMPLEMENTATION

RESPONSIBILITY	DESCRIPTION	AUDIENCE	DATE
NEGRDC	Distribute TMDL Implementation plans to counties, cities and others participating in the implementation process.	Stakeholders	June 2007

Broad River Watershed Association, Adopt-A-Stream, EPD	Distribution of water quality education materials to volunteers helping with targeted sampling	Volunteer citizens	2008
NEGRDC	Presentation of potential implementation activities. Oconee River RC&D may apply for 319 grant funding in the future to implement suggested management practices mentioned in the meeting.	Oconee River RC&D	June 2007

IX. MILESTONES AND MEASURES OF PROGRESS FOR BEST MANAGEMENT PRACTICES (BMPs) AND OUTREACH

Table 9 tracks and reports progress of significant management measures identified in Tables 6A, 6B, and other sections of this plan, including outreach, additional monitoring and assessments, and enhancement or installation of BMPs. Significant activities and the target dates of accomplishment are listed, and comments are provided on the effectiveness of the management measure, the degree of community support, what was learned, how the measure might be improved in the future, and other pertinent observations.

Table 9. MILESTONES AND MEASURES OF PROGRESS

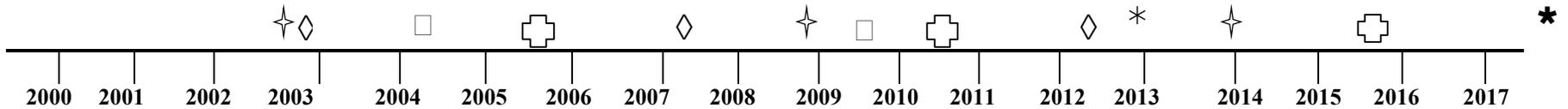
BEST MANAGEMENT PRACTICE	RESPONSIBLE ORGANIZATION	STATUS		COMMENT
		PROPOSED	INSTALLED	
Construction Storm Water Discharge NPDES Permit	Georgia DNR/EPD		On-going	Decreases sediment load from land disturbing activity during construction. Effective if enforced.
River Corridor Protection Ordinance	Madison County		1993	Proposed to be adopted for the South Fork Broad River in 2007.
Riparian Buffer Ordinance	Madison County	May 2007		Offers increased filtration and infiltration of runoff.
Post-Development Stormwater Management Ordinance	Madison County		2006	Decreases sediment load from post-development. Effective if enforced. Efficiency is greater than 75% when enforced.
Conservation Subdivision Ordinance	Madison County		2001	Minimization of impervious surface and preservation of greenspace may reduce runoff of pollutants.
Set aside funds for purchase of greenspace	Madison County		Ongoing	Preservation of greenspace in environmentally sensitive areas may reduce runoff of pollutants
Development Standards Program	Madison County		2005	Creates point system for development practices. Some points can be obtained through preservation of greenspace and trees.
Illegal Dumping Programs	Madison County		In place, on-going	Code Enforcement Officer enforces illegal dumping ordinance.
Georgia Best Management Practices	Georgia Department of Agriculture / Georgia Environmental Protection Division for enforcement action.		In place, on-going	Varies with BMP applied
Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services		In place, on-going	Varies with BMP applied. EQIP programs should be targeted to farms that are located near TMDL segments.
Conservation Reserve Program (CRP)	Natural Resources Conservation		In place,	Effectiveness will vary with the specific application.

Plan for South Creek and Biger Creek
HUC 10 # 0306010404

	Services / USDA Farm Services Agency		on-going	
Conservation Security Program (CSP) (available for Broad River Watershed in 2007)	Natural Resources Conservation Services	2007		Effectiveness varies with specific application. Only available to farms that have Best Management Practices in place. Reward for environmental stewardship.
Georgia Forestry Commission Monthly BMP Assurance Examination	Georgia Forestry Commission (matters involving enforcement are generally referred to GA EPD)		In place, on-going	Effectiveness will vary with the specific application
Partners for Fish and Wildlife	US Fish and Wildlife Services		In place, on-going	Effectiveness will vary with the specific application
Special Forestry/Wildlife Environmental Quality Incentives Program (EQIP)	Natural Resources Conservation Services		In place, on-going	Effectiveness will vary with the specific application
Wildlife Habitat Incentives Program (WHIP)	Natural Resources Conservation Services		In place, on-going	Effectiveness will vary with the specific application
Rivers Alive	Keep Madison Beautiful		Ongoing	Annual water quality education and river clean-up event
Volunteer Targeted Sampling Event "River Rendezvous"	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Targeted sampling to determine sources with a water quality education initiative
Follow-Up to Monitoring Event	Broad River Watershed Association, Adopt-A-Stream, EPD	2008		Results from event presented to stakeholders and government officials and used to guide use of funding and resources.
Distribution of TMDL Implementation Plans	Broad River Watershed Association, Adopt-A-Stream, EPD		June 2007	Hard copies to be distributed to requesting stakeholders. Plans to be posted on webpage.
Water Quality newspaper articles	County Extension		On-going	Periodically runs water quality articles related to agricultural BMPs, septic maintenance, etc.
Meeting with Oconee River RC&D Council	NEGRDC	June 2007		Presentation of potential future 319(h) projects to address sources of fecal coliform in the TMDL watersheds.

PROJECTED ATTAINMENT DATE

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



- Projected EPD Basin Group Monitoring
- New TMDLs Completed
- Revised or Updated TMDL Implementation Plan Received by EPD
- Evaluation of Implementation Plan/water Quality Improvement
- Project Attainment for Plans Prepared in 2002
- Project Attainment for Plans Prepared in 2007

Prepared By:	Christina Baker		
Agency:	Northeast Georgia Regional Development Center		
Address:	305 Research Drive		
City:	Athens	ST:	GA ZIP: 30606
E-mail:	cbaker@negplanning.org		
Date Submitted to EPD:	6/15/2007	Revision:	01

Preparation of this report was financed in part through a grant from the U.S. Environmental Protection Agency under the provisions of Section 106 of the Federal Water Pollution Control Act, as amended.

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/ORGANIZATION	ADDRESS	CITY	STATE	ZIP	PHONE	E-MAIL
Doug Appler, Madison County Planning	P.O. Box 68	Danielsville	GA	30633	706-795-6340	dappler@madisonco.us
Jack Huff, Madison County Code Enforcer	P.O. Box 510	Danielsville	GA	30633	706-795-5685	mcce@madisonco.us
Carl Varnadoe, Madison County Extension Director	P.O. Box 510	Danielsville	GA	30633	706-795-2281	Uge1191@uga.edu
Ruth Ann Tesanovich, Property Owners for Commonsense Growth	959 Hwy. 172	Colbert	GA	30628	706-788-3238	rtesanovich@uha.uga.edu
Burton 'Chip' Chandler, Watson Mill Bridge State Park	740 First St.	Carlton	GA	30627	706-797-3501	dewchndlr@aol.com
Marvin White, Madison County Chamber of Commerce	P.O. Box 361	Danielsville	GA	30633-5961	706-795-3473	marvin@madisoncountyga.org
Steve Sorrells, City of Comer Clerk	P.O. Box 65	Comer	GA	30629-0065	706-783-4552	shsorrells@alltel.net
Sam Linhart, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-783-2308	jeansmithga@earthlink.net
Victor Johnson, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-795-2184	glfvyj@charterinternet.com
Dudley Hartel, Broad River Watershed Association	P.O. Box 661	Danielsville	GA	30633	706-559-4236	drhartek@alltel.net
Michelle Dills, City of Danielsville Clerk	P.O. Box 339	Danielsville	GA	30633-0339	706-795-2200	cityofdville@charter.net
Susan Seagraves, Madison County Health Department	P.O. Box 26	Danielsville	GA	30633-0026	706-795-2131	
Doug Patton, Madison County Cattlemen's Association	P.O. Box 1075	Danielsville	GA	30633	706-248-5851	
John Colberg, Georgia Forestry Commission	2088 Warrington Hwy.	Thompson	GA		706-595-4661	jcolberg@gfcstate.ga.us

APPENDIX B.

UPDATES TO THIS PLAN

If this is a major or minor revision of an existing plan, this section will describe the date, section or table updated, and a summary of what was changed and why.

APPENDIX C.

FIELD SURVEYS, NOTES, PHOTOGRAPHS, AND MAPS.

Visual Field Survey for South Creek / Biger Creek (Madison County (EPA)), January 2007

Visual Field Survey
For
South Creek/Bigger Creek (Madison County)
In the
Savannah River Basin
January 2007

Prepared by the Northeast Georgia Regional Development Center with the support of the Environmental Protection Division of the Georgia Department of Natural Resources

Table of Contents

1.0 INTRODUCTION.....3
1.1 Location.....3
1.2 Watershed description.....3
2.0 METHODOLOGY.....7
3.0 FIELD FINDINGS.....7
3.1 General Characteristics.....7
3.2 Point Sources.....12
3.3 Non-Point Sources.....12
4.0 RANKS ASSIGNED TO POLLUTION SOURCES.....15
5.0 SUMMARY OF FINDINGS.....15
6.0 STAKEHOLDER INVOLVEMENT.....15

List of Tables

Table 1. Watershed Land Cover.....3
Table 2. LBCS Categories and Function Codes.....4

List of Figures

Figure 1. South Creek/Biger Creek Watershed Land Use.....5
Figure 2. South Creek/Biger Creek Survey Map.....6
Figure 3. South Creek at Glenn Carrie Rd.....8
Figure 4. Biger Creek at Garnett Ward Rd.....9
Figure 5. Cattle access to stream at Garnett Ward Rd.....9
Figure 6: Biger Creek at Foote-McClellan Rd.....10
Figure 7. Biger Creek at Diamond Hill Colbert Rd.....10
Figure 8. Forestry at Brush Creek and Colbert-Danielsville Rd.....11
Figure 9. Eroded Gully to Brush Creek at McCarty Dodd (Cattle access)....11
Figure 10. Confluence of Brush Creek and So. Fork Broad at Hwy 172.....12
Figure 11. Land clearing activity with loose sediment.....14
Figure 12. Sediment running off in rainwater from land clearing activity.....14

1.0 INTRODUCTION

1.1 Location

The South Creek/Biger Creek (Madison County-EPA Listed) TMDL segment is not meeting its designated use of fishing due to a biota impairment attributed to sediment loadings. The bioassessment and habitat assessment that put the stream segment on the 303(d) list were conducted between 1996 and 1997 and the segment was added to the list in 1998. The 12-mile segment is located in southern Madison County, and extends from Hull, GA to Brush Creek. The watershed is primarily in Madison County with a very small portion in Clarke County. Portions of the cities of Hull and Colbert are located within the South Creek/Biger Creek watershed, and the segment flows through the northern corner of Hull.

1.2 Watershed Description

The South Creek/Biger Creek TMDL segment is comprised of 23,325.61 acres of land in Madison and Clarke Counties. It is located within the HUC 10-0306010404, and is within the same boundary as the HUC 12-030601040402. Land use was determined by classifying 2004 NEGRDC parcels data using the Land-Based Classification System of the American Planning Association. The primary land uses in the watershed are residential, crop production, and forestry/logging. **Table 1** shows the area and percent of each land use type. **Table 2** lists the LBCS categories and function codes that relate to each land use category used for this survey. The land use map for the South Creek/Biger Creek watershed is included as **Figure**

Table 1: South/Biger Creek Watershed Land Use

Land Use	Area (Acres)	% of total
Residential	7759.72	33%
Commercial	147.81	1%
Transportation/Utility	840.39	4%
Park/Recreation/Conservation	151.27	1%
Public/Institutional	177.65	1%
Crop Production	7219.26	31%
Animal Production	504.13	2%
Forestry/Logging	6393.28	27%
Other	132.10	1%
Total	23325.61	100%

Table 2: LBCS Categories and Function Codes

Land Use Categories	LBCS Category	LBCS Function Codes
Residential	Private Household	1100
	Hotel, motel, other accommodation	1300
Commercial	General Sales and services	2000's
	Construction related business	7000's
Industrial	Manufacturing and Wholesale Trade	3000's
Transportation/Communication/Utility	Transportation, communication, information, and utility	4000's
Park/Recreation/Conservation	Arts, entertainment, and recreation	5000's
	Natural parks	5500
Public/Institutional	Education, public Admin., health care, oth. Institutional	6100
Mining/Extraction	Nonmetallic mining	8400
	Quarrying/stonecutting	8500
Crop Production	Crop Production	9100
	Support Functions for agriculture	9200
Animal Production	Animal production and slaughter, grazing land	9300
Forestry/Logging	Forestry and logging	9400
Game Preserve	Fishing, hunting and trapping, game preserves	9500
Other	Unclassifiable	9900

Figure 1. South Creek/Biger Creek Watershed Land Use

South-Biger Creek Land Use

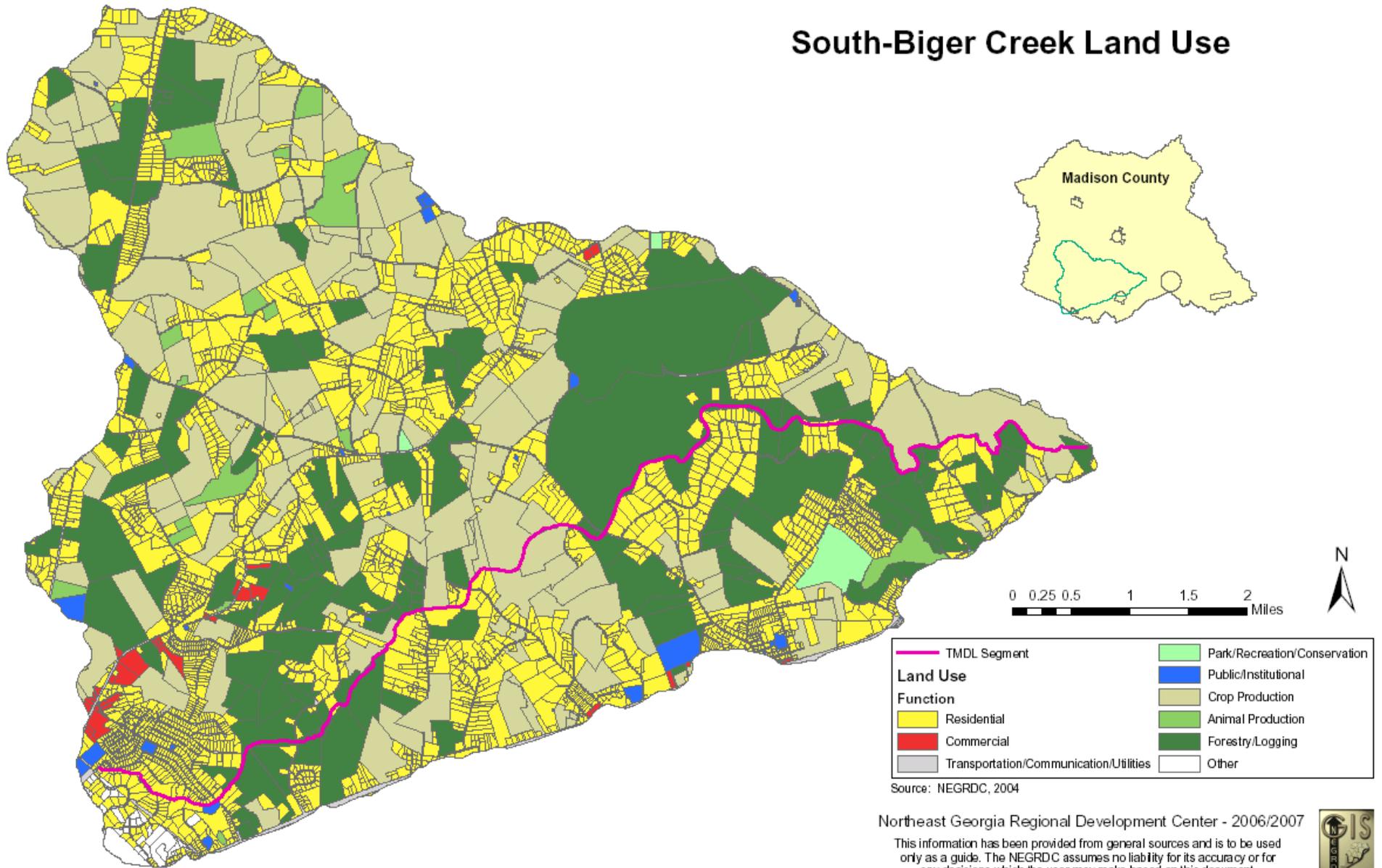
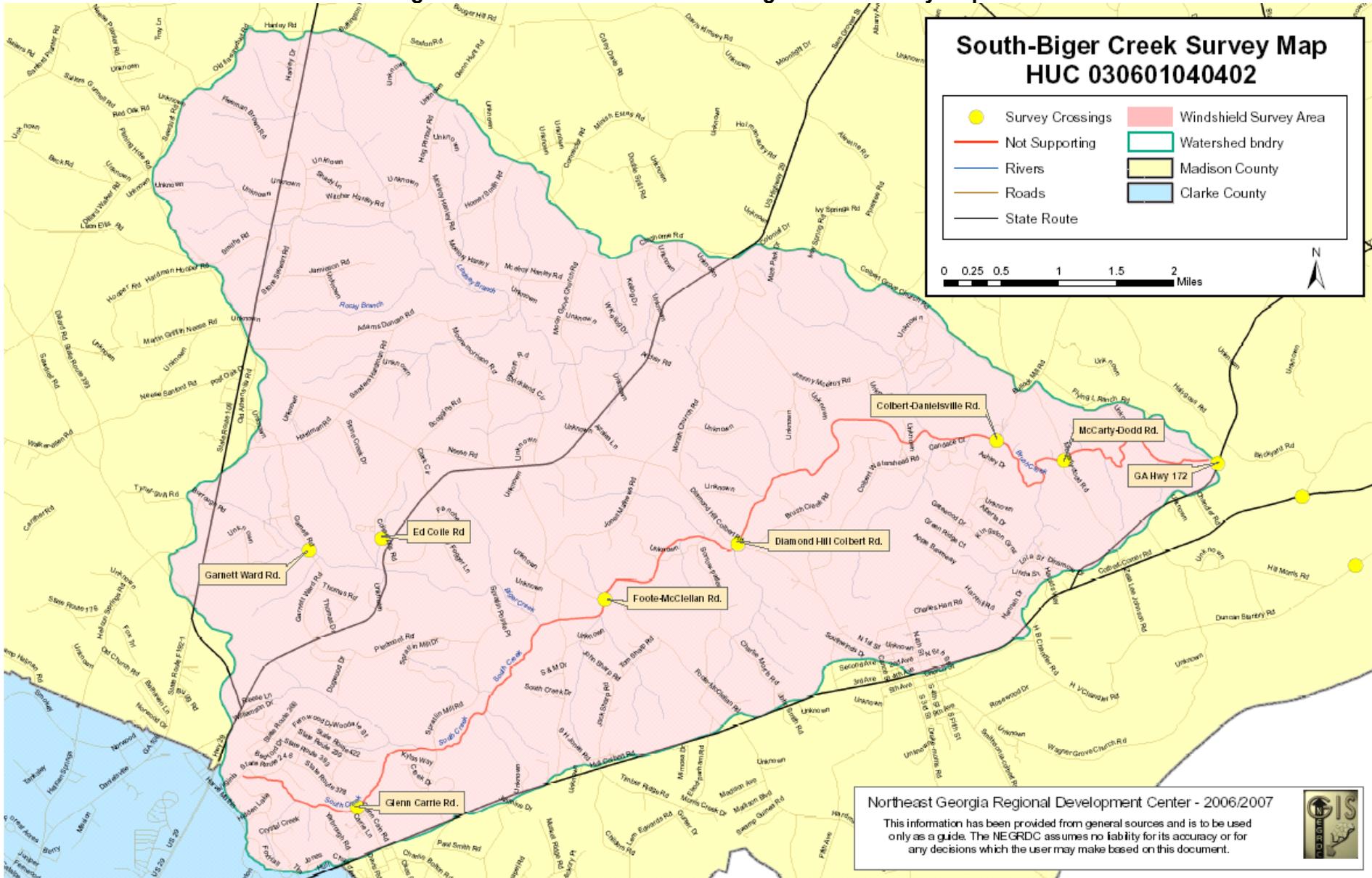


Figure 2. South Creek/Bigger Creek Survey Map



2.0 METHODOLOGY

Prior to conducting the field survey 2005 aerial photos from the National Agricultural Imagery Program were used to determine possible sources of sediment pollution within the watershed boundary shown on the maps on the previous pages. 2004 RDC land use data were also consulted to determine the extent of potential sources of sediment. One purpose of the field surveys is to compare the most recent RDC land use data with the 1995 land use data that was used in the development of the TMDLs.

The visual field survey consisted of a windshield survey of land use in the watershed and a visual assessment of stream condition at road crossings. The stream segment was not conducive to walking due to private property. Seven road crossings were visited on the TMDL segment and one road crossing was visited on a tributary to the TMDL segment. The area of the windshield survey is shown on the survey map as the area shaded in pink. Sources investigated during the windshield survey were land-disturbing activities, because these are easy to identify from aerials and it can be readily apparent if they are not using Best Management Practices. These activities were considered to be priority sources if best management practices were not in place to prevent runoff of sediment into the stream. Notes and photographs were taken to document observations of the stream segment and the surrounding watershed.

3.0 FIELD FINDINGS

3.1 General Characteristics

The field findings discussed here are the result of the visual surveys of the TMDL stream segment and its watershed.

The stream crossings that were visited for this survey were at Glen Carrie Rd. and South Creek, Garnett Ward Rd. and Biger Creek, Ed Coile Rd. and tributary to Biger Creek, Foote McClellan Rd. and Biger Creek, Diamond Hill Colbert Rd. and Biger Creek, Colbert-Danielsville Rd. and Brush Creek, McCarty Dodd Rd. and Brush Creek and Hwy 172 on the South Fork Broad River. At all TMDL segment crossings the water appeared cloudy or opaque and reddish-brown from sediment. At the crossing with the tributary to Biger Creek the water appeared clear. There was major bank erosion, mid-channel bars, and/or sediment deposition on stream banks at the first four stream crossings listed above (which are the farthest upstream). There was little or no erosion and sediment deposition at the other crossings. The riparian buffer width is extremely variable along the TMDL segment. A couple of areas along the stream have no riparian buffer while others have over 100ft forested riparian buffers. At road crossings where agricultural land is located adjacent to the stream (Garnett Ward Rd, Foote McClellan Rd, and McCarty-Dodd Rd.), there is frequently little or no forested buffer. No unusual

odors or water surface abnormalities were observed. General photos of the stream are included as **Figures 3-10**.



Figure 3. South Creek at Glenn Carrie Rd. Looking Upstream



Figure 4. Biger Creek at Garnett Ward Rd. Looking Upstream



Figure 5. Cattle access to stream at Garnett Ward Rd. Looking Upstream



Figure 6: Biger Creek at Foote-McClellan Rd. Looking Downstream



Figure 7. Biger Creek at Diamond Hill Colbert Rd. Looking Upstream



Figure 8. Forestry at Brush Creek and Colbert-Danielsville Rd. (Downstream)

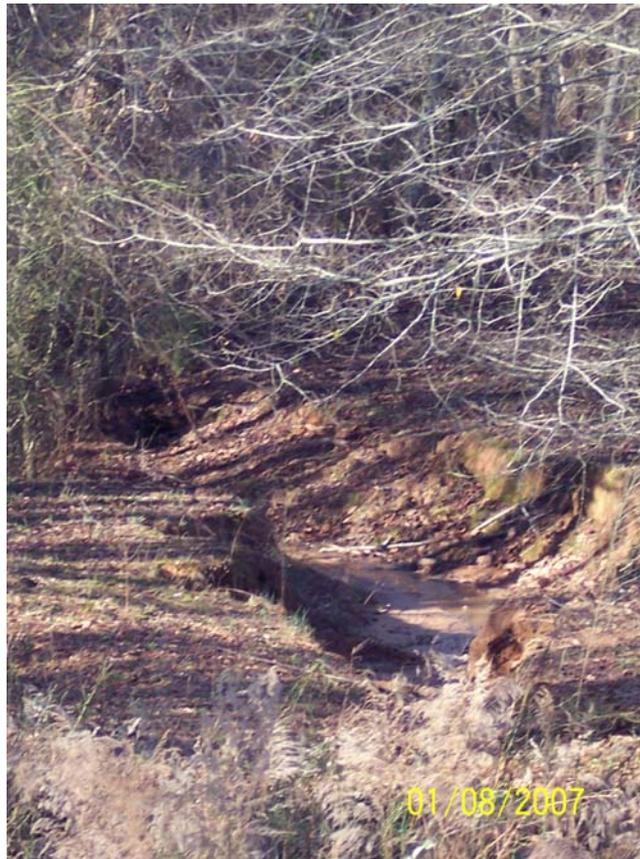


Figure 9. Eroded Gully to Brush Creek at McCarty Dodd (Cattle access)



Figure 10. Confluence of Brush Creek and So. Fork Broad at Hwy 172 Looking Upstream

Land use activities observed during the watershed drive included horse, cattle and poultry farms, forestry/logging, old, new and future residential development, a small dirt bike course, a golf course, commercial construction and a large pond with lots of exposed sediment.

3.2 Point Sources

NPDES permitted construction sites (sites over 1 acre) are the only point source of sediment in the watershed.

3.3 Non-Point Sources

Potential non-point sources of sediment pollution in the South Creek/Biger Creek watershed include, construction sites, forestry/logging, agriculture and impervious surfaces.

Residential development accounts for the largest percentage of land use in the watershed. There were several new developments in the watershed. Some developments still had vacant lots that will be developed soon. One or two areas are being cleared for future residential development. For example, on Garnett Ward Rd. there is a future subdivision that has cleared trees, exposed a lot of loose dirt and

installed utility lines with no apparent use of best management practices to prevent sediment runoff. Urban development increases impervious surfaces, which will cause more runoff of sediment and other pollutants. Practices used during road construction can be another big source.

Agriculture is another potential source of sediment pollution. Erosion and sedimentation can be a problem if proper best management practices are not used in crop production. Farms with animal production can be a source of sediment if animals are allowed access to the stream banks or if grazing is not managed properly. According to the land use data, only a small percentage of the land in the South Creek/Biger Creek watershed is used for animal production. However, during the windshield survey animal production was observed to be quite common. It is possible that some of the land classified in the land use data as crop production is in fact used for livestock grazing. Also, the trend in Madison County is for cropland to be given over to animal production. At one of the road crossings, cattle had access to the TMDL segment (see Figure 5). At another, cattle had access to a gully that drains to the TMDL segment during storm flows (see Figure 9)

Forestry/logging is another source of sediment if best management practices are not implemented. There was evidence of inactive logging operations. Figures 11 and 12 below show an operation that has cleared trees and exposed a lot of loose dirt some of which can be seen running off in Figure 12. Also on the site was a torn down house. The actual function of the land is unknown.

Comparison of the 1995 TMDL land use data and the 2004 RDC land use data shows significant changes in land use. Urban land use (residential, public/institutional and transportation/communication/utility) increased 1,234%, Commercial/Industrial increased 25.3%, Forestry/logging decreased by 57.6%, and Agriculture increased 8.3%.



Figure 11. Land clearing activity with loose sediment



Figure 12. Sediment running off in rainwater from land clearing activity
4.0 RANKS ASSIGNED TO POLLUTANT SOURCES

Construction is likely to be the primary source of sediment pollution. There is not enough information to rank agriculture and forestry sources, so for the purposes of TMDL implementation they should be considered equal contributors.

5.0 SUMMARY OF FINDINGS

The primary land uses in the South Creek/Bigger Creek watershed are residential, crop production and forestry/logging. The only point sources are NPDES permitted construction sites. Several non-point sources exist in the watershed including, construction sites, crop production, forestry/logging, animal production, and impervious surfaces, although, not all sources were visibly evident.

6.0 STAKEHOLDER INVOLVEMENT

The field surveys were presented to stakeholders at the second advisory group meeting and posted on the Northeast Georgia RDC website to facilitate stakeholder input on the survey reports.